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L'Afrique et les défis du XXIème siècle
Africa and the Challenges of the Twenty First Century
A África e os desafios do Século XXI
إفريقيا وتحديات القرن الواحد والعشرين

Strengthening African Higher Eduction and Research Systems

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1. Introduction

1.1 The paper seeks to crystallize issues related to three fundamental themes: 1). The catalytic role played by Higher Education and Research institutions for achievement of sustainable development and effective participation in the knowledge-based global economy 2) The major challenges of the 21st century that confront Higher Education and Research Institutions and 3) The strategic reforms and innovations essential for surmounting the developmental, technological, cultural, economic and other major challenges of the 21st century. In the analysis of each theme, lessons will be drawn from the experiences of many higher education institutions in Africa.

I.   Role of Higher Education and Research Institutions in the Pursuit of Sustainable Development

1.2 The World Bank publication "Constructing knowledge societies: New challenges for tertiary education states "The ability of a society to produce, select, adapt, commercialize and use knowledge is critical for sustained economic growth, and for effective participation in the global economy. Knowledge has become the most important factor in economic development. In OECD countries investment in knowledge based-research and development exceeds investing in physical equipment"[1].

1.3 Knowledge is increasing becoming the core of a country's competitive advantage. Comparative advantage among nations is no longer determined by availability of abundant natural resource or cheap labour but is becoming increasingly dependent upon technical innovations and the competitive use of knowledge. The success story of Bangalore, the capital of the software industry of India, is largely attributed to knowledge accumulation.

1.4 Higher education is a major driving force for achieving sustainable development in knowledge-intensive societies. The workforce of the 21st century is increasingly becoming a knowledge labour force which needs more advanced training and constant updating and training throughout life. In addition to economic growth, higher education can contribute to the solution of major problems that the world faces at present at the global, regional and local levels. It contributes to removing inequalities, alleviating poverty and environmental degradation, improving health, arresting large-scale pandemics such as AIDS. It also plays a decisive role in building social cohesion, and in laying the foundations of healthy civil societies committed to the practice of good governance and participatory democracy.

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1 "Conducting knowledge societies: new challenges for territory education" – World Bank 2002

In brief, tertiary education institutions play a critical role in supporting 1) Knowledge-driven economic growth strategies, 2) the construction of democratic, socially cohesive societies, and 3) The expansion and utilization of information and communication technologies, which has revolutionalized the capacity to store, transmit, access and use information at very low cost. Let us examine each of these roles in greater detail.

Support for Economic Growth and Development

1.5 Tertiary education institutions play a key role in supporting knowledge-driven economic growth. These institutions exercise a direct influence on national productivity which largely determines living standards and a country's ability to compete in the global economy. Through the training of competent and responsible professionals (high level scientists, educationists, technicians, business leaders, public servants), higher education ensures the availability of cadres of strategic thinkers and planners capable of developing and implementing sound macro-economic policies for alleviation of poverty and inequality in society.

1.6 Access to tertiary education opens better employment and income-generation opportunities for underprivileged students, thereby decreasing inequality in society. It is doubtful if developing countries can make significant progress towards achieving the United Nations Millennium Development Goals (MDGs) for education including (universal enrolment in primary education and elimination of gender disparities in primary and secondary education) without a strong tertiary education system. Tertiary education supports the rest of the education system through the training of teachers, the designing of curricula and improvement of the methods of teaching and learning at all levels.

1.7 Technological innovation and the diffusion of scientific and technical knowledge lead to higher productivity, and most of these innovations are the products of basic and applied research undertaken in universities. Progress in agriculture, health and the environment sectors in particular, is heavily dependent on the application of such innovations. The acquisition of advanced scientific and technological knowledge, facilitated by higher education institutions, reduces the vulnerability of low-income countries to the effects of climate change and natural disasters. The utilization of emerging technological know-how in areas such as meteorology and remote sensing improves forecasting and early-warning techniques that can drastically reduce the effects of land and environmental degradation and of natural disasters. The catastrophic floods in Mozambique in December 2000 could have been averted if only the required scientific and technological capacity was locally available.

Six months before the disaster, British meteorologists had issued warnings about the danger, but there was no in-country capacity to analyze the scientific data, draw concrete conclusions, and recommend preventive measures that could have saved thousands of lives.

Support for Creation of Democratic Socially Cohesive Societies

1.8 The norms, values, attributes, ethics and knowledge that tertiary institutions impart to students, constitute the social capital necessary for construction of healthy civil societies and socially cohesive cultures. Higher education confers benefits on individuals and families which contribute to economic growth and development. It consequently constitutes a "Public good" that serves broad social objectives which go beyond individual and economic development benefits. The social benefits of higher education include:

a) The improvement of social justice through fair access

b) The pursuit of knowledge that transcend commercial and economic objectives

c) The education of an informed and critical citizenry, capable of contributing to the development of a democratic culture that promotes social cohesion, open debates accountability and appreciation of diversity in gender ethnicity, religion and social class. Pluralistic and democratic societies are highly influenced and guided by strategic thinkers, analysts and researchers from higher education institutions.

1.9 The broad social benefits conferred by higher education institutions have been succinctly re-iterated by Akilagpa Sawyer in these terms[1]: "Higher education promotes; 1) Equalization of the life chances of talented individuals irrespective of social origin or financial capacity,

2) It functions as "critic and conscience of society" which is fundamental to the development of a vibrant democracy, and

3) It stimulates the pursuit of knowledge in a variety of fields which is essential for achievement of balanced social, economic and cultural development".

Support for Promotion of Information and Communication Technologies (ICT)

Today, technological communications in informatics and telecommunications are revolutionising capacity to store, transmit, access and use information at low costs. The progress in electronics, telecommunications and satellite technologies, permitting high-capacity data transmission at very low cost has brought about the neutralisation of physical distance as a barrier to communication and as a factor in economic competitiveness.

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1 The public good in Africa higher education – A Sawyer – newsletter of the social science academy – Nigeria - 2002

Research conducted in tertiary education institutions is central to the creation of the intellectual capacity on which knowledge production and utilization depend and to the promotion of the life-long learning practices necessary for updating people's knowledge and skills.

II. Major Challenges that Confront Higher Education Research Institutions in the 21st Century

2.1 This section addresses two fundamental issues: (a) the nature of the challenges facing tertiary education and research institutions in the 21st century and their root causes and (b) the impact of these challenges on the performance of tertiary education institutions and on Africa's participation in the knowledge-based global economy.

The Director General of UNESCO in an opening address to a conference on "Challenges facing higher education in Africa in 2009"[1] succinctly described the research mission of higher education: " Research in African universities will best serve the needs of the continent if is focused on two fundamental pillars: the wider world and the African world. Africans are the most suited to research on their own environment, and in each and every branch of learning, there is a wide range of Africa specific problems to be fully explored. The greatest challenge to every African University is to lead the way in exploring its immediate environment, in all its facets, using available instruments and resources from the wider world and adapting these to the exploration of the local problems". The challenges of the wider world and the challenges of the local environment capture most of the problems and issues highlighted in this section. The challenges identified are diverse and their magnitude and impact vary from country to country. Although it is inappropriate to generalise for a continent as vast and diverse as Africa, there are nevertheless same common features which are clearly discernible.

A. The Challenge of the Brain Drain and Capacity Building

2.2 If African Universities are to play a crucial role in solving some of the developmental problems in their respective countries, and accelerate their rate of economic growth and industrialization, there is a clearly a definitive need to redirect their research agenda towards the disciplines of science, technology and engineering. Unfortunately the research output in these disciplines has been very meagre, compared to that of the other regions of the world. For example, in engineering and technology, the number of publications in

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[1] UNESCO conference on Higher education – PARIS -2009

mainstream journals from Sub-Saharan African countries was less than 0.5% in 2006. A survey of 12 Universities in eastern and southern Africa, (published by the Eastern and Southern African Universities Research Programme in 2005), revealed that about 45% of all research projects in these universities were being undertaken in the Arts and Social Science disciplines - a definite legacy of the priorities of the colonial powers. Through the production of high-level manpower and the generation of knowledge through research, African universities play a crucial role in the promotion of science, technology and culture. Unfortunately the "Brian Drain" has deprived Africa of the research services of higher calibre science and technology academic staff.

2.3 One of the most serious challenges facing many African countries is the departure of their best scholars and scientists away from universities. Regional and overseas migrations or "The Brain Drain" has grave consequences, particularly in relation to institutional capacity development and the enhancement of research capacity. Migration of academics takes two different forms: a) Internal mobility and b) Overseas migration. The internal mobility of scholars can best be described as the flow of high-level expertise from the universities to better paying jobs in government agencies and private institutions." The deterioration of universities has compelled, academics and researchers to seek employment opportunities outside Universities, where salary levels, working conditions and fringe benefits are often more attractive. Regional migration is caused by civil strife or political persecutions and social upheavals. The massive exodus of highly trained personnel from countries such as Somalia, Liberia, Ethiopia, Togo, Sierra Leone, Nigeria, Rwanda and Algeria in the late 1990s and early 2000 was largely due to violation of academic freedom, persecution and social upheavals.

2.4 Overseas migration by scholars to the United States, Britain and the Western countries for pursuit of greener pastures and better working conditions has seriously jeopardised research development in African universities. According to MUNZALI JIBRIL (2007) it is estimated that there are at least 15000 Nigerian academics and 31000 doctors alone in United States alone. Similarly, studies undertaken by Paul Effah confirmed that there are over 50% of the total population of doctors in Ghana practising in the United States alone. Effah further revealed that many of the best and most experienced academics from South Africa are migrating to Australia, Britain, Canada, the United States and the other developed countries.

2.5 The causes of migration be it regional or international are varied and complex. The reasons why Researchers and academics migrate or decide to stay abroad are products of a

complex combination of economic, political, social, cultural and psychological factors and the impact of each factor varies from country to country and from individual to individual. African countries and many major international and non-governmental organizations have tried to stem massive movements of African expertise, but the results achieved have been most unsatisfactory. The international migration of highly educated people is by no means limited to Africa. It is a worldwide, unprecedented phenomenon, resulting from the existence of an increasingly globalised labour market.

2.6 The consequences of massive regional and overseas migration of African scholars and professionals are grave and include: a) serious shortage of high level academics in many countries, b) excessive and precarious dependence on expatriate staff, c) serious deterioration in the standards of delivery of teaching, research and service in universities and d) non-achievement of capacity building objectives in most institutions.

B. The Challenge of Access

2.7 Africa faces a significant challenge in providing access to higher education, not only to reach the levels of other developing and middle-income countries, but also to satisfy the demand of populations that are eager for opportunities to study and that have achieved a level of secondary education that qualifies them for post-secondary study.

2.8 A prominent feature of the higher education terrain since the attainment of political independence in the 1960s by many countries was the rapid increase in the number and variety of institutions, coupled with explosion in enrolment levels. From 52 in 1960 the number of universities almost tripled to 143 by 1980 and more than doubled to 316 by 2000. According to a study undertaken by DAMTEW TEFERRA AND PHILIP G. ALTBACH[1]; Africa, a continent with 54 countries had over 500 institutions in 2010 that fit the definition of a university. By international standards, Africa is the least developed region in terms of higher education institutions and enrolments. A striking feature of the rapid increase in enrolment is that it did not always lead to a broadening of the student body. Recent studies on enrolment in African universities and access to education at all levels, suggest that the sources of recruitment into university have remained limited and have become much narrower. The most dramatic evidence of this phenomenon is found in studies undertaken in Ghana, Mozambique and Senegal by Addae Mensah, Monzinho Mario and James Coleman[2].

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[1] Association of African Universities - Cost effectiveness and efficiency in African Universities - 2007

2 "Education in Ghana – a tool for social mobility or social stratification" by Coleman and others– Ghana Academy of Arts and Sciences – Addae Mensah 2007

This trend in social exclusion has serious policy implications. The continued admission of children of the privileged in better schools and universities re-enforce inequalities in society which may be passed from generation to generation.

What factors have precipitated rapid explosion in enrolment levels at higher education institutions? The first is a historical one – the need to fill the substantial unmet demand arising from limited opportunities for university education in the colonial and immediate post-colonial period. The second was the specific need to staff the expanded public services, the professions and businesses in the newly independent states. The third factor was the high rate of population growth and the youthfulness of the African population, which leads to substantial increase in both primary and secondary school graduates. The massification of higher education or the explosions in enrolment at all levels have diminished resources which could have been utilized to improve facilities for research, and to augment services to communities, to improve the leaving environment.

C. The Challenge of Funding

2.6 The central challenge for all African higher education systems in African universities is chronic lack of adequate financial resources. The causes of this phenomenon are well known and include: a). the pressures of expansion and "massification" that have added large numbers of students to most African academic institutions, b). the economic problems facing many African countries that make it difficult, if not impossible, to provide increased funding for higher education, c). the inability of students to afford tuition rates necessary for fiscal stability, and in some cases reluctance to impose tuition fees because of political and social pressures, d). misallocation and poor prioritization of available financial resources, such as the tradition of providing free or highly subsidized accommodations and food to students and maintaining a large and cumbersome non-academic personnel, and e). the reluctance of multilateral lending agencies such as World Bank and the International Monetary Fund (IMF) to support higher education institutions because of their preference of basic education. This was the attitude of these unilateral agencies in the 1980s and 1990s but dramatic changes have fortunately taken place since the beginning of the 21st century.

2.7 Higher education is a five to six billion dollar enterprise in Africa. For a continent of more than 800 million people, this expenditure is abysmally small. The total yearly expenditure for higher education in Africa as a whole does not even come close to the endowments' of some of the richest universities in the United States. The budgets of individual universities in many industrialized countries exceed the entire national budgets

for higher education in many African nations. The bulk of the funding for higher education is generated from state resources. African Governments consistently provide more than 90% to 95% of the total operating budgets of higher education. The remaining percentages are contributed by tuition fees, services, consultancy, renting facilities and other sources. Research is largely funded by donor agencies, and this naturally has implications for the nature of the research conducted and the research agenda in general.

2.8 The results of scarce financial resources are glaring and include: a. serious shortage of published materials - books and journals, a). lack of basic resources to support research and capacity building, b). the absence of simple laboratory equipment and supplies, and c. in some countries delays in salary payments for months. Some African countries e.g. Uganda and Tanzania have succeeded in significantly expanding the resource base of their universities by implementing cost-sharing mechanisms. The sustainability of these mechanisms and their impact on the quality of teaching and research are areas that merit exploration and research.

2.9 In the increasing global world that is largely being shaped by knowledge and information establishing a strong research, infrastructure is a sine qua non for effective participation in the highly competitive global market. Unfortunately the combined effects of a) scarcity of laboratory equipment and scientific paraphernalia, b) accelerated brain-drain and c) acute decline of reliable sources of research funds, have seriously retarded capacity development in teaching research and the offer of services to communities.

2.10 Expansion of the frontiers of knowledge is crucial for teaching and development. Most African countries have practically no funds allocated to research in the university budgets. Having access to indicators of the knowledge frontiers, such as journals, periodicals and databases is a major pre-requisite to undertaking viable, sustainable and meaningful research. For many African countries, these resources are either lacking or are extremely scarce.

2.11 The escalating cost of journals and ever-dwindling library and university funds have exacerbated the problems of expansion of the frontiers of knowledge. The local publishing infrastructure has traditionally been weak and generally, unreliable. The paucity of local publications is complicated by many factors, including a). The small number of researchers with the energy, time, funds and support needed to sustain journals, b) the lack of qualified editors and editorial staff c) a shortage of publishable materials, a restrictive environment that inhibits freedom of speech and, e) a lack of commitment to and appreciation of journal production by university administrators. It is an irony that publishing, as a universal tool of

measuring productivity, remains a yardstick for academic promotion in Africa, even though the environment does not appear to support research. Teferra re-iterated this point in 2007: "It is a stark contradiction that African academics are expected to publish their work in an academic context that does not even provide them with access to the journals, databases and other publications that are vital in keeping abreast of international developments in science and scholarship". [1]

2.12 Many of the research activities that are undertaken on the continent are largely funded, and to a large extent, managed and directed by external agencies viz - bilateral and multilateral bodies, non-governmental organisations (NGOs) and Foundations. Estimates of the percentage of external support for research in Africa range from 70% to as much as 90%. Dependence on external funding means that the research agenda funded are more related to the priorities interests and concerns of the donors. Thus the research undertaken does not largely focus on themes and issues vital to the needs and priorities of Africa. A major challenge in the 21st century is pursuing strategies and policies for strengthening the research capacity of higher education institutions, to ensure Africa's effective participation in a world increasingly dominated by knowledge and information.[2]

D. The Challenge of Academic Freedom

2.13 The acceptance and maintenance of a culture of academic freedom in higher education institutions is a major challenge for the 21st century. Many African governments are intolerant of dissent, criticism, non-conformity and free expression of new and unconventional ideas. Many examples of serious violations of academic freedom by security forces and militant groups in many African universities have been cited in studies undertaken by AMAN ATTIEH (2009) and also by Charles Ngone. In Kenya, for example, Ngone revealed that unwarranted Government interference and abuses of academic freedom have eroded the autonomy and quality of teaching and research in many higher education institutions. The summary expulsion of over forty university professors and lecturers from the University of Addis Ababa in the mid-1990s was a confirmation of gross violation of academic freedom and intolerance of dissent.

The culture of academic freedom is crucial in nurturing academic and scholarly pursuits. Academic freedom ensures that academies will be able to teach freely, undertake research in

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[1] "The African higher Education landscape" – TEFERRA- Journal of higher education 2007.
[2] Association of African Universities – Journal of Higher Education – 2007 - TEFERRA

areas of their interest, and communicate findings and ideas openly, without any fear of persecution. A civil society thrives on tolerance and freedom of expression. Academic freedom is a crucial element of a civil society and allows a great variety of perspective and views to be considered, entertained and contested. Observance of this culture is imperative if research and teaching are to contribute to the progress and development of African Societies.

E.   The Challenge of Culture

The UNESCO world conference on cultural policies held in Mexico in 1992, gave a succinct definition of the concept of culture: "culture may be defined as the whole complex of distinctive spiritual, material, intellectual and emotional features that characterize a society or social groups. In a nutshell, it is the collective output that defines a society's identity, its ethos and its values."

Development agencies have become increasingly convinced that balanced development should be viewed from a holistic perspective, and can only be achieved "by making cultural factors an integral part of the strategies designed to achieving it." The lessons of failure in Africa's development process can be largely attributed to the failure to take into account the cultural component and realities of their societies. In china, Japan, and Malaysia scholars have utilized the results and findings of empirical research to integrate cultural components into their development paradigm and management models.

The president of the World Bank in a statement re-iterated the crucial role of the cultural component as "the challenge of a holistic vision: culture, empowerment and the development paradigm". "The whole paradigm of development needs to be refocused on two intertwined sector of change: (a) promotion of cultural identity and (b) empowerment of the people. The first is not unlikely to happen without the second, nor can empowerment be developed in isolation from the cultural realities of a society."

African universities, particularly researchers have a responsibility to transform their institutions so that they can serve as center for functional cultural emancipation. What is presently lacking is a functional study of culture in a way that will help identify and integrate certain positive cultural values and knowledge into appropriate disciplines for development of problem-solving skills. Research on the different dimensions of the African culture can generate knowledge, skills and insights which can be effectively utilized to improve traditional medicine, indigenous technology, governance and democracy, social

cohesion, national unity and above all to promote empowerment and participation which are core areas in Africa's development paradigm.

In today's highly competitive global economy, characterized by rapid and mounting movement of human capital, foods and services across borders and cultures, policy makers and managers have to constantly grapple with the challenge of diversity. Whilst diversity brings stimulation, challenge and innovation, it does not always lead to harmony. The mixture of cultures, genders, lifestyles and values, often becomes a source of misunderstanding and conflict. The fundamental challenge of managers in the modern organizations of the 21st century is development of capacities for erecting an environment where differences are valued and where people who look, talk and think differently can work productively together. Through intensive study of the complexities and adversities of the African culture, and exploration of their strengths and weaknesses of cultural norms and traditions, researchers can generate relevant and far-reaching knowledge essential for surmounting many of the identified challenges of the 21st century.

The study of culture, needless to say, is very sensitive, and researchers are bound to confront obstacles and challenges related to (a) superstition, (b) taboos and (c) cultural practices inimical to sustainable development, gender equity and environmental sustainability. Researchers engaged in study of subjects or traditional practices of a sensitive nature; have in some countries faced repression, censorship and even persecution. A major challenge of the 21st century is creation of the required intellectual space in societies, conducive to unrestricted inquiry and the conduct of objective policy and action-oriented research.

F. The Challenge of Gender

Gender is single most important basis of inequality in higher education institutions. Gender imbalance is a common phenomenon in the continent's educational institutions. Cultural, sociological, economical, historical and political factors have fostered these inequalities. The gender imbalance in higher education is acute in virtually all African countries and in most disciplines. The female student population, the natural sciences across African public higher education is consistently lower than that of male students. This pattern appears to be an unusual phenomenon around the world, though the population of the disparity across countries does differ significantly. A   study on "Gender inequality in educational opportunity in Africa" conducted by Cornell University, reached a similar conclusion: "Empirical data revealed that most college women are in the social and behavioral sciences, followed quite closely by medical sciences, education, law and agriculture. There is a

tendency for less female participation in mathematics, computer, architecture, engineering and natural sciences."

One of the visible characteristics of most African universities is the invisibility of female faculty in same departments. For the few who make it in the university teaching profession, other social and cultural barriers exist between them and the higher echelons of the professional ladder. Under- representation of higher education, particularly at leadership and decision- making levels, partially explains their under- representation at national leadership positions. Although affirmative action, particularly at the level of national and international forums has yielded some fruitful results, gender disparity at university level continues to be acute. To significantly dispel some disparities, structural changes, particularly at national level must take place. To break the cycle of female under-representation on the higher educational system, and women's overall marginalization, a vigorous policy is needed of appointing women to positions where their actions and activities can have the strangest impact. Their systematic inclusion on all committees, commissions at both the local and international levels can help make a positive impact.

G. The Challenge of Student Activism

2.20 Student activism is prevalent in many African countries, and the reasons are often ascribed to: a). poor student services, d). delay of stipends, c). removal of perquisites and benefits, d). suppression of academic freedom, and e). increase of tuition fees. Student protests have resulted in Government instability and have played a major role in political power shifts. In a few cases, they have even toppled governments. When such protests take place, Government officials, conscious of their possible consequences take them seriously-often brutally crushing and subduing them. Hundreds of students have been seriously hurt, imprisoned, persecuted and even killed during protest in Africa. According to a study by Frederic and Coffentzis (2000) there were over a total of 110 reported student protest in Africa between the 1990 and 1998. The figures have escalated since then. This study demonstrates that government responses to student protests were "inhumane" "brutal" and "excessively cruel". The phenomenon of growing student unrest is likely to persist and is a major challenge for the 21st century since universities have been forced to cut budgets, as a result of economic stagnation, and to vigorously resort to resource mobilisation.

2.21 The major challenges identified for the 21st century are likely to become more acute as the pressure for academic and institutional expansion come into conflict with limited

resources. Political instability and social upheavals, experienced in several African countries will exacerbate economic decline and thus make these challenges more acute.

Unless these challenges are vigorously addressed and surmounted enhancement of research capacity in higher education – (which is central to the University's mission) will be extremely difficult to accomplish. Fortunately, the recognition of the leading donor agencies and lending institutions that, Higher Education is a vital contributor to socio-economic development, coupled with innovative reforms, with help to surmount the challenges that impede capacity development in the fields of teaching and research.

H. The Challenges of Globalization

2.22 There is no doubt that globalization has created considerable opportunities for improvement of the progress and welfare of humanity. It also implies increased competition at the global level and a higher level of technological preparedness which many African countries, unfortunately lack. As a result the benefits of globalization are unevenly distributed and the phenomenon exacerbates the challenges of glaring inequalities and social exclusion.

Globalization is a multifaceted process and can impact countries in vastly different ways – economically, culturally, socially, and politically. Knight and De Witt describe globalization as "The flow of technology, economy, knowledge, people, values, ideas across borders. Globalization affects each country in a different way due to a nation's individual history tradition, culture and priorities"[1]. Globalisation has certain key fundamental elements which include a) Knowledge expansion, b) Information and communication technologies, c) The market economy, d) Trade liberalization and e) Changes in governance structure. All these elements have an impact on the higher education sector, and on the development of research capacity.

Knowledge Creation

2.23 It emphasises the increasing importance attached to the production and use of knowledge as a wealth creator for nations. For higher education, this element implies growing emphasis on lifelong learning and continued professional development, supported by intensive research in key priority areas vital for socio-economic development.

Information and communication technologies

2.24 The second element comprises new development in information and communication technologies and systems which create innovative delivery methods for utilization in cross-

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[1] Challenges of globalization—Knight and De Britt—journal of Higher Education 2006.

border education particularly through online and satellite based facilities. This technology facilitates increased international mobility of students, academics, education and training programmes, research projects and promoters

Market economy

2.25 The third element implies growth in the number and influence of market based economies around the world. Its impact is greater commercialization and commodification of higher education and training at domestic and international levels.

Trade liberalisation

2.25 This element implies the development of new international and regional trade agreement for the purpose of removing barriers to international and regional trade. It facilitates increased import and export of education services following removal of trade barriers.

Governance

2.27 This element refers to the creation of new international and regional governance structures and systems. The impact on higher education is creation of new international and regional frameworks to complement national policies and practices, especially in the areas of quality assurance, accreditation, and credit transfer, recognition of qualifications and mobility of students

The impact of globalization on the development process of Africa and on the higher education landscape is so far-reaching and pervasive that surmounting its challenges requires sustained, innovative multi-dimensional approaches. The UNESCO conference on higher education (June 2003) was emphatic on this point "At no time in human history did the welfare of nations depends in such direct manner on the quality and outreach of their higher education systems and institutions. The increased globalization of economies, trade and services has turned higher education into a first necessity for all countries which wish to successfully face its challenges". Surmounting such challenges helps higher education institutions to significantly contribute to "Removing inequalities, alleviating poverty and environmental degradation, improving health, arresting large scale paramedics such as AIDS, building social cohesion and laying the foundations of healthy civil societies, based on good governance and participatory democracy".

I. **The Challenge of Hiv/Aids**

2.29 Many African countries lack the capacity to develop and implement effective coping strategies to combat the HIV/AIDS pandemic. Since the beginning of the AIDS epidemic in

the early 1980s, Africa has been commonly described as a "Continent in peril". It is estimated about 10.5% of African adults are infected with the HIV/AIDS virus, and the increasingly high rate of premature adult deaths is expected to result in 50million children becoming orphaned within the next decade. In the seven sub-Saharan countries with the highest infection rates – Botswana, Lesotho, Namibia, South Africa, Swaziland, Zambia and Zimbabwe between 30% to 40% of the adult population live with HIV. The rise of HIV over the last decade has generated serious economic and social consequences in countries with high infection rates.

In 2010, South Africa was 25% poorer than it would have been had the AIDS virus never existed. It is estimated that some countries in Africa are losing one quarter of their core personnel to HIV/AIDS. In Zambia, the loss of teaching staff in primary and secondary schools is staggering, equalling over half of the number of teachers trained each year. Tertiary Education Institutions are also losing large numbers of their teaching staff members, administrative personnel and students. The rapid loss of skilled professionals, technologically trained adults, and strategic thinkers and planners, has seriously hampered the development of the socio-economic sectors of several African countries. Agricultural productivity in these countries is rapidly declining and similarly service delivery and productivity in both public and private sector institutions have acutely deteriorated. The high cost of antiretroviral drugs, inadequate access to health care services and inadequate investment in knowledge creation and development of human capital have exacerbated the economic and social ill-effects of the AIDS pandemic. Tertiary education institutions play a crucial role in replenishing losses in human capital, resulting from the negative effects of the AIDS pandemic. A strong flexible tertiary education system develop capacities needed to control the negative effects of HIV/AIDS through

a. Production of trained teachers, professionals and health care workers, and
b. Development of local capacity for production of antiretroviral drugs.

Low income countries, with high infection rates, cannot afford to develop effective coping strategies or to buy the high cost remedies from the industrial world. Higher Education institutions help to develop the human capital essential for equipping outreach health programmes targeting poor people and also for production of generic drugs. Brazil's success in achieving a drastic reduction of the spread of HIV/AIDS was facilitated by the development of technical and human capital capacity essential for undertaking the research leading to the manufacture of the required drugs.

J. The Challenge of Relevance

2.30 The failure of many African research institutions to focus their agenda on the challenges concerns and priorities of the local environment is largely attributable to the entrenchment of African universities in cultural dependency. Currently, the research agenda and the curricula of many African universities are not designed to generate problem-solving skills or to address the socio-economic and developmental challenges of their respective countries. The experiences of Japan, China and some African countries in the development of research policies and research agendas, reveal that co-ordination of university research with that of local development and industrial agencies can yield major benefits for a country. A study of the Japanese model of development conducted by KOBAYASHI in1992, demonstrates that Japan's technological might today is a "Result of the government's commitment to ensure that industry was co-ordinated with University research".

2.31 A few co-ordinated links of a similar nature now exist in some universities. The Nigeria Federal Institute of Industrial Research OSHODI, has developed linkages with several institutions including the federal ministry of Industries, the Nigeria Bank of Commerce and Industries and the National Productivity Centre. Co-ordinated research between the university and these agencies has significantly contributed to creation of employment opportunities particularly in the informal sector and in the pursuit of poverty alleviations. Similar linkage efforts have also been successfully undertaken by the University Dar Es Salam and the University of Ouagadougou. These linkages aim at promoting collaboration between the institutions and businesses to identify areas of research and training which command priority for business and industrial enterprises.

K. Strategies for Addressing the Challenges of the 21st Century

3.1 Before presenting strategies essential for effectively combating the identified fundamental challenges confronting African higher education institutions in the 21st century, it is important to be explicitly clear about the concept of capacity development and its definition.

3.2 Scholars have defined the concept of capacity development in different ways and have viewed it from different perspectives. Alan Kaplan (1999) defined capacity as "The ability of an organization to function as a resilient, strategic and autonomous entity. A UNDP report (2007) defined capacity as "The ability of people, organizations and societies to perform functions, solve problems as well as set and achieve objectives in a sustainable manner". An

OCED report (2006) defined capacity as "The ability of people, organizations and societies to manage their affairs successfully".

3.3 Different scholars offer a range of different definitions and perspective to explain what is involved in developing capacity for research promotion. While some focus more on technical and resource transfer (e.g. KHARAS – 2005) other take a broader view (BASER AND MORGAN – 2008) and emphasize that any capacity building initiative must focus on the importance and influence of the context – the local socio-cultural and political context. In such cases, as (Harris 2004) emphasized the focus is not on developing capacities that do not exist, but rather on identifying and strengthening existing local capacities. Other scholars place considerable emphasis on the power relations between northern donors and providers of research capacity strengthening services and southern beneficiary organisation. They argue that any initiative to support research capacities needs to be seen as a two-way collaborative process whereby northern partners stand to learn as much as southern partners. These scholars argue that in order to ensure the sustainability of capacity strengthening efforts, local ownership over research priorities and agenda must be guaranteed.

3.4 In the literature on capacity development, scholars have made differentiation between various levels of capacity building. These are commonly divided into

     I.   Individual

    II.   Institutional and

   III.   System level approaches.

At the individual level, capacity building initiatives focus on building up a critical mass of researchers, competent in diverse fields.

3.5 At the institutional levels, the concern is with improving organisational structure processes, resources, management and governance issues including institutional rewards systems that encourage partnership modes or working, so that local institutions are able to attract, train and retain capable researchers.

36 Although a comparatively newer area of focus, the system level approach is designed to improve national and regional innovation environments. The emphasis is on the development of coherent polices, strategies and effective co-ordination across sectors, and among governmental non-governmental and international actors.

3.7 Since capacity development is a multi-dimensional process and should equally be pursued at three different levels, it is imperative that a strategy for enhancement of research capacity has to be holistic in its approach and should address a range of elements. As

already indicated, Sawyer identified two fundamental components in the development of research capacity –

J. The Challenge of Enhancement of Research Capacity

3.8 A key function of all universities is to sustain first class research and generate and apply the knowledge needed to face Africa's challenges. Without research universities lose the capacity to offer first class graduate studies, the capacity to motivate and retain the best brains, the capacity to train the new generation of research fellows and scientists. Without good libraries and laboratories, universities lose the capacity to offer quality undergraduate courses, which are the foundation for research and graduate studies.

3.9 In their revitalization programmes, African universities face fundamental challenges which A. Sawyer calls "The two components of research capacity, namely the environment component and the active component". The establishment of a research environment requires the provision of "A sound educational system which encourages equips people to be curious about nature and society and to develop our interest in the pursuit of knowledge and ideas"[1]. Policy makers need to develop broad social policies and practices that reward innovation and inquiry and encourage and facilitate the flow of information.

3.10 In the institutional context, universities need to put in place management systems and policies that support the research enterprises; a minimum research infrastructure such as laboratories, equipments, libraries and an effective system of information storage retrieval and utilization, an overall culture supportive of research and inquiry.

3.11 The "active component" of research which essentially consists of - human resources, requires adequate curricula and study programmes and a system that makes research attractive and that rewards achievements. It requires the assembling of a critical mass researchers and the cultivation of a positive research culture. The importance of research in Africa cannot be overemphasized since universities are in most cases the only institutions in African countries with the capacity to undertake research. Research provides a country with a cadre of personnel with the analytical skills to contribute to the formulation of plans and policies for national development. It also generates the capacity for dialogue and negotiations with international partners which has become increasingly important with the opening of African societies to the global market.

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[1] A. Sawyer "Re- introducing the public good in Higher Education institutions in Africa" – Journal of Higher education- 2005.

Development of the Active Component

3.12 This strategy essentially focuses on the development of capacity on individual researchers, including skills, competencies, attitudes, and values through appropriate training programmes, post-graduate and post-doctorate courses. It also requires cultivation of positive research culture, and provision an incentive system and structure that makes pursuit of a research career attractive and rewarding.

The Envrionment Component

3.13 Development of this component is much more demanding since it requires interventions beyond the university institution. To establish an appropriate and congenial research environment, universities ought to co-operate with other agencies and policy-makers in the education sector to support the production of a sound educational system which encourages and equip people to be curious about nature and society and to develop an interest in the pursuit of knowledge and ideas. In the specific institutional context, universities need to put in place management systems and policies that actively support the research enterprise, a minimum research infrastructure such as laboratories, equipments, libraries and an effective system of information storage, retrieval and utilization. At the macro-environment level policy-makers must be committed to initiating broad social policies that encourage and facilitate the flow of information and reward innovation and inquiry. An atmosphere of political and cultural tolerance also needs to be nurtured, since this is essential for the development of research capacity.

K. The Challenge of Funding

3.14 A fundamental element in the environment component is the availability and adequacy of the means for undertaking research. There are not enough resources, public or private currently devoted to research and to research capacity building. A study undertaken by Juma shabani covering 12 African countries on Challenges facing Higher Education in Africa - 1996 confirmed that between universities 1990 to 1994, more of these universities spent 4% of their recurrent budget on research. The structural adjustment programmes of the 1980s, justified by the need to reduce public expenditure and fiscal deficits, further compounded the financial challenges faced by African Higher education Institutions.

3.15 One feasible strategy for combating the challenge of dwindling financial resources for teaching and research is continued collaboration with donor agencies, with all its attendant ills. Donor grants have supported specific research projects in many African countries and

collaboration between northern and southern research institutions has yielded mutually beneficial results. Research networks have helped to link up researchers and to identify complementary research agencies. They have also contributed to facilitating widespread dissemination of research papers, improvement of research quality and management of research in general.

3.16 The disadvantage of such collaboration should be avoided, and include

1) limited impact of research generated on policies,

2) limited demand-led nature of research,

3) Non co-ordination of disbursements reporting and financial management procedures with institutional policies and procedures.

4) interference with the autonomy of the institution,

5) jeopardising the capacity of the institute to establish and adhere to its plans and priorities,

6) Failure to focus research on locally identified priorities and challenges.

3.17 Adoption of the cost sharing measures in an attractive form of augmenting revenue for research. Cost-sharing mechanisms including adoption of DUAL TRACK TUITION have been successfully implemented in Uganda's Makerere University and in other East African universities in Kenya, Tanzania and Ethiopia.

Research Management

3.18 Since donor agencies generally focus on project research, there is need for better and more professional management of the research function. Appropriate polices, systems, training schemes, and incentives structures should be developed to encourage and facilitate project development and implementation. A central research management facility should be established within the institutions, to monitor and co-ordinate research activities, to develop local capacity for identifying and accessing research funds in public and private sector agencies, and to develop expertise in the areas of contract development and management of intellectual property and ethical issues. To further support the active dimension of the research component, significant initiatives that have recently been developed at the national and regional levels e.g. organisation of study programmes should be promoted and implemented.

Study Programmes

3.20 The study programme on higher education management in Africa introduced by the Association of African universities in 1993 awarded Research funds to many young African scholars, to undertake research in diverse fields including: a. Institutional culture, b. resource mobilization and allocation, c. higher education and work, d. higher education-cost and financing, e. university management and f. student living and learning conditions.

3.21 A special feature of this scheme was that experienced resource persons supervised the research projects and that grantees were given intensive, often personalized training in various aspects of higher education research through workshops and seminars. Grant beneficiaries were also given the opportunity to benefit from attachments at recognised centres for higher education research in Europe to help raise the quality of their work. In addition, particularly after the completion of their projects, they were selectively sponsored to participate in international higher education conferences as part of their professional development.

3.22 Between 1999 to 2003, 126 individual researchers were trained and 43 research papers were published. There researchers have increasingly been engaged in advising governments and universities, publishing on higher education issues, participating in international meetings, and generally contributing knowledge and insights on higher education issues in Africa.

3.23 Similarly the Council for the Development of Social Science Research in Africa (CODESRIA), with the financial support of a pool of donor agencies, has been significantly building the capacity of young and senior researchers through the sponsorship of four different initiatives –

1) Multinational working groups
2) National working groups
3) Small grants programmes and
4) The training institutes programmes, focusing on democratic governance, gender, children and youths.

The participation in these CODESRIA – sponsored programmes have significantly contributed to enhancement of the core skills and competencies of many young African Researchers in the field of social sciences. There is a definite need to expand and strengthen these experience- enrichment and capacity building programmes and to widen the opportunities for increased participation by African scholars.

Conclusion

An analysis of the features, complexities and root-causes of the challenges identified in this paper confirms that an effective strategy for strengthening the capacity of higher education institutions to address them, has to be multi-faceted and requires the solid intervention of all key stakeholders: a) government b) donor agencies c) policy-makers d) the university management e) students and faculty f) the community at large.

A) The role of Government

Since the budget of African universities is largely funded by government (80% to 90%) its roles is a major determinant of efficiency in institutional delivery of top-quality teaching, research and community services. Public funding of higher education currently faces heavy constraints. Education is just one of the sectors that seek funds from state budgets. The needs of other public services are growing and economic growth in many African countries is slowing down or getting stagnant. Research is mainly funded by external agencies without exception. African universities are under considerate financial pressure and face serious financial challenges. Over the last decade, the pressure to expand the revenue base of high education has been mounting resulting in implementation of cost-sharing mechanisms, increased contributions from private and family sources, reduction of excessive non-academic staff and student accommodation, eating and living expense. With continued mounting pressures on environment's limited resources, more stringent measures must be employed to diversify the revenue base of universities and to implement mechanisms that guarantee transparency, accountability and cost-effectiveness in service delivery.

B) The Role of Donor Agencies

A feasible strategy for combating the challenge of dwindling financial resources, particularly in the area of research, is exploration of collaborative linkages with donor agencies. Donor grants have supported specific research projects in many African universities and collaboration between northern and southern research networks has yielded mutually beneficial results. The disadvantages of such linkages need to be avoided e.g. a) interference with the autonomy of the institution b) failure to focus research on locally identified priorities and challenges c) failure to link research to policy-formulation d) non-co-ordination of disbursement, accounting and procurement procedures with the established policies and modalities of the institution.

C) The Role of Policy-Makers

A major challenge facing policy-makers in African Higher education institutions and in the education sector at large is ensuring that the current missions and roles of African universities are responsive to the developmental, technological, economical and cultural challenges of the 21st century. Universities absorb a proportionally high percentage of the national budgets of African countries, and if is only economically sound that there should be demands for accountability. Unlike the "developed" world where national research activities are not exclusively carried out by universities, but also by industries and businesses, African universities virtually remain the main centres for research as well as the principal training centres for skill and professional development.

For institutions that depend so much on government funding to function, and have the highest concentration of high level talent for scientific and technological research trained with public funds, it is imperative that their over-riding mission should be to engage in improving the well-being of Africans and to respond to the socio-economic challenges of the 21st century.

There is no doubt that these institutions have made significant progress in improving the well-being of Africans through a) providing trained manpower needed for the development needs of countries and b) introducing innovative training programmes in the areas of environmental studies, multi-cultural and intercultural studies, information technologies, gender studies, much more needs to be done. Policy-makers in the education sector, in collaboration with the leadership of these institutions need to introduce and implement more innovative policies and strategies to achieve reforms in the curricular, in quality assurance and in internal management.

D) The Role of the University Management

The African university of the 21st century must be committed to achieve participation in social transformation and economic modernization and to the training and upgrading of the human resources of society in general, and not just a few small elite. To achieve these objectives the university management must foster a) the pursuit, promotion and dissemination of practical locally-oriented knowledge, b) research based on local problems, c) intellectual leadership which promote the diffusion of programmes of socio-economic relevancy d) increased extension work with artisans, farmers and small businesses. The governance structure needs to be substantially re-organised. Universities should take a lead

in the promotion of democratic processes by making councils, senate, faculties and departments more reflective of staff, student and community interests.

Needless to say there are many more key players in the university community whose combined interventions are essential for surmounting the challenges. The alleviation of student governances, through open democratic and participative engagements, the improvement of the commitment and morale of faculty and the increased offer of services to local communities will substantially contribute to transforming these institutions into engine of change and progress.

The challenge facing African higher education systems are formidable and no panacea exists to address them. The challenges are complex and deep-rooted and may even become more acute as the pressure for academic and institutional expansion comes into conflict with limited resource. Continuing political instability exacerbates the economic decline seen in many countries. It is true that African higher education is at a turning point, but the prospects for reform and revitalization are still bright. The revival of academic freedom in many universities, the emergence of democratic political systems, and vibrant civil societies, and above all the recent recognition by the international community, particularly the leading donor agencies and major lending institutions, that African higher education is a vital area for development, provide potent grounds for optimism over the emergence of positive solutions. With effective leadership, committed to implementing the strategies and measures outlined in this paper, the African Universities will acquire the capacities essential for achieving their cherished aspirations in the 21st century.

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