Revisiting the Challenges for Higher Education in Sub-Saharan Africa:

The Role of the Open Educational Resources Movement

Peter Bateman, April 2008

OER Africa
Building African education capacity through openness

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Introduction

OER Africa is a nascent project currently being implemented by the South African Institute for Distance Education (SAIDE) with support from the Hewlett Foundation. In devising a Plan of Action for OER Africa, the working group has determined that there is a need to find out just how Open Educational Resources (OER) might contribute to the needs of Higher Education Institutions (HEIs) in Sub-Saharan Africa (SSA). This research study will investigate the key challenges to Higher Education (HE) in SSA and identify those areas in which OER could contribute significantly to finding solutions to those challenges.

The Structure of the Research Study

This study commences with a brief overview of the historical context in which current higher education systems in SSA have evolved. Without an understanding and appreciation of how Higher Education[1] evolved on the continent it may be all too easy to equate the complex challenges faced by HEIs today with a lack of resources, motivation or capacity on the part of those who have worked for several decades to address these challenges. In other words, there are sound historical reasons that help to explain the current 'crisis' within the HE sector and these are well worth exploring.

The paper then explores the challenges for HE in SSA. While these challenges are complex and wide ranging, for the purposes of this study these are categorized into four key areas: Relevance, Management and Financing, Access, and Cooperation.

The final section of the study iterates several areas in which active participation in the OER movement might play a role in addressing some of the challenges faced by HEIs in SSA. It will become evident that OERs cannot provide a universal panacea for all of the challenges currently facing the HE sector for these are both multifaceted and multi-sectoral in nature. This section will therefore limit itself to addressing those challenges for which OERs may have the potential to assist HEIs to better achieve their mandate.

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1   The understanding of the term Higher Education varies somewhat across SSA. The traditional state-funded universities are no longer the dominant players in the HE sector with more and more polytechnics and colleges of further education now offering degree programs. Many of the challenges for each of these types of these HEIs are common and so in this study the term is used to describe all post-secondary education where a degree, diploma, or certificate is awarded at the end of study.

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Higher Education in SSA – The Historical Context

Joseph Ki-Zerbo, an African historian, described the challenges of modern Africa as having no solution but 'to educate' and to do so as rapidly and effectively as possible. He suggests that '[Africa's] entry into the Third Millennium is marked by upheavals that call into question the certainties of yesteryear and will therefore oblige societies to re-invent the meaning of life, and to create the foundations of a world ready for action' (Ki-Zerbo 1990). He also describes how the systematic dismantling of the pre-colonial African education system was undertaken by colonial authorities who brought with them an entirely new system aimed at achieving the subjugation of the continent to European needs. He goes on to suggests that it is necessary – in a post-colonial, independent Africa – to design an education that is of Africa and for Africa.

But what was the nature of this pre-colonial educational system? Banya and Elu (1997) describe, perhaps somewhat romantically, how African education was 'conceived as a living process linked to the daily experience of every individual'. Brock-Utne (1999) explores these linkages further:

- 'Linkage between general knowledge and practical life. The normal method for the trans-mission of knowledge was a series of practical exercises.

- Education was linked to production.

- Education was linked to social life.

- Education was linked to culture through the use of the mother tongue.

- Education was linked to culture through the incorporation of cultural practices like, games, dancing, music and sports.

- Links between the pre-colonial education system and ethical values were absolutely clear.' (Brock-Utne 1999)

In addition to these general precepts surrounding education (and contrary to popular belief), higher education systems also existed in parts of Africa prior to the colonial era. The Alexandria Museum and Library was established in the third century B.C. in Egypt as a centre of learning in the ancient world (MacLeod 2004). Later, in the third century AD, this was followed by Christian monastic educational institutions which spread from Egypt to other parts of Africa including Ethiopia in the 12th century with the establishment of the Metsahift Bet (School of the Holy Books) (Lulat 2005).

Similarly, Islam gave Africa some of its earliest higher education institutions – several of which remain active today such as the Ez-Zitouna Madrassa founded in Tunis in 737 A.D (Abd al-Mawlá 1971) and the Al-Azhar Mosque University which was established in Cairo in 969 A.D (Barghusen 2001). These institutions were highly influential. In fact European civilizations incorporated several key aspects of the Islamic education tradition into their systems of higher education. These included notions of rationalism, the investigative approach to knowledge and notions of individual scholarship.

Early Post-Colonial Higher Education in SSA

Notwithstanding the early examples cited above, the origins of nearly all contemporary higher education institutions in Africa – particularly in

Box 1: A note about making generalizations concerning Africa

There is a tendency to generalize when describing 'Africa' – almost as if it was a single country. While commonalities do indeed exist among African countries, there also exists considerable diversity. Among others things, culture, language, governance, institutional capacity, political orientation, policy formulation and implementation, stability, security, the nature of external donor support and levels of development are often highly variable across African states. Even a cursory glance at the UNDP's Human Development Index will confirm that South Africa's development index, for example, is considerably more positive for many key indicators than, say, post-conflict societies such as Somalia, Sierra Leone or Liberia. Similarly, those African states north of the Sahara can be characterized quite differently to those in Sub-Saharan Africa.

This same tendency to generalize also exists when describing the subject of this study – namely the Higher Education (HE) sector in SSA. Nonetheless, it is possible to identify several common challenges for the HE sector across the region and to offer recommendations as to how Open Educational Resources (OER) might ameliorate these. In doing so, however, the reader should keep in mind that SSA is not a homogenous entity.

SSA – are in the colonial era. These institutions, at least in Anglophone Africa, were largely sponsored by Christian church groups and considered a key component of the colonial governments' strategy to manage social change effectively. One of the earliest examples was in Sierra Leone where the Fourah Bay College was established in 1827 by the Anglican Church and became a centre for education for Anglophone Africans on the West Coast of Africa. For more than a century it was the only European-style university in western SSA but pressure for increased opportunity to access a university education was mounting in other parts of the continent. By the end of the 19th century there was a strong call for publicly financed African universities that would emphasize science and technology and provide a liberal education. However, it was not until after the 'Great War' of 1914–1918 that colonial governments started to develop more comprehensive policies for the provision of higher education in Africa. And it was not until the end of the Second World War in 1945 that the impact of these policies really began to take effect (see Box 2.)

In general, the institutions that were set up as a result of these policies were satellite colleges of European universities. As such, the 'metropole' retained control of staff appointments, design of the curriculum, assessment and examinations, and the awarding of degrees. Some scholars (Altbach & Kelly 1978) suggest that while the Africa-based institutions should, in theory, have offered the same education as their European counterparts the reality was that they provided a 'watered-down' version of the European university original. They further suggest that this dilution was aimed at minimizing the possibilities for African scholars to gain influence within their societies since this might adversely affect the authority of the colonizers. Others (Thompson & Adloff 1958) suggest that there was no alternate educational system for Africans. Indeed in the French colonies of West Africa any attempt to dilute the curriculum was met with strong resistance.[2] Similarly, in British colonies, Banya and Elu (1997) report that '[a]s early as 1925… …an Advisory Committee on Native Education in the British Tropical Africa Dependencies, reporting to the Secretary of State for the colonies, proposed that education be adapted to the condi-

Box 2: The establishment of universities in SSA post World War II

'In the British colonies, the new era started with the establishment of university colleges in Nigeria (Ibadan in 1947), Ghana (Legon in 1948), Sudan (Khartoum in 1949 from the merger of the Gordon Memorial College and the Kitchener Medical School), and Uganda (Makerere was upgraded in 1949). In addition, in Kenya the Royal Technical College was established in Nairobi in 1951, and further south the University College of Salisbury was formed in 1953 and renamed two years later as the University College of Rhodesia and Nyasaland. Meanwhile, Fourah Bay College became the University College of Sierra Leone. The University of Paris established Institutes of Higher Studies in Tunis in 1945, and together with the University of Bordeaux, in Dakar in 1950 and Antananarivo in 1955 that became the University of Dakar in 1957 and the University of Antananarivo in 1960, respectively. In Algeria access to the University of Algiers for Algerians was expanded slightly, although by the time of the Algerian revolution in 1952 there were only 1,000 Algerian university graduates. In the rest of the French colonial empire university education had to await independence.

The Belgians in the Congo followed the French practice as the Catholic University of Louvain established the Lovanium (little Louvain) University Centre in 1949, with which it became affiliated in 1954, while the state created the Official University in 1956 in Lubumbashi. Lovanium also catered for students from Rwanda and Burundi. In the Portuguese colonies higher education lagged behind until the turn of the 1960s. In Angola, institutions to train priests were formed in 1958 in Luanda and Huambo, followed by the establishment in 1962 of two General University Studies in Angola and Mozambique as branches of the Portuguese university system that were converted in 1968 into the Universities of Angola and Lourenço Marques, respectively.' (Zeleza 2006)

tions and traditions of the people under British rule, and that changes be introduced to reflect the evolution of the various societies and peoples.' The authors further report that there appears to be no documented evidence that this proposal was ever acted upon and that the quality of education in African institutions was concordant with their British counterparts.

A critical appraisal of the quality of the education offered in the African colleges compared to that offered at the metropole universities at the time would require a detailed comparative analysis of the curriculum documents, assessment procedures and quality assurance mechanisms in place at the time. Clearly this is outside the scope of this study. However, beyond issues of concordance of specific programs, Teferra and Altbach (2004) outline several elements that characterized the limited

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2   Such as the threat by African students to initiate a boycott at the University of Dakar in the early 1950s.

nature of the colonial higher education policy. Among these were policies aimed at:

- Limiting access to training to prescribed numbers of African nationals who would assist in administering the colonies;

- Ensuring that the language of instruction was the language of the colonizer;

- Limiting academic freedom and the autonomy of academic institutions;

- Limiting the curriculum at universities in Africa to those disciplines that would support the needs of the colonial administration. As a result science-related subjects were rarely offered.

The legacy of these stringent limitations imposed by the colonial authorities resulted in an unsound foundation for the development of subsequent, postcolonial African higher education systems. One cannot underestimate their deeply rooted and ongoing impact when undertaking an analysis of contemporary African higher education. Ngugi wa Thiong'o writes that this imperialist tradition 'makes [Africans] see their past as one wasteland of non-achievement and it makes them want to distance themselves from that wasteland. It makes them want to identify with that which is furthest removed from themselves; for instance, with other peoples' languages rather than their own' (wa Thiong'o 1986).

Clearly, for the colonial administrators, the dual purpose of this highly specified and limited education was a trained senior civil service as well as control over social change within the colonies (Gifford & Weiskel 1971). However, for the relatively few Africans involved there was also significant personal gain to be had from obtaining a Western tertiary education as this enabled them to establish themselves as part of an educated elite. 'The university degree itself was for a while a major passport to influence and opportunity' (Mazrui 2003).

In almost all cases, post–independent African states have maintained the foreign education systems put in place during the colonial era. Amonoo-Neizer (1998) suggests that in determining what type of education should be offered subsequent to the colonially administered higher education systems in Africa, those Africans who were consulted were themselves products of this selfsame colonial education. As such, their approach to the policy formulation that determined how the higher education sector would operate after independence emulated what already existed. In doing so they have not only continued to 'identify with that which is furthest removed from themselves', but actively participated in the bolstering of the Eurocentric tradition of the colonial educational system.

Mazrui (2003) recalls that '…by the time these African universities were being established, African intellectuals had already become so mentally dependent that they themselves insisted on considerable imitation of western educational systems – including the importation of western media of instruction for African schools and universities.'

The 'imperialist tradition' was not the only influence that shaped postcolonial higher education. The political doctrine of newly independent states espoused by Julius Nyerere and others[3] as 'African Socialism' had a wide ranging influence on the decisions being made at the time, particularly those related to policy formulation. This doctrine informed, among other things, the early notions of education as being a part of the public or common good in Africa. The aspirations of these early leaders was not to last. Asouzu describes 'a low-level [of] awareness concerning the centrality of the legitimising role of the common good within the consciousness of the average contemporary African' and a result, '***Africans are the ones largely holding themselves hostage***[4] and not only the aftermath of slavery and colonialism as many erroneously suppose' (Asouzu 2004).

Another factor that shaped postcolonial HE in SSA was the rapid social and economic change taking place during the 1960s that provided a new context for higher education. The need to staff the newly independent civil service and to foster economic growth justified substantial budget allocations to HEIs since they were expected to

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3   In addition to Julius Nyerere (Tanzania), other postcolonial African leaders to embrace socialist ideals included: Robert Mugabe (Zimbabwe), Amílcar Cabral (Guinea-Bissau and Cape Verde), Kenneth Kaunda (Zambia), Kwame Nkrumah (Ghana), Samora Machel (Mozambique), Nelson Mandela (South Africa), Sam Nujoma (Namibia), Oginga Odinga (Kenya), Didier Ratsiraka (Madagascar), Thomas Sankara (Burkina Faso), Léopold Sédar Senghor (Senegal) and Ahmed Sékou Touré (Guinea).

4   Emphasis added by author.

contribute to the national development effort (Ajayi 1973). This resulted in the emergence of the widely supported notion of the 'developmental university'[5] in Africa (Coleman 1984).

During the Conference of Ministers of Education of Independent States in Africa in Addis Ababa in 1961, education was promulgated as being the *sine qua non* for development at all levels of society – be that individual, local, regional, or national. Furthermore, HE was perceived to be an important developmental undertaking that could be revised and reorganized from its colonial purposes into a tool that would meet the new challenges of Africa's development.' The new universities were to help the new nations build up their capacity to develop and manage their resources, alleviate the poverty of the majority of their people, and close the gap between them and the developed world' (Sawyerr 2002).

This transition was not without its challenges. The colonial foundations on which the newly independent higher educational systems were built were alien to the social structure of SSAn countries. Those tasked with managing the restructuring and repurposing of African universities began to view the remnants of European models of HE as a form of cultural dependence, inappropriate to the new requirements of their nascent states; a phenomenon that Kwame Nkrumah termed 'neo-colonialism'.

The response was to seek local solutions to the challenges of African universities. That is, for Africans to define the problems and develop and implement the solutions. In the process it was hoped that this would provide the universities with a truly African identity. Accordingly, during a second education conference in 1962 at Tananarive (now Antananarivo), participants assigned African universities seven roles:

- To teach and advance knowledge through research;
- To maintain adherence and loyalty to world academic standards;
- To ensure unification of Africa;
- To encourage elucidation of and appreciation

for African culture and heritage, and to dispel misconceptions about Africa, through research and teaching of African Studies;

- To train the 'whole person' for nation-building;
- To develop human resources for meeting labour force needs;
- To evolve over the years truly African institutions for higher learning dedicated to Africa and its people, yet promoting a boun d of kinship to the larger human society; and
- To emphasise science and technology so that the continent could by 1980, produce 60% of its own doctors and agriculturalists. (UNESCO 1963)

By all accounts, this was a worthwhile set of goals, which resulted in a surge of activity during the period following the Tananarive conference that saw SSA universities expand in number[6] and replace most of their expatriate staff with indigenous staff. This then provided African academics with the opportunity to initiate the development of more relevant curricula that better reflected the development needs of their countries. They also began to establish specialized university research units and commenced working towards publishing a uniquely African collection of research literature.

The Decline of Higher Education in the 1980s

Regrettably, these early advances in the HE sector were quickly overtaken by wider social, political and economic upheavals during the 1980s. Some of these were as a result of internal factors (such as military rule and its resultant conflicts), while others were external. Sawyerr (2002) provides us with a succinct overview of the deleterious effects of the macro-economic environment of the time. He points out that it was characterized by a reduction in trade in primary commodities from developing regions such as SSA while trade in technology intensive manufacturing and services by industrialized economies expanded. Sawyerr further notes that: 'At the national level, the […] decline in export volumes as well as the relative decline in the price of primary products in world trade in the 1980s and 1990s, the mishandling of exchange rates

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5   An idea supported by national and international governments, international organizations and major foundations.
6   African universities grew from six in 1960 to 97 in 1992 with a corresponding rise in enrolments.

and of external reserves, and the huge external debt overhang together created major resource gaps for the countries of Africa. This put serious pressure on their import capacity and the availability of resources for essential economic and social investment. The results included increased dependence of the typical SSA country on aid from the developed countries, which was never going to be enough to offset the resource shortfalls. These were some of the factors behind the cycle of economic and social crises, which has been the lot of SSA to this day' (Sawyerr 2002).

Universities were not impervious to the impact of these changes in their environment. During this time the availability of resources to invest in social programs – which included higher education – began to wane. It was also during this time that several new and prominent players emerged in the policy formulation process in the developing world. Key among these were the Bretton Woods Institutions,[7] which became increasingly influential within the education sector across SSA.

The Role of External Forces on Higher Education Institutions

Much has been written regarding the role of the World Bank in Africa. Some authors place the blame for the current 'crisis in higher education' squarely on the Bank's Structural Adjustment Programs of the 1980s, which, in their view, were forced on African governments with devastating effect (Brock-Utne 1999). Others speak in more general terms of Africa's passive participation in an 'unchallenged hegemony of capitalism and neoliberal ideology' (Sawyerr 2002), which had an immense impact on HE in Africa. Yet others adopt a more pragmatic interpretation – seeing the Bank's intervention as part of a rationalized policy aimed at assisting global development (Samoff & Carrol 2004). Whatever the perception, during the 1970s and 1980s, the World Bank published four highly influential education policy documents, including

one focussed specifically on education in Africa. Using a much contested 'social rates of return'[8] indicator (among others), these documents cast significant doubt on HE's contribution to development and directly impacted the Bank's policy with regard to HE provision. Critics suggested that the Bank had a tendency to see HE primarily in economic terms which ignored the wider functions of universities as knowledge producers and as enabling spaces in which to form and transmit the cultural values of the societies they serve. Buchert and King (1995), for example, argue that the Bank's policy documents did not reflect the importance of both traditional and modern goals of education.

At the same time, some HEIs also began to be perceived by their own governments, weakened by the deepening economic and social crisis, as a threat to national stability. Thus, this period became characterized by discrete but mutually reinforcing critiques of HE in Africa. Universities were perceived by the World Bank to be costly, privileged enclaves that had little impact on development, and by their national governments as promoting social unrest while continuing to drain public coffers. Consequently they did not warrant further investment.

During the 1990 World Conference on 'Education for All' the emphasis on the provision of basic education was institutionalized in the national policies of participating governments. Some have argued that this sounded the death-knell for HE as attention (and resources) became focused on the basic education sector. However, this is not altogether true. The 'World Declaration on Education For All' (WDEFA) that arose from the Jomtien conference argues in the preamble that a '... sound basic education is fundamental to the strengthening of higher levels of education and of scientific and technological literacy and capacity and thus to self-reliant development' (WDEFA 1990), which at least acknowledges the key contribution HE should make to development.

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7   The Bretton Woods Institutions are the World Bank, and the International Monetary Fund (IMF). They were set up at a meeting of 43 countries in Bretton Woods, New Hampshire, USA in July 1944. Their aims were to help rebuild the shattered postwar economy and to promote international economic cooperation. (http://www.brettonwoodsproject.org/

8   Later critiques of the World Bank's intervention in the education sector in SSA have cast considerable doubt on the validity of the arguments presented at the time. 'Rate of return analysis was… …developed in particular settings outside of Africa and may or may not yield the same insights in African settings. More important, rate of return analysis may be an inappropriate tool for assessing the relative value of alternative decisions about priorities and the use of resources in education' (Samoff & Carrol 2004). Indeed, 'recent comparative analysis of social and private rates of return in developing countries […] shows that social returns are higher than private returns'. (Nafukho 2004; World Bank 2000 cited in Magagula 2006).background/index.shtml)

Later in the document (Article 8) a further argument for ongoing support of HE is made: 'Societies should also insure a strong intellectual and scientific environment for basic education. This implies improving higher education and developing scientific research. Close contact with contemporary technological and scientific knowledge should be possible at every level of education'. (WDEFA 1990)

Although both statements acknowledge a key role for HE, they also presented a dilemma for those tasked with implementing the declaration – particularly when this implementation required choices to be made regarding the allocation of limited resources. On the one hand, a quality basic education was seen as a prerequisite to ensuring broad development goals were met as well as providing a strong basis for participating effectively in higher education. On the other, HE was seen as being an essential component in enabling quality basic education in the first place. In seeking a solution to this dilemma, Aime Damiba (1991) suggested that: 'we must avoid the danger of limiting ourselves to basic education and neglecting high level manpower training and research. It is not possible to solve the problems of "Education for All" without a national pool of expertise and without an indigenous capacity for research.'

Despite vociferous objections from many university academics, in Africa the need to support HE seemed to be subjugated by a more compelling need to support basic education rather than supporting both. This meant a redirection of scarce resources away from universities and towards basic education institutions. The argument for doing so seemed simple enough: given the economic conditions that prevailed in most developing countries, available resources would reach far more students at basic education level than at HE level. This argument was then supported by the World Bank's research that reported higher social rates of return for investment in basic education and high private (individual) benefits for higher education. Taken together the redirecting of resources away from HE was therefore presented, erroneously in the view of many, including African academics, who had much to lose as an essential element of sound financial policy as well as being socially more equitable.

The reality of making such decisions however, is not as straightforward as the above argument may suggest. In the African context, decisions involving the resourcing of education are more often taken by the Ministry of Finance than the Ministry of Education – the latter being forced to accept whatever resource allocation it can get, even if this does not necessarily match with its preferred target areas. It is worth pausing here to consider further the role of the World Bank in this decision-making process. Although it cautiously defers to national government policy as a formality, in reality the World Bank clearly articulates what it regards as effective or ineffective education policy while making it equally clear that any government adopting what the Bank regards as ineffective education policy will result in a decrease in the availability of funds. Thus, as SSAn governments increasingly came to rely on external funding for their policy and program implementation across all sectors, the influence of the Ministry of Finance and external funding agencies (such as the Bank) increased since it is the Ministry of Finance that represents the government in negotiations with those agencies.

Samoff and Carrol (2004) refer to this as one of the 'paths of influence' of the Bank. They suggest that: 'the near invisibility of this path of influence renders it particularly powerful. The World Bank controls a desired good that is highly sought by African educators. To release funds, it commissions research. While increasingly African researchers are involved in those studies, the research bears the strong imprint of those who have commissioned it. Their assumptions, understandings, and expectations are embedded in the framing questions and the detailed terms of reference… What might be controversial becomes unexceptional as it is incorporated into frameworks and ostensibly technical questions, with no explicit or direct link to the source of the constructs or their ideological content. Some questions simply never get asked.'

Conclusion

The initial optimism that characterized the HE sector in SSA immediately following the colonial era was subject to a variety of institutional, national and international pressures, which together have resulted in a severe decline in the resources made available to, and therefore the capacity of, universities on the continent. While these challenges are characterized differently in the various regions of

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SSA (most notably the structural differences between the Francophone African and Anglophone African education systems), in most cases universities have struggled for years to achieve their mandate effectively. This is evidenced in a continuing state of decline in physical infrastructure, inadequate state funding, lower standards for teaching and learning, under-equipped libraries and science laboratories, reduced research and publication output, and a reduction in real value of wages for faculty resulting in moribund faculty morale.[9]

The following section will look more closely at the key challenges that exist currently for African universities brought about, in part, as a result of the above series of events and also by contemporary issues such as the HIV/AIDS pandemic, the lack of a robust ICT infrastructure and the loss of social and intellectual capital from the continent in what has come to be known as 'brain drain'. It will also examine the increasing role of Open and Distance Learning in SSA where several nations are experimenting with ODL models in order to help meet growing demands for higher education.

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9   This has also necessitated faculties seeking out other sources of income that they need to support themselves and their families. The result is a less than focused commitment to quality teaching and research in many cases.

Key Challenges for Higher Education in Africa

Relevance

More often than not discussions surrounding the relevance of higher education in SSA tend to focus quite narrowly on the relevance of the curriculum being taught. The key question most often raised is how effectively will graduates who have undertaken HE programs contribute to the developmental needs and aspirations of the societies in which they are to be employed. While this debate is important, there is a much wider challenge facing the HE institutions in SSA when it comes to ascertaining their relevance. This wider discussion has to do with the 'historical project' that is 'African Nationalism' or 'Pan Africanism'.

The Challenge of Defining the Relevance of African Institutions of Higher Education

The African University has yet to establish for itself a leading role in the process of critical enquiry into ongoing societal issues such as cultural dependency, development, democratization, good governance, and intellectual leadership nation-building, regional integration and globalization. There are several reasons for this but key among these is that they lack an Afro-centric philosophy upon which to ground institutional discourse and thereby establish and shape a shared African social order. In other words, the historical background of African Universities (described earlier) and the continued adoption of a Eurocentric approach to education service delivery brings into question the local identity of these institutions, and therefore their relevance to the wider African society.

Defining an Afro-centric philosophy upon which to base participation in local, regional and international discourse represents a significant challenge to African HEIs. It has proved exceedingly difficult to dismantle the university systems inherited from an imperial past that perpetuate cultural dependency. Mazrui (2003) suggests that 'if genuine development has to include cultural decolonization, a basic contradiction persists in the ultimate

functions of an African university. It may generate skills relevant for modernization and development. But it has not even begun to acquire, let alone to transmit to others, what is perhaps the most fundamental skill of them all – how to promote development in a post-colonial state without consolidating the structures of dependency inherited from its imperial past.'

The arguments often proffered as to why this is the case are a) because of their lack of capacity (both infrastructural and human) and b) because of their resistance to change. While both these arguments have credibility, a further argument proffered is

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the general inability of universities to produce and disseminate local and contextually relevant knowledge that would form the basis of an Afro-centric discourse. Unfortunately, the 'knowledge' of African universities is often still of imported origin and therefore reinforces a state of external (often post-colonial) dependency; that is to say, in order to develop an Afro-centric philosophy, to establish their Africanness, African HEIs need to reduce their reliance on externally generated knowledge and increase their capacity to produce and share knowledge that is locally and contextually relevant. Part of the solution may be to develop more locally and contextually relevant HE curricula that focus explicitly on Africa's needs to emphasize the study of African languages and culture, and where appropriate, to use African languages as the media of instruction.

An additional concern – particularly to publicly funded African universities – is that in engaging in high-level critical discourse they may find themselves at odds with the governments that support them. Universities have an essential role in shaping the Pan-African project and in monitoring the 'core freedoms' it promulgates. This need is particularly apparent in post conflict states (see Box 3).

While in theory this role is of great interest to African states as they, through the African Union, continue their efforts to achieve closer integration within Africa, in reality the involvement of the university in this discourse may cause tension. On the one hand, universities have a key role in promoting openness within the societies they serve. On the other, this may at times be seen as a threat to the authority of the state. So while the African university should rigorously and critically debate issues of national interest, it often does so knowing that it needs the full support of the state in order to obtain the resources it needs to achieve its mandate – that is, to undertake high quality teaching and learning, research, and community service, to maintain (and in many cases revive) itself, and to overhaul its courses and facilities. As a result, very few African universities have the levels of autonomy that would enable them to remain politically distant from the state and contribute an independent and possibly contradictory perspective. This is particularly difficult when academic freedom is further curtailed by state imposed limits on core freedoms.[110]

Sawyerr (1996) points out that 'the absence of any real tradition or culture of academic freedom or university autonomy in most African countries, and the centralization of political and economic power in the state in the face of weak countervailing civil society institutions, means that the minimum conditions for the development and maintenance of the core freedoms hardly exist' (see Box 4.)

Sawyerr also points out another limitation to academic freedom in African universities is related to the attitude of the average academic, which may in turn be related to the inadequate remuneration they receive. Sawyerr suggests that this state of affairs 'is characterized by a general[11] lack of commitment to the task, except in clear cases such as the struggle to improve conditions of service. This is compounded by the frequency of selfcensorship and apoliticism'.

The Challenge of Ensuring the Relevance of Higher Education Programs in SSA

Many African countries that have begun to focus on expanding HE have been criticized for not paying due attention to the relevance of the programs they offer to economic development. International (and neo-liberal) players have stated that

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10 Sawyerr (1996) draws an important distinction between academic freedoms and core freedoms. The latter he suggests are universal and include 'the freedoms of belief and conscience, of expression, and of association.'

11 Elsewhere Sawyerr is clear that there are notable exceptions and that this generalization is in no way meant to 'belittle the valiant struggles waged by numerous academics, to the point of sacrificing their lives' (Ibid.)

more attention needs to be placed on aligning HE programs with economic development goals. This has resulted in African countries being pressured to adopt development policies and university curricula that emphasize the role of science, technology and innovation in economic development.

At face value such a reform agenda may not necessarily seem to be a problem since it may help to redress the scarcity that resulted from neglecting these domains during the colonial era. and the years immediately following. However, concerns need to be raised that in reforming curricula to support economic development by focusing primarily on disciplines that promote the expansion of scientific and technological knowledge as *the driving force* behind economic transformation, other disciplines that are equally important for development risk becoming less well resourced. African HEIs should remain aware of their key

role in the wider social transformations required beyond economic development and provide support to the arts and humanities programs that help to revive and promote diversity and growth within the communities they serve.

HEIs also have a key role in encouraging economic development strategies that establish links with the scientific and technical expertise of the African Diaspora. The Economic Commission for Africa estimates that 20,000 professionals a year left Africa during the 1990s and that, overall, Africa has lost 30 percent of its supply of skilled human resources (Materu 2007). It is likely that a significant proportion of those departing do so initially in order to study elsewhere and decide not to return. The map below indicates the 'outbound mobility ratio' of tertiary students across the world and clearly indicates the high numbers of African students leaving their countries to study elsewhere:

Figure 1: Outbound Mobility Ratio

Mobile student from a given country as a percentage or tertiary students enrolled in that country (outbound mobility ratio), 2004

Outbound mobility ratio (%)

- <1.5
- 1.5-<3.4
- 3.4-<9
- 9-<20
- 20+
- Data not available

Coverage: 173 out of 207 countries.
Source: UNESCO Institute for Statistics, Statistical Table 10

Source: UNESCO Institute for Statistics (2004)

11
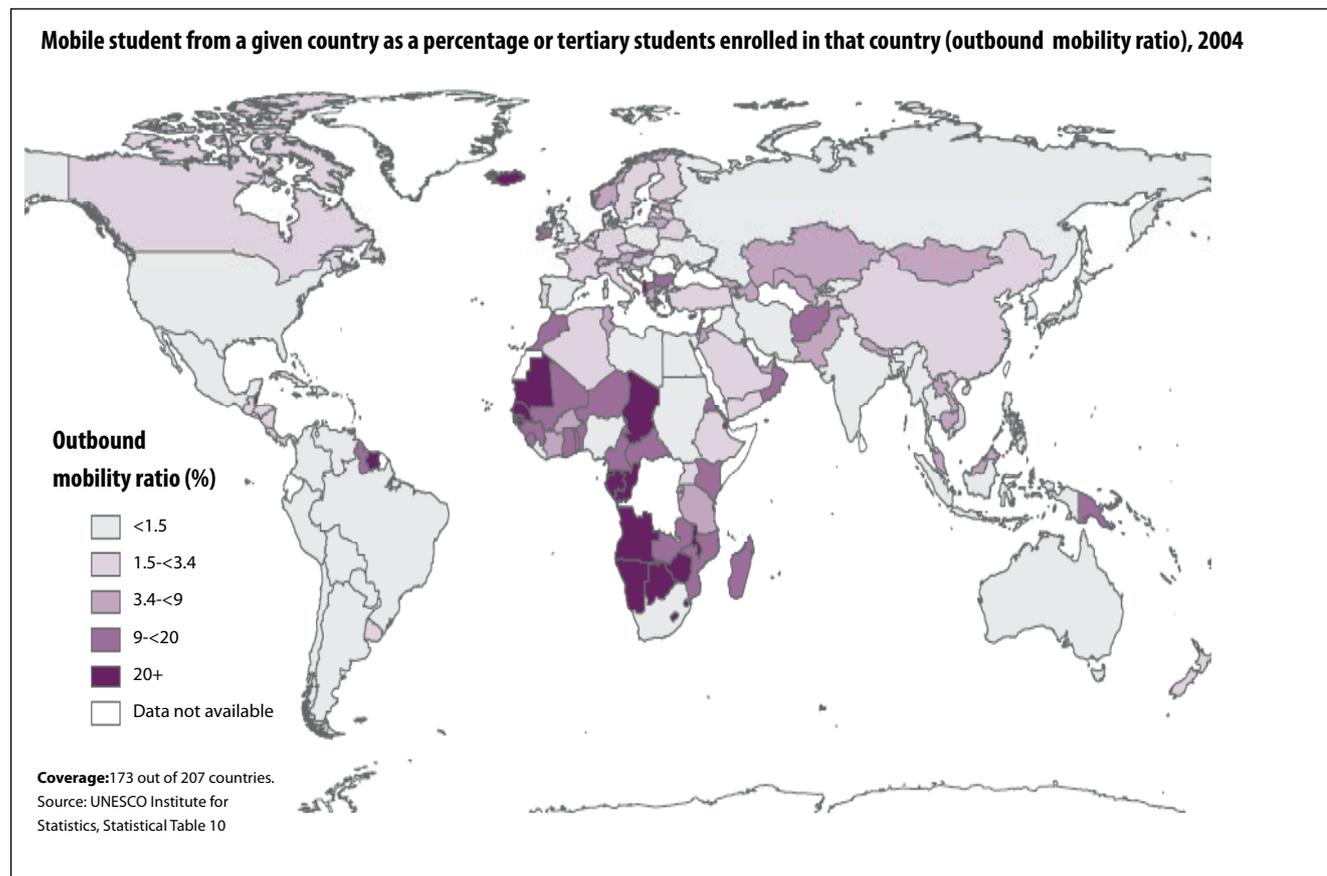
The Challenge of Ensuring the Key Role of African Higher Education Institutions in Participatory Development

Universities should play a key role as originators, disseminators, reproducers and, where appropriate, critics of knowledge systems and their associated power relationships. For universities in SSA this should include how they contribute to the discourse surrounding poverty reduction, economic empowerment, gender equality, social inclusion, respect for human rights, and sustainability. Participatory development in the African context speaks to a key issue identified earlier – that of grounding development in African cultures and priorities. This should include HEIs taking a lead in finding African solutions to challenging social problems in Africa that involve bottom-up planning and decision-making processes beginning at the grassroots level. Inevitably, a challenging part of this discussion will involve African HEIs critically reflecting on their role in perpetuating colonial education systems and in reproducing inequalities in African societies. Ideally, in the spirit of the 'Pan African Project', African HEIs would elect to do this collectively in a collaborative manner that involves a wide range of stakeholders.

UNESCO's paper on Higher Education and Sustainable Human Development points out that 'it is essential to recognize the emerging role of universities in refining the concept and key messages of education for sustainable development, integrating environmental, demographic, economic, social and other concerns inherent in the complex notion of sustainability. However, universities must re-orient their research programmes and curricula for flexible interdisciplinary co-operation and collaborate with institutions outside the university' (UNESCO 1998). With the above in mind, questions are now being asked about the role HEIs have in the processes through which people are empowered to influence the initiatives, programs and policies that affect their lives. At an institutional level, by encouraging inter-disciplinary, collaborative research and education programs and by establishing widely inclusive networks of interdisciplinary discourse universities can influence how their staff and students develop a wide and inclusive perspective in whatever field of study in which they are engaged.

There is also much to be gained by HEIs engaging in collaborative and participatory approaches that extend outside the institutional setting since these approaches can lead to new, locally appropriate knowledge emerging while at the same time contributing to knowledge generation at a global level. Such processes have the potential to increase the relevance of HEIs in Africa because they better enable them to respond to issues – such as the injustice caused by poverty and social inequity – by giving citizens a voice. Participatory approaches also enable grassroots stakeholders to influence policy making, to enhance local governance, and to make institutions more accountable and responsive to their needs. 'One of our greatest challenges is to help universities become spaces where critical analysis of social issues is fostered and to help them achieve and promote inclusion of the voices of all community members in democratic and policy processes' (UNESCO 2006).

This then brings to the fore an overarching challenge for African HEIs as they strive to become more relevant; that is, the excessive load placed on these institutions as they strive to fulfill and ever widening mandate (see Box 5). Ajayi has cautioned that ' … in the face of demands which far exceed their capacities, African universities would have to be highly selective and consider very carefully what they could expect to achieve … given the means actually at their disposal. There are several deserving critical areas. However, it is important for the universities to strike a balance between what is essential and possible and what is desirable and possible but not essential' (Ajayi et al. 1996).

Box 5: Academic overload

'As careers become more complex, people are increasingly faced with actively engaging in multiple roles to fulfil job expectations. Consequently, the attitudes, behaviours and emotions associated with one role may spill over to another. Also, in the academic context, the emergence of a so-called "knowledge economy" has changed the traditional role of the academic in a fundamental way. Besides teaching and research, academics have to act as entrepreneurs, facilitators, marketers and managers. Fisher (1994) has suggested that such a plethora of roles might easily result in role overload, a particular salient stressor for the modern academic.'
(Barkhuizen 2006)
http://findarticles.com/p/articles/mi_qa5465/is_200601/ai_n21402989/print

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The Challenge of Meeting the Demand for Tertiary Education in SSA

Without doubt the enrolment rates for HE Higher Education in SSA are increasing in response to demand. The following diagram indicates the massive growth in the number of tertiary students between 1991 and 2004:

Two things are strikingly obvious from the above data. The first is the very low overall levels of provision of HE in SSA. The second is that, despite these low levels the rate of increase of tertiary enrolment in SSA has surged (*see* Box 6).

In the HE sector the mode of access to education is still heavily reliant on a campus-based model. In 1998 Daniel suggests that for this model to work 'a sizeable new university would now be needed every week merely to sustain current participation rates in education' (Daniel 1998). A decade on, there has been no indication that the establishment of universities has taken place at anywhere near this rate. This begs the question as to how to cater for the 150 million or so individuals (most of whom reside in the developing world) who aspire to undertake a higher education (Dhanarajan 1997) but cannot access a campus-based education system.

The educational environment in SSA indicates a high, yet largely hidden demand for educational services. Notwithstanding moderate increase in ODL delivery, the countries of SSA have largely remained focussed on expanding traditional (campus-based) HE capacity to address this demand. Between 1990 and 1997, the overall tertiary education population grew by about 60%, from 1.4 million to approximately 2.2 million while the number of universities expanded from six in 1960 to 97 in 1992. This number was estimated to be over 156 in 2002 (UNESCO 2002), and is likely to be closer to 300 today. Enrolments in tertiary education are estimated at 2.2 million in SSA with a Gross Enrolment Rate (GER) of only 4%, the lowest rate for any region in the world (UNESCO 2005). This indicates that there are many more qualified people leaving the secondary school system than spaces that the tertiary education system can absorb. A survey in 2001 indicated that only one of four or five quali-

Figure 2: Growth in Tertiary Students

Source: UNESCO Institue for Statistics databae
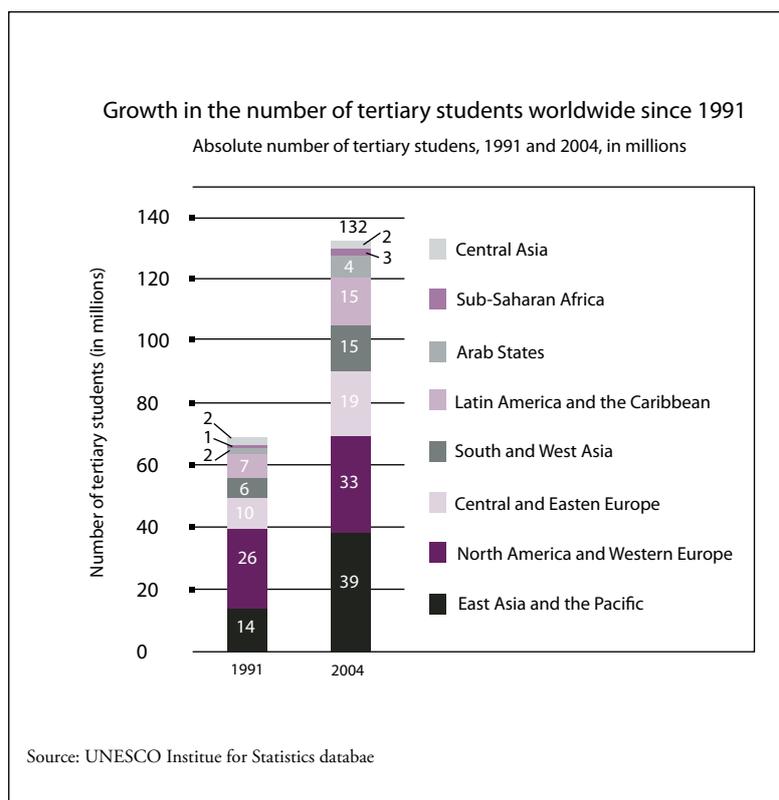
Box 6:

'Between 1985 and 2002 the number of tertiary students increased by 2.6 times (from 800 thousand to about 3 million) - on average by about 15 percent yearly. If continued at this rate, African tertiary enrollments will double every five years. Average annual enrollment growth is particularly strong in Rwanda [55 percent], Namibia [46 percent], Uganda [37 percent], Tanzania [32 percent], Cote d'Ivoire [28 percent], Kenya [27 percent], Chad [27 percent], Botswana [22 percent], and Cameroon [22 percent].'
(The Statesman 2007)

Box 7: Reflecting on the numbers

What are we actually striving for when we lament a GER of 'just 4%'? Are we actually aiming at enrolling an additional 44,000,000 students in HE in SSA in order to be able match the GER of 'developed nations'? How do we establish what the desirable GER should be for SSA? If the demand for graduates within a KE is so crucial, why not aim for 100% GER (55,000,000)? Where will all these students sit, live, study, pee? Even if we put the additional students into non-residential ODL programs – how are their fees to be paid? Who will they be taught by? Where will the additional 480,000 or so academic and support staff required to service these ODL programs come from? How will they be paid? What type of support will these ODL students receive? What will be the likely completion rates (particularly among those who have no study facilities at home – e.g. electricity, let alone computers and Internet connectivity). *Bateman (email correspondence: April 2008)*

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fied African student gains admission into tertiary education (Accenture 2001) with the result that the HE system in most parts of SSA remains hopelessly oversubscribed (see Box 7).

In 2005, the African Virtual University (AVU) supported a model for the expansion of tertiary educational opportunities for SSA that was premised on the notion that the high demand will only be met through a corresponding expansion in the development and delivery of Open, Distance and eLearning (ODeL) programs – ideally designed, developed and implemented as a collaborative effort among consortia of African universities (Bateman 2005).

The AVU's consortium model for collaborative ODeL program development involved participating universities working towards achieving economies of scale, increasing access to high quality and relevant ODeL programs developed for and by African tertiary institutions while ensuring stringent quality assurance mechanisms would be in place to satisfy the requirements of the individual universities. The model recognized the potential of sharing knowledge resources (both human and material) through ODeL programs that aimed at providing large numbers of students with access to the best of what the continent has to offer. To date, this potential has not been fully realized within the HE sector.

By collaborating to pool limited resources, consortium members also recognized the gains to be made in efficiency and cost. The scenario in which each of the university independently invests in the 'odelification'[12] of its own campus-based programs represents a considerable duplication of efforts and costs by African institutions that have limited access to resources. Research undertaken by DfID confirmed that 'a severe impediment to achieving economies of scale can be caused by non-communication between institutions. The result of this is that materials and/or courses are often produced competitively, markets are split, resources are not shared and the costs increase as a consequence' (Bilham & Gilmour 1995).

The 'AVU Gap Analysis Report' (Bateman & Murray 2004) and subsequent 'Draft Concept Paper for AVU Consortium Model' (Bateman 2005) both indicated that a collaborative model for the development (and possibly for the implementation) of ODeL programs was both possible and encouraged by African universities. However, a major obstruction to the collaborative development and delivery of ODeL programs was the need for content/materials that use an alternative form of copyright (i.e. one that encourages rather than discourages sharing of attributed works) and therefore can become more widely available across the network of participating institutions.

Often, the copyright costs attributed to higher learning resources far outweigh the annual revenue from tuition rates for African HEIs. Initially, the goal in establishing the current global IPR structure, outlined in the WIPO Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement, was an attempt to provide the legal context necessary to promote the development of entrepreneurial societies (WIPO 2003). However, it has done so almost exclusively in the developed world and at the expense of the developing world. The education sector in SSA experiences the current IPR regime in terms of an increase in costs, rather than in increased opportunities for learners and users of educational materials in general.

Another major obstruction for the majority of those seeking to adopt new technologies and methodologies, including the much touted eLearning, in order to expand the delivery of education in SSA is the lack of technical infrastructure, including access to the Internet. Where it is accessible connectivity costs remain, to a large extent, prohibitively expensive. To the limited extent that eLearning has been taken up in a few African universities, it was mainly done so in support of traditional Distance Education (DE) programs which tended to follow either a correspondence model or learning centre model that physically establishes a presence at remote locations where students can participate in DE programs. In addition, African academics were not familiar with the new requirements or po-

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12 Converting campus-based programs to a format that is suitable for ODeL delivery.

tential of this delivery methodology and, to a large extent, struggled to adapt their existing pedagogy which was highly didactic in approach.

Recently, in 2006/07, a desire to reinvent eLearning programs in a manner that capitalizes more effectively on the emerging social and participatory environment offered by the World Wide Web has become evident. These models capitalize on the so-called 'Web 2.0 environment' and invite the participation of students in structuring their own learning pathways to a much greater extent. Even as they gain traction in a variety of Internet communities globally, and also find their way into the formal education system as 'eLearning 2.0', it is unlikely that in the medium term African students will have sufficient access to computers or the Internet to enable them to take advantage of these emerging methodologies.

In summary then, HEIs in Africa increasingly find themselves trapped in an ineluctable impasse: to remain relevant they must satisfy the diverse and often contradictory demands of various stakeholders while doing so with severe limitations to their budgets and other resources. Examples of the range of stakeholder demands include: admit more students; introduce 'more relevant' courses; adjust to social and cultural change; recover costs; charge no tuition fees; produce quality research; cut costs; increase collaboration; become more competitive; produce sound minds; redress the gender imbalance; contribute to development; safeguard the environment; produce work-ready graduates; engage with industry; embrace new technologies; engage with the Diaspora; promote autochthonous knowledge; embrace globalization etc. etc. (Sawyerr 1996); and achieve all this in a context that promotes the Africanization of the academy that is based on a well articulated, relevant Afrocentric philosophy.

Management and Financing of Higher Education in SSA

The related challenges of managing and financing HE in SSA involve both government policy-level discourse that supports (or fails to support) the HE sector within a particular country as well as the institutional level discourse which seeks to enable HEIs to achieve effectively their mandate.

As the earlier historical discussion noted, African universities held the view that it was the state's responsibility to ensure that HEIs were adequately supported. More recently there has been a far greater emphasis on discussions related to the need for HEIs in SSA to devise innovative ways of reducing their reliance on government funding. In doing so, there has been increased recognition that policies for cost sharing, including fees and student support, should form part of the longer-term strategic planning for higher education. This contrasts with what has to date been a rather extemporized response to the financially austere position in which many HEIs in SSA have found themselves.

The Challenge of Inadequate Strategic Planning and Policy Frameworks

Adequate planning is essential if countries, institutions, educators and indeed the learners themselves are to benefit from the cost effective provision of quality HE programs. A clear starting point for planning is a supportive policy environment as this informs and guides the process. Developing a sound, affordable policy framework is overlooked by many governments in SSA and this diminishes their ability to effectively regulate educational quality within the institutions they govern and to ensure that their national development objectives are met. Fortunately there are models from other parts of the world to which African governments and HE institutions can refer when formulating their policies.

Woodhall (2003) enumerates several common principles that are shared by higher education institutions internationally and that policy makers in SSA should consider:

- Higher education is vital for economic and social development and contributes to economic growth through creation and transmission of knowledge and building of human and social capital;

- Governments and HEIs need to adopt a long-term strategic planning approach for tertiary education, based on a clear vision and diversity of institutional mission, programs, and modes of delivery[13] and well as realistic expectations of what can be delivered from their available budgets;

- Higher education needs secure and sustainable financing to meet economic and social demand for expansion while preserving or enhancing quality. This requires some form of cost-sharing, since governments cannot do it alone, and those who benefit from higher incomes and better job opportunities, as a result of HE, should contribute to its cost;

- Policies on cost recovery, including tuition fees, other charges, and deferred payment schemes, all need to be developed in conjunction with well-designed programs of student support and financial aid. Introduction or increases in fees and student charges need to be carefully monitored, to assess their impact on access and equity;

- Student loans have a positive role to play in systems of student support, but they need to be well-designed and administered, and should be combined with well-targeted grants, scholarships, and other subsidies to ensure that the most disadvantaged potential students are not discouraged by fear of debt. Income contingent repayment of loans has advantages over 'mortgage-type' loans but requires

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13   Although Woodhall does not specifically mention ICT policy here, this has become a key component of higher education. Relatively few HEIs in SSA have comprehensive policies that adequately support their missions. This issue is dealt with further in later section of this paper entitled: 'The Challenges of Inadequate ICT Infrastructure to support Higher Education in SSA.'

accurate measurement of graduates' income and efficient recovery mechanisms;

- There is a worldwide trend towards greater institutional autonomy for HEIs, rather than detailed government control. Using financial incentives in the funding of institutions can encourage diversity, flexibility, responsiveness, and innovation but must be combined with careful monitoring to ensure accountability and consistency with national policy priorities. (Woodhall 2003)

Appropriately designed HE policies should therefore form part of existing national education and development policy and support the following outcomes:

- To increase access to HE programs while regulating cross-border education;

- To develop capacity enhancement programs that ensure the requisite skills are readily available;

- To develop quality assurance (QA) frameworks;

- To develop workable business models and budgetary frameworks that result in cost effective teaching, learning and research in the HE sector; and

- To support and coordinating the expansion of education-related infrastructure, including information and communications technology (ICT).

The Challenge of Inadequate Financing of Higher Education in SSA

The financing of HE in SSA remains a key challenge. However, even though international experience indicates striking levels of innovation for tackling the financial challenges of HE provision, it will be important that African institutions plan carefully before seeking to arbitrarily adopt the financing solutions from countries whose contexts may vary significantly from their own. The budgets of individual universities in some developed countries for example, exceed the entire national budgets for higher education in many African nations (Teferra & Altbach 2004). Nonetheless several Sub-Saharan

Box 8a:

A decade ago, the University of Dar es Salaam (UDSM) was in shambles. Faculty members were miserably underpaid, the library had received almost no new books or periodicals for years, and violent student protests over the poor state of dormitories and classes led to the closure of the university for most of 1990. But today UDSM is seen as a model of self-initiated transformation. It has developed new sources of income, cut costs by farming out non-academic services like catering and cleaning, and invested heavily in better faculty salaries and Internet connectivity.

After emerging from a crippling civil war in 1992, Mozambique concluded that its vast potential riches could be unlocked only by sharply increasing the number of its young people getting a higher education. So recently the country doubled its total spending on education. In an effort to ensure that the investments in higher education are spent in the most effective way, officials organized a series of consultations across the country, where academics, students, business people and non-governmental organizations helped shape the plans for expansion.

In Rwanda, a largely rural country, few people possess technical training, and many of those who did were killed or forced to flee during the genocide of 1994. So since its founding in 1997, the Kigali Institute of Science and Technology has been developing and promoting simple technologies to meet the country's gaping needs. Its foot-powered water pumps help irrigate crops. Its solar electricity units power radios and computers. And its biogas digesters should soon turn sewerage from provincial prisons – which hold tens of thousands of those accused of the killings – into methane gas, saving the prisons much of their huge expenses on firewood, while protecting the environment. Profits from entrepreneurial activities already provide the institute with over-one third of its operating budget.

Burton Bollag (2003) *Improving Tertiary Education in SSA: Things that Work*

institutions have begun to address the pressing need for financial reform based on detailed examination of the local context (See Box 8a).

According to Johnstone[14] (1998), 'cost-sharing is being embraced by more and more governments throughout SSA – although slowly and cautiously, and frequently limited to its easier and more politically acceptable forms. At the institutional level, small fees are being introduced, food services are becoming self-supporting, fees are being charged for evening or summer or other 'special' courses and programs, and facilities and equipment are being offered for rent.'

Johnstone also cites Makerere University, in Uganda, as an example of what may be possible as a result of devising and implementing 'an aggressive policy' of recruiting large numbers of fee-paying students. The World Bank/UNESCO Task Force also

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14   Although Woodhall does not specifically mention ICT policy here, this has become a key component of higher education. Relatively few HEIs in SSA have comprehensive policies that adequately support their missions. This issue is dealt with further in later section of this paper entitled: 'The Challenges of Inadequate ICT Infrastructure to support Higher Education in SSA.

cite this policy, along with improved management and the introduction of demand-driven courses, as having had a tremendous impact at Makerere: 'During the 1990s, Makerere moved from the brink of collapse to the point where it aspires to become again one of East Africa's pre-eminent intellectual and capacity-building resources, as it was in the 1960s' (Bollag 2003) (see Box 8b).

The means by which state universities in SSA have undertaken comprehensive and fundamental financial and administrative reforms has been quite diverse. These include adopting strategies that increase the use of their facilities mainly by increasing dramatically the number of fee-paying students that are enrolled in so-called 'parallel programs'. This has meant that student fees are becoming a significant contribution to recurrent budgets: 'Fully 70 percent of expenditures at the University of The Gambia are derived from student fees. At the University of Nairobi, student cost-sharing produced 37 percent of the institution's recurrent budget in 2002. In Ghana, student fees contributed 31 percent of university budgets in 2005' (Materu 2006). Some public universities have also set up commercial units[15] and associated consultancy companies. Johnstone (2003) has made several observations regarding what policymak-

ers should consider when devising a cost-sharing strategy (see Appendix 2).

In summary, financial reforms in the HE sector in SSA are very much in keeping with the increasing market orientation of HE in many parts of the world, often spurred on by market capitalism and the principles of neo-liberal economics. The historical expectation, particularly in SSA, that HE is a public good is brought into question by analysts such as Nicholas Barr (1993) who challenge this perception since higher education 'exhibits conditions of rivalness [limited supply], excludability [often available for a price], and, rejection [not demanded by all]' all of which Barr says do not meet the characteristics of a purely public good.

The measures being taken by some African universities could be seen as an acceptance of this type of liberal reform agenda as they:

i) introduce tuition fees, which shift some of the cost burden of HE from taxpayers to parents and students, (who are largely perceived to be the ultimate beneficiaries of higher education);

ii) introduce fees for institutionally-provided accommodation and meals, and

iii) more closely align the interest being levied on student loans to market rates.

All of these are driven by market forces and therefore shift the influence from the institution (mainly from the faculty) and the ministry of education to the consumer or client, whether that be the student, government, business, or the general public as the latter can now make increased demands on performance and accountability.

The Challenge of Enabling Diversification in Higher Education

In addition to the increased market orientation of state funded HEIs, the last several years have seen a rapid expansion of private institutions in SSA.[16]

Box 8b:

Since its decision to recruit fee-paying students in the early 1990s, **Makerere University** has grown extremely rapidly. Undergraduate enrollment increased from 3,361 in the 1993/94 academic year, to 22,000 – the large majority fee-paying – in 2003/04. One consequence has been increasingly overcrowded facilities. Prof. Sawyerr, the AAU Secretary General, acknowledges that this policy has indeed saved the institution, turned paltry faculty wages into some of the best on the continent, and allowed the modernization of many of the teaching programs. Yet he says the institution's apparent new focus on earning revenues through a continuous expansion of fee-paying programs, is worrying. The improvements have been achieved 'in a manner that seems to threaten the quality of the teaching and learning environment'. There are signs, he adds, 'of a decisive move towards the privatization of a public institution'.

Burton Bollag (2003) *Improving Tertiary Education in SSA: Things that Work*

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15 Johnstone (2003) suggests that while such entrepreneurial activity may have its problems within the university framework there are several key benefits noting that 'it helps introduce a market sensitive institutional culture; relevant training experience is introduced for students; cooperative links are established with business partners who might become involved in curriculum guidance, work placements, and part-time teaching arrangements, etc., all of which helps enhance quality of higher education and monetary inflow. Most shortcomings and risks associated with entrepreneurship can be overcome/ minimized by legalizing the entire procedure of entrepreneurship in tertiary education in developing nations, and supplementing it with the aid of good management, transparent procedures, clear rules, and discipline.'

16 According to Salmi (1992) there is a need for countries, including those in SSA to develop 'institutional diversification strateg[ies] whereby the social demand for higher education is managed through the development of a variety of lower cost alternative institutions differentiated in terms of missions, function and modes of delivery...'.

This has been largely due to the fact that public investment has not been able to keep up with the ever increasing demand. Of the approximately 300 universities operating today in SSA, about one-third are privately funded with the majority of these having been established since the year 2000.

The map below indicates how prevalent the private sector had become in the provision of higher education throughout the world by 2004.

In some countries in SSA, the establishment of new HEIs is subjected to a rigorous procedure of accreditation and quality assurance coordinated by national agencies. However, in most cases, due to a lack of capacity and the financial resources to undertake the work, these procedures have all too often been reduced to rubber-stamping the licensing of private tertiary institutions. Most African countries are yet to establish effective policy mechanisms for monitoring quality assurance that would assist in the accreditation process. There is some progress being made however with the initiation of a Strategy for Harmonization of Higher Education Programs (AU HEP Harmonization Strategy)[17] which, among other things, may stimulate the development of national and cross-border accreditation and quality assurance frameworks.

At the same time, competition in the developed world is compelling institutions to seek new markets in developing countries aggressively. Some (such as Monash University and RMIT of Australia) have established satellite campuses, others (such as Curtin University and Georgetown University) are partnering with African institutions to offer their degree programs in subjects that have particularly high and well established demand.[18] With increasing access to Internet connectivity will come wider opportunities for African students to study in open and distance learning programs offered online from non-African institutions.

For African students each of these modes of external private provision has several advantages not the least of which is the perceived greater recognition and marketability of foreign degrees. Students also appreciate the relative certainty they have

Figure 3: Prevalence of Private Sector in the Provision of Higher Education
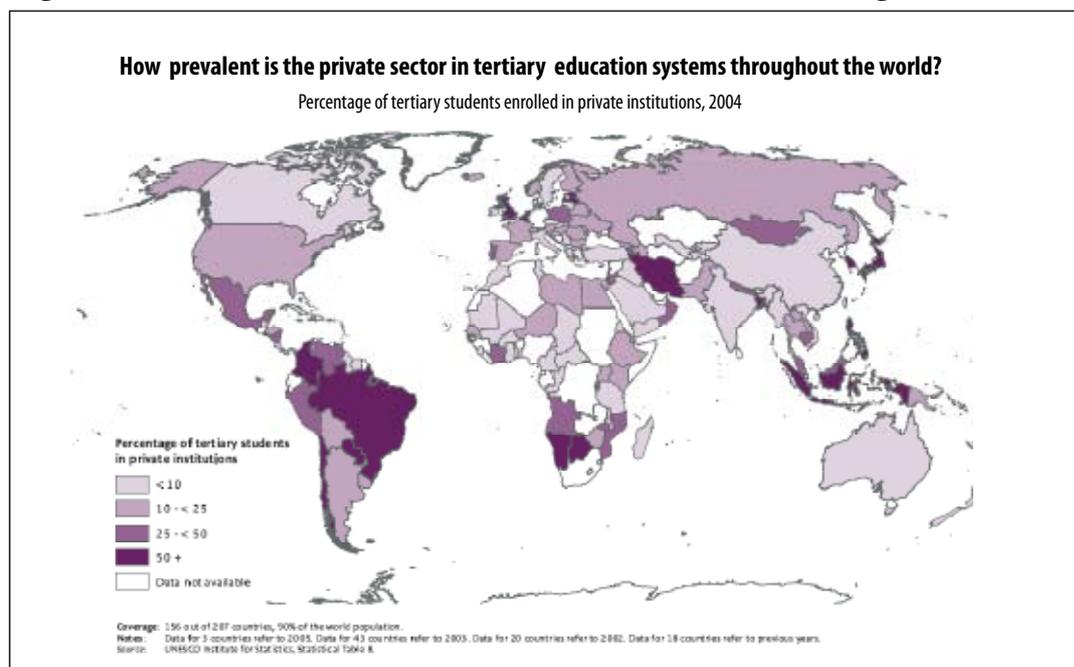
Source: UNESCO Institute for Statistics (2004)

17   In his 'Report on the AU HEP Harmonization Strategy Discussion List', Neil Butcher and Associates (NBA 2007) indicate that 'The Strategy for Harmonization of Higher Education Programmes [AU HEP Harmonization Strategy], is aimed at supporting the higher education development efforts of relevant agencies, initiatives, and programmes at continental and regional levels by providing an integrated platform for dialogue and action. The strategy further aims to strengthen the capacity of higher education institutions through innovative forms of collaboration and ensuring that the quality of higher education is systematically improved against commonly agreed benchmarks of excellence. Over time, this should facilitate mobility of graduates and academics across Africa.'

18   Mainly in the areas of business management and information technology.

19

of completing their degree within a prescribed period of time without the fear of interruption due to political or student unrest (Materu 2007). These foreign 'name brand degrees' therefore represent both a challenge and a benefit as they, on the one hand, pose a rising competitive challenge for local universities in African countries while on the other, provide a much-needed supplementary avenue for African students (who have the financial resources available) to pursue a HE that may otherwise not have been available to them.

The Challenge of Gender Equity

In the decade following independence few African women were qualified or socially equipped to enter either the formal workforce (even as part of the much needed civil service) or HEIs, both of which, as Mlama points out 'were as masculine in their composition as they were masculinising in their educational philosophy' (Mlama 1998).

The research data for participation rates for women in HE in SSA are scarce. In 1996, Ajayi et al. suggested that women academics comprised only 3 percent of the total and that women made up only 25 percent of those enrolled in African universities. Mlama (1998) suggests that 'the majority of the women who work in African universities are not academics and researchers, but rather the providers of secretarial, cleaning, catering, student welfare, and other administrative and support services'.

In 2003, Teferra and Altbach presented an eclectic set of data depicting women's enrolment in HE. Given the multiple sources (including a number of 'unspecified' sources) these data are difficult to interpret, let alone compare across countries. What is clear from the table below however, is a general trend indicating that the vast majority of countries included in the study continue to exhibit a clear gender imbalance in terms of the percentage of women enrolled.

The following table (from the UN's Global Education Digest) was published in 2006. Although a more recent source, the gaps in the table are a further indication of the ongoing dearth of comprehensive gender-related research data available that would allow for detailed comparison across SSA countries or with other regions of the world. Nonetheless, the table does give us a further (albeit limited) insight into the percentage of women graduates as well as an indication of the subject areas being pursued by women. Although not the same as the enrolment rates cited above, and notwithstanding that there is no indication of levels of attrition in the table, the graduation rates once again clearly show the general inequity between the sexes. The table also indicates a specific trend away from women's enrolment in science and technology fields that is in keeping with a similar trend for both males and females in SSA.

The inequity indicated by each of the above data sets presents another challenge for the management of higher education institutions in SSA and for the wider education sector as well. Mlama (1998) suggests that an underlying cause for the disparity might be due to the systems of admission employed by universities and the legacy issues accruing from the participation and completion rates for girls in primary and secondary education.

Table 1 : Women's Enrolment in African Universities

Country	Source and Date of Data	% Women Enrolled
Angola	Unspecified	40
CAR*	2000–2001	9
Congo	Mbemba (2003)	24
Egypt	Supreme Council of Universities (SCU) (1999)	46
Ethiopia	EMIS – MOE: Education Statistics (1999)	15.6
Ghana	Munah (2002) – University of Ghana	35
Kenya	Ministry of Education Science and Technology Statistics Section (2000)	30
Libya	Secretariat of Education and Scientific Research (2000)	51
Madagascar	UNESCO (2000)	46
Malawi	Unspecified	25
Mali	Global Education Database, UNESCO, USAID (1999)	19
Morocco	Unspecified	43
Nigeria	Unspecified	35
Senegal	Unspecified	47
Sierra Leone	Ministry of Education	18.7
Swaziland	VC's report to Congregation	51.9
Uganda	Academic Registrars Office Makarere (2000)	34
Zambia	UNESCO Statistical Year Book (1999)	33
Average	N = 18 countries	33.5
* Central African Rerpublic		

Source: Cited in Mlama (2003)

Table 2: Graduates by Field of Study

Country or territory	Total number of graduates		Graduates by field of education as a % of total									
			Science and Technology Fields						Other fields			
			Total		Science		Engineering, manufacturing and construction		Total		Education	
	MF	%F	MF	%F	MF	%F	MF	%F	MF	%F	MF	%F
Sub-Saharan Africa												
Angola	172[-2]	41[-2]	19[-2]	41[-2]	10[-2]	41[-2]	9[-2]	40[-2]	78[-2]	41[-2]	34[-2]	41[-2]
Benin	...	...	...	...	...	...	...	...	...	...	...	...
Botswana	...	...	...	...	...	...	...	...	...	...	...	...
Burkina Faso	...	...	...	...	...	...	...	...	...	...	...	...
Burundi	1,731	25	13	10	4	16	9	7	87	28	49	27
Cameroon	...	...	...	...	...	...	...	...	...	...	...	...
Cape Verde	...	...	...	...	...	...	...	...	...	...	...	...
Central African Republic	...	...	...	...	...	...	...	...	...	...	...	...
Chad	...	...	...	...	...	...	...	...	...	...	...	...
Comoros	...	...	...	...	...	...	...	...	...	...	...	...
Congo	...	...	...	...	...	...	...	...	...	...	...	...
Côte d' Ivoire	...	...	...	...	...	...	...	...	...	...	...	...
Democratic Rep. of the Congo	...	...	...	...	...	...	...	...	...	...	...	...
Equatorial Guinea	...	...	...	...	...	...	...	...	...	...	...	...
Eritrea	1,254	14	19	8	12	11	7	2	81	16	35	14
Ethiopia	41,364	29	13	15	7	22	6	6	87	31	23	20
Gabon	...	...	...	...	...	...	...	...	...	...	...	...
Gambia	470	14	20	9	20	9	.	.	80	16	27	10
Ghana	...	...	...	...	...	...	...	...	...	...	...	...
Guinea	...	...	...	...	...	...	......	...	...	...	...	...
Guinea-Bissau	...	...	...	...	...	...	...	...	...	...	...	...
Kenya	...	...	...	...	...	...	...	...	...	...	...	...
Lesotho	1,319[-1]	...	4[-1]	...	4[-1]	...	-[-1]	...	62[-1]	...	34[-1]	...
Liberia	...	...	...	...	...	...	...	...	...	...	...	...
Madagascar	6,652[-2]	47[-2]	22[-2]	34[-2]	18[-2]	37[-2]	4[-2]	20[-2]	78[-2]	51[-2]	1[-2]	34[-2]
Malawi	...	...	...	...	...	...	...	...	...	...	...	...
Mali	...	...	...	...	...	...	...	...	...	...	...	...
Mauritius	4,151	53	26	33	9	51	18	24	74	60	44	61
Mozambique	2,878	35	15	23	12	26	4	13	85	38	7	26
Namibia	1,981[-1]	56[-1]	6[-1]	35[-1]	4[-1]	46[-1]	2[-1]	11[-1]	79[-1]	56[-1]	38[-1]	52[-1]
Niger	...	...	...	...	...	...	...	...	...	...	...	...
Nigeria	174,602	41	...	...	...	...	...	...	...	...	...	...
Rwanda	3,595	42	...	...	...	...	...	...	...	...	...	...
Sao Tome and Principe	...	...	...	...	...	...	...	...	...	...	...	...
Senegal	...	...	...	...	...	...	...	...	...	...	...	...
Seychelles	.						.	.	.	.	.	.
Sierra Leone	...	...	...	...	...	...	...	...	...	...	...	...
Somalia	...	...	...	...	...	...	...	...	...	...	...	...
South Africa	109,658[-1]	58[-1]	16[-1]	36[-1]	10[-1]	45[-1]	7[-1]	23[-1]	84[-1]	62[-1]	23[-1]	73[-1]
Swaziland	1,026	54	6	43	5	44	...	40	94	55	31	64
Togo	...		...	...	...	...	...	...	...	...	...	...
Uganda	21,164	38	10	22	3	27	6	19	88	39	35	37
United Republic of Tanzania	4,028		21	...	3	...	18	...	59	...	15	...
Zambia			...	...	...	...	...	...	...	...	...	...
Zimbabwe	...	...	...	...	...	...	...	...	...	...	...	...

Source UN Global Education Digest (2006)

She further suggests that, 'as long as university entrance procedures are not designed to ameliorate the deficits that accrue at the secondary level, they will inevitably reproduce them'. She later concludes that 'it would be perfectly feasible to design an affirmative strategy that would see enough women admitted to mitigate the effects of "drop-out" and ensure equitable graduation rates'.

While the management at some institutions may not have fully recognized this challenge, there is evidence that some universities are responding positively. Both Makerere and Dar es Salaam Universities have introduced affirmative action gender policies in order to increase female enrolment in higher education. For example, between 1990 and 1999 implementing an adjusted admittance score helped to increase the percentage of female enrollments – from 27 to 34% at Makerere University and from 21 to 27% at the University of Ghana (World Bank 2002). The University of Dar es Salaam also applied an affirmative action policy that admitted female students with 1.5 points lower than their male counterparts while not lowering the university entrance requirements (Mlama 1998).

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Gender issues are not limited to enrolment levels alone. Elsewhere, Mlama warns that female students may be increasingly at risk from 'sexual corruption'. She points out that this 'seems likely to be exacerbated by the withdrawal of subsidies and growing student poverty' (Mlama 2003) inferring, one assumes, that in order to support their education female students with reduced monetary support from the state are compelled to engage in transactional sex to finance their education.[19]

The Challenge of HIV/AIDS in the Higher Education Sector in SSA

The regional estimates for the prevalence of HIV/AIDS in SSA are presented in the following table:

Although SSA has just over 10 percent of the world's population, almost 64 percent of all HIV infections occur in this region with an estimated 22.5 million people living with HIV infection. Despite these bleak statistics, HIV prevalence in SSA appears to be levelling off. In 2005, an estimated 2.3 million to 3.1 million people in the region became newly infected, and up to 2.3 million adults and children died of AIDS-related illnesses. As the above table indicates, in 2007 these figures were 1.7 million for new HIV infections and 1.6 million AIDS-related deaths. It is thought that this stabilization is due to behavior change and increased HIV-related mortality. That is, the numbers of people becoming infected with HIV is beginning to match the numbers dying of AIDS-related illnesses (UNAIDS 2008).

For the HE sector the challenges presented by the HIV/AIDS pandemic are as onerous as for other sectors of society. The first comprehensive study of the impact of HIV/AIDS on universities was commissioned in 2001 by the Working Group on Higher Education (WGHE), which is sponsored by the Association for the Development of Education in Africa (ADEA). The Kelly Report[20] suggested that universities in SSA will increasingly find that they must operate in a worsening socio-economic environment brought about, in part, by the wider social and economic impact of AIDS-related illnesses. The Report also indicated that in 2001, despite a clear recognition by universities of the potential for substantial adverse human, financial and social impact, university managers made almost no allowance for HIV/AIDS in their strategic planning. Similarly there was a dearth of policy formulation focusing on how to cope with the HIV/AIDS pandemic in the HE sector.

Since the Kelly Report, two more reports have been commissioned: the first is a 2006 update from the WGHE, that was implemented with the support of the Association of African Universities (AAU), entitled 'Higher Education Institutions in African Responding to HIV/AIDS'; the second was published by the AAU in 2007 under the title 'HIV and AIDS and Higher Education in Africa: A Review of Best Practice Models and Trends'.

The 2006 AAU Report reasserts the ongoing impact of the HIV/AIDS pandemic on HEIs *(see Box 9)*. However, both reports comment on the significant progress being made towards finding solutions to the challenges faced. Sawyerr notes from the AAU Report that 'the survey results show that, by and large, African universities are making great strides in their efforts to address the threat that the HIV pandemic poses to their institutions and to those who study, work and live in them, but that they need more support to play an even greater role in the fight against the global pandemic' *(Sawyerr cited in AAU Report 2007)*.

Table 3: Prevalence of HIV/AIDS in SSA

HIV/AIDS in SSA	
Population, 2007	788,000,000
People living with HIV/AIDS, 2007	22,500,000
Women (aged 15+) with HIV/AIDS, 2005	13,300,000
Children with HIV/AIDS, 2007	2,200,000
Adult HIV prevalence (%), 2007	5.0
New HIV infections, 2007	1,700,000
AIDS deaths, 2007	1,600,000

Source: Population Reference Bureau & UNAIDS (2008)

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19   Mlama goes on to highlight a further contextual issue arising for African HE institutions seeking to address this issue in that 'existing [research] work in this area has attempted to use the Western rubric of "sexual harassment", with limited efficacy, given the profound contextual differences between North American and African campuses. These differences include economic, institutional, and cultural circumstances, not to mention differentials in the impact of the HIV/AIDS pandemic.' (Mlama 2003)

20   Named after its chief author

Box 9:

'The most obvious way in which institutions have been affected by HIV/AIDS is through increased deaths. Other ways in which institutions have been affected include absenteeism, intermittent attendance of affected students, high turnover rates, loss of skilled personnel, increased expenditure (health care, funerals, recruitment of part-time lecturers), overstretching of medical services, reduced productivity, stigmatization of the infected, lowered morale, inability of students to pay tuition and other fees, poor student performance and uncertainties in human resource planning and development.

HIV and AIDS affect both teachers and learners equally. Staff members may be sick or have to attend to a sick family member. Irregular attendance of students has led to reduction in academic performance. Apart from physical pain, there is a psychological dimension of HIV/AIDS: the depression, stress and anxiety. Not only do depression, stress and chronic anxiety among affected staff and students impact on their performance, but on their social interaction as well.

Some patterns are emerging especially in countries with advanced epidemics. Universities are seeing increasing number of student orphans; an increasing number of HIV positive patients are presenting themselves in teaching hospitals; an increase in uptake at institutional clinics for treatment of opportunistic infections; an increase in counseling workload; and there is a noticeable increase in student drop-out rates. This has serious implications for university planning with regard to student needs, capacity, facilities and operation of bursary schemes.' (AAU 2007)

Similarly the WGHE Report notes that universities in SSA 'have taken a lead role and are developing institution specific HIV/AIDS policies; integrating HIV/AIDS into curricula; establishing resource center to support teaching and learning; forming partnerships to provide voluntary counseling and testing (VCT); and carrying out social science research to engage communities and stakeholders' (WGHE 2006).

Nonetheless, the reports make it clear that the HE sector has only just started to mobilize itself against the enormous challenge of HIV/AIDS. While many institutions have begun to tackle the challenges, many others are only beginning to recognize the threat posed. In all cases, university management will play a crucial role in determining whether or not HEIs in SSA succeed in this endeavor.

The Challenge of Inadequate ICT Infrastructure to Support Higher Education in SSA

A particular challenge that is oft quoted in discussions surrounding the efficacy of HE in Africa – particularly with regard to new modes of delivery and with effective research and innovation – is the lack of technological infrastructure.

At a macro level, Africa's economic integration and participation in the global economy continue to be held back by the high cost of Internet access, which in turn limits the flow of cross-border, regional and international telecommunications traffic. In addition, high Internet access costs, low bandwidth, poor ICT infrastructure and often unreliable communication facilities heighten the challenges faced by African countries in general and educational institutions in particular.

Choosing an appropriate technology for developing regions like SSA has to take into consideration several constraints including:

- Cultural and language issues;
- Geographical reach;
- Poor telecommunication infrastructure;
- High bandwidth and connectivity costs, and the policy/regulatory environments that sustain these;
- Unreliable power;
- Lack of computers;
- Lack of trained technical personnel to manage and maintain the technology;

A largely undefined policy environment for ICT supported distance education.

The Challenge of Inadequate ICT Policy to Support Higher Education in SSA

At a policy level, a 2007 report compiled by the Association for Progressive Communications (APC) and the Third World Institute (ITeM) entitled *'The Global Information Society'* cites the following as

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key concerns regarding ICT deployment in the developing world:-

Weaknesses in national policy processes:

- Lack of policy awareness, at all levels of government and citizenship, of the potential role of ICTs in development;

- Lack of technical and policy capacity on ICT issues, particularly in respect of emerging technologies and new policy area;

- Weaknesses in national and regional policy-making processes, which variously included weaknesses in political leadership; absence of national ICT strategies; ineffective coordination between different government departments and agencies with ICT responsibilities; lack of private sector and civil society participation in national decision-making; inadequate preparation for international meetings; and ineffective use of financial and human resources.

Weaknesses in international policy processes:

- Lack of easy, affordable and timely access to information about ICT-related issues, decision-making forums and processes;

- Logistical problems, including the frequency and location of international meetings and restrictions on participation (for example, by private sector and civil society experts);

- Ineffective use of financial resources available to support participation. (Global Information Society Watch 2007)

There is however evidence of some progress being made in terms of infrastructure development in the African context. This does not necessarily mean that a positive change in the delivery of HE will automatically follow. Nonetheless the range of projects aimed at supporting ICT Infrastructure in the education sector in SSA is extensive.[21] In March 2003, the NEPAD Heads of State and Government Implementing Committee (HSGIC) approved the NEPAD ICT Infrastructure Program. This program aims to complete a submarine optic fibre ring around Africa and establish terrestrial (backhaul) connections between all African countries and the rest of the world through various submarine cable systems. In doing so the program seeks to increase the capacity of Internet traffic while greatly reducing the costs associated with the satellite infrastructure (VSAT) currently deployed in many parts of Africa (see Appendix 3 for a detailed description of the NEPAD ICT Infrastructure program).

The Challenge of Inadequate Research and Knowledge Sharing

There is a need for further research into HE program design and delivery that, ideally, emanates from African institutions themselves. Currently, there is little formal research available that analytically describes and evaluates good practice for university programs in SSA. More specifically, there is need for targeted, quality research into HE program costing, financing, management (including learner support systems, assessment, cross border accreditation), pedagogy (including the impact of Web 2.0 tools and collaborative learning environments), technology (including mobile learning), access (including issues surrounding gender equity), and the value chain of teaching and learning provision in terms of its impact of realizing national development goals.

'Knowledge' is becoming an increasingly important component of the economic, social and cultural development of a globalized world. HEIs in Africa, as centres for innovation and the creation of knowledge, must continually and progressively set the pace and direction for this development. Knowledge sharing and collaboration strategies are required both within the institutions themselves and among the education ministries that support them. The issue may not be one of the research outputs *per se* but rather one of disseminating and sharing these outputs in such a way so that enter the knowledge commons and become useful additions to areas such as policy formulation and informing development agendas. For this reason, initiatives that assist in establishing and supporting research networks have become a key area of interest in the HE sector as have the technical infrastructure initiatives that support them.

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21 The World Bank's 'InfoDev' project has compiled a survey of ICT in education initiatives in Africa. This is available at http://www.infodev.org/en/Publication.347.html. Columbia University has also compiled an indicative list of such projects at http://www.columbia.edu/cu/lweb/indiv/africa/cuvl/Internet.html. Stanford University has another similar list available at http://www-sul.stanford.edu/depts/ssrg/africa/elecnet.html.

One such initiative, the UbuntuNet Alliance for Research and Education Networking, is a recently formed regional research and education network that was launched at a 2005 conference of established and emerging NRENs (National Research and Education Networks) in Kenya, Malawi, Mozambique, Rwanda and South Africa. The UbuntuNet Alliance works primarily with NRENs in an effort to 'inter-connect them via a pan-African broadband research and education backbone network – the UbuntuNet Backbone – and to provide them, via gateways on the UbuntuNet Backbone, with high speed connections to NRENs worldwide and the Internet generally'[22] (Martin 2007).

The Bandwidth Consortium is another regional network that is focusing more on the teaching, learning and research needs of its members. This coalition of 11 universities recently concluded an agreement with the satellite service provider Intelsat to expand bandwidth capacity for its members at approximately one-third of the cost. Until recently the AVU managed the Bandwidth Consortium,[23] which involves institutions in Ghana, Nigeria, Kenya, Mozambique, Tanzania, and Uganda. The consortium is a collaborative project of the Partnership for Higher Education in Africa (PHEA).

Some universities in Africa make do with less than one megabyte of bandwidth and pay considerably more for it than their European or North American sister institutions (AVU 2005). Although the Bandwidth Consortium has deployed some 20 VSATs across Africa, most universities still do not have access to reliable and affordable bandwidth. Part of the solution that the Bandwidth Consortium has put in place in the medium term (until a ubiquitous fibre optic network is in place across SSA) is the development of a consortium to purchase bandwidth via VSAT.

In 2005, the AVU began aggregating the demand from several universities in order to purchase bandwidth at a price of US$2.3 per kilobyte per second, representing a reduction from around US$20 per kilobyte per second in the year 2000 (AVU 2006). With increased numbers of universi-

ties participating in the consortium the ability to leverage further economies of scale and purchasing power are expected (AVU 2006). This model is currently seeking ways to reduce its dependency on donor funding and establish itself as a self-sustaining enterprise.

According to Martin (2007), from the beginning of 2008 universities and research institutions in East and Southern Africa would increasingly benefit from fast, terrestrial fibre optic connectivity to each other, to NRENs in other parts of the world, and to the Internet generally. Martin further suggested that this would impact initially institutions in or near major cities. Writing in early 2008 it is not yet clear if these predictions have come to fruition although Martin conceded at the time that 'some institutions will not benefit as early as others, and institutions in remote areas may well be dependent on VSAT connections for several years longer' (Martin 2007).

The UbuntuNet Alliance suggests that as a result of this increased connectivity, funding agencies should shift their focus from the level of selected individual institutions to that of the NRENs and the regional RENs. The Alliance further suggests that these agencies should 'establish primary developmental relationships with the NRENs, and should encourage NRENs to welcome all bona fide universities and research institutions in their countries as members. Wherever possible, agencies should leave the management of connectivity relationships with the institutions to the NRENs irrespective of whether the institution requires terrestrial or VSAT connectivity' (Martin 2007).

The relationship between the UbuntuNet alliance and the Bandwidth Consortium is, at present, unclear. Given that both are involved in negotiating for reduced cost satellite connectivity on behalf of African educational institutions, and that both are keen to support the sharing of research resources and other learning materials, there appears to be some overlap in their activities. Whatever the case, the key role of African universities in producing innovative and creative thinkers is well summarized

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22   In a report released by the Alliance entitled 'Optical Fibre for Education and Research Networks in Eastern and Southern Africa' several key findings were made, which are reproduced in Appendix 3.

23   The Bandwidth Consortium is currently managed, in the interim, by the International Development Research Centre (IDRC) as it makes plans to move to the Nigeria ICT Forum.

by Steve Song, the International Development Research Centre's Manager of Information and Communication Technologies for Development (ICT4D) programs in Africa: 'We live in a world where economic growth is driven by ideas, and many of those ideas are incubated at universities…they are the place where there is energy, space, and time for ideas to generate. Without the bandwidth, those ideas won't achieve the kind of critical mass and reach that they could otherwise. The opportunity exists now to put African universities back where they should be. For African universities to claim the Internet as their rightful domain for innovation, for creativity, and for the promotion of social and economic growth' (Song 2005).

The Challenge of Adapting to Changing Modes of Delivery

Globally, the increased use of ICT in education program delivery has enabled the use of new and sometimes innovative methodologies. The inclusion of audio, video and computer-computer-based multimedia materials, online learning environments including collaborative learning tools, is gaining traction in many parts of the developed world. In Africa the widespread development of these methodologies is currently beyond the resource capacity of most universities. However, as technological development increases the need to upgrade and re-skill teachers' pedagogical approaches and instructional design methods, along with the adoption of outcomes-based learning, will increasingly become a necessary part of HE capacity across SSAn countries. An area that is of particular interest to the HE sector in SSA is the expansion of Open and Distance Learning. Another area of interest arisies from the possibilities afforded by eLearning – be that as part of ODL programs or as part of campus-based learning programs.

The Role of Open and Distance Learning (ODL) in Higher Education Provision in SSA

Open and Distance Learning (ODL) has an extensive history around the world and more recently has seen significant expansion in SSA. In the latter

context, limitations of ICT infrastructure have curtailed the inclusion of technology enhanced ODL methodologies that have taken place elsewhere. The expansion of eLearning programs for ODL delivery globally stems from a concurrent expansion of Internet technology that took place in the early to mid 1990s. At the time it was thought that eLearning programs held the promise to transform education in terms of access, quality and cost. This optimism was felt most strongly at those universities in the developed world that possessed the necessary skills, expertise and infrastructure to take advantage of this technology. Universities that could afford to, made heavy capital investments in sophisticated delivery systems (such as Blackboard and WebCT) and in the production of learning materials under the flawed assumption that they could attract large numbers of students and reduce the need for highly-paid instructors.

Instructors at universities in the developed world reworked their teaching materials accordingly and in some cases used new online tools to add streamed audio and video of lectures in order that these may become accessible to students via newly developed Learning Management Systems (LMS). However, by and large their efforts failed to recognize the inherent differences between face-to-face delivery and what was required by this new online environment. Consequently, in this early eLearning model, the students' role was primarily a passive one with their responsibility limited to daily monitoring of activities, downloading material, and participating in time bound and often contrived discussions on bulletin boards within the LMS.[24] It was not long after the initial wave of excitement that questions were raised as to the efficacy of learning in this way. It soon became evident that above and beyond the often ill-conceived pedagogical praxis it attempted to employ, along with a lack of evidence of its educational effectiveness, the market itself was not yet ready for the type of eLearning being offered. It seemed that efforts to increase access to and reduce costs of HE resulted in a loss of quality.

Daniel (2004) disputes that this needs to be the case when he describes the need to break what

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24   Early Web 1.0 supported eLearning programs were noted for the characteristic 'push methodology' they adopted via the use of Learning Management Systems (LMS) (Porter 2006). Rarely did these programs fully exploit the communication potential of networked computers that would enable the types of reflection, communication and collaboration espoused in social theory (Coleman 1990) and/or active learning theory (Vygotsky 1978). In what may be viewed as a lost opportunity, the collaboration tools built into the LMSs being used did not feature highly in the program design for eLearning programs.

he refers to as the 'Iron Triangle' that is formed between quality, access, and cost of education provision; that is, the perception that changes in one element (quality, access, or cost) cannot be implemented without impacting negatively on the others. Daniel's supposition is that in the case of ODL programs, the notion of the inter-connectedness of these elements requires debunking. He believes that appropriate use of multimedia and ICT in support of ODL can in fact expand and reshape this triangle. Daniel cites institutions such as the Open University (UK) as having been able to harness the mass media initially and later ICTs to increase access to education without any reduction in quality or significant increase in cost (Daniel 2004). However, the transformational impact of ICTs in ODL within other educational institutions is still yet to be established.

In SSA, an unpublished Gap Analysis Report by the AVU examined the readiness in education institutions in Africa to take on what the authors more expansively term 'Open, Distance and eLearning' (ODeL) programs. The report indicated that HEIs remain trapped by the 'Iron Triangle' and have not achieved the much hoped-for massification of cost-effective, affordable and quality ODeL programs (Bateman & Murray 2004). The authors suggest that, in most cases, the public sector and governments have not been able to undertake the crucial support role required for the development of technology supported ODL. In other words, they have failed to act as the initiator and determiner of a process that would support the development of an effective policy environment, the development of appropriate financial support, the development of physical infrastructure or the development of the human resources required for effective technology supported ODL program implementation.

Like their colleagues in the North, African academics who attempted to introduce ICT-supported modes of learning were not familiar with the new requirements or potential of this methodology and to a large extent struggled to adapt their existing

pedagogy which was highly didactic in approach. The results for most were therefore disjointed and ongoing efforts to implement technology supported ODL programs in the region remain, for the most part, at the piloting phase with limited capacity for development into sustainable programs.

Recently, in the global context, the need to reinvent eLearning programs in a manner that capitalizes more effectively on the emerging social and participatory environment offered by the World Wide Web has become a key consideration. These models (the so-called 'Web 2.0 environment'[25]) remain largely unpoven at a systemic level but are starting to appear in a variety of Internet communities and are gradually finding their way into the formal higher education system as 'eLearning 2.0'. The process of refining these new eLearning strategies is now being undertaken by some 'early adopters' including some in Africa – albeit mainly in those African countries with the requisite ICT infrastructure, policy environment, and curriculum and materials development expertise that might support such strategies (e.g. South Africa).

Porter (2006) notes that instructors with experience in online course delivery are now beginning to investigate wikis, blogs, and various media-casting tools for their application to social-constructivist aspects of learning. In acknowledging the potential impactof the Web 2.0 environment on eLearning Porter further notes that: '[n]ewer social software systems may provide a medium for instructional activities that instructors may have done without when they focussed their online and distance teaching activities around production-based learning management systems that place a high emphasis on content development and its transmission' (Porter 2006).

These developments in Web 2.0 tools and practices have served to increase the awareness of the value of peer learning that encourages students to share and negotiate ideas in order to reach a deeper understanding of their subject discipline and develop

25 Web 2.0 is a difficult term to define since it does not refer to single new technical development but has come to be applied to a varied mix of social practices that have been enabled by a mix of both familiar and emergent web-based technologies and tools. Downes (2005) describes Web 2.0 as 'an attitude not a technology. It's about enabling and encouraging participation through open applications and services. By open I mean technically open with appropriate APIs but also, more importantly, socially open, with rights granted to use the content in new and exciting contexts' (Downes 2005).

In this sense, Web 2.0 represents an emerging synergy between the Open Content, Open Access and Open Source Software movements along with new online tools that enable participation. In the end, a definition of "Web 2.0" is less important perhaps than the concepts, projects and practices it encompasses (Alexander: 2006).

a range of different skills such as critical inquiry and reflection. Earlier studies by Blum (1999), Wegner, Holloway and Garton (1999), and Ryan (2000), indicated that new pedagogical strategies needed to be devised for eLearning programs that aimed at developing this reflective construction of knowledge and active participation by students as auto-didacticians.

Students in the developed world who have ready access to the Internet are part of generation of learners whose awareness of the socializing aspects of education when supported by the World Wide Web rival that of any previous generation's – including most of their instructors/tutors at university. As a result they are searching for and finding a wealth of course materials and resources online – not all of which emanate from their designated course instructor, who may tend to overlook the pedagogical effectiveness of the vast array of learning resources that do not originate from the formal university content production system. A good example of this is the application of blogging and podcasting practices to the online learning environment in the form of ePortfolios, thereby enabling learning content to be created and distributed in a very different manner.

As today's students become active participants in designing their own learning as members of a community of practice (albeit outside the formal university program design structures), their expectation is that they will have free access to the wealth of knowledge resources available on the Internet and beyond. Universities, including those in SSA, will need to involve themselves in making choices now to shape how 'eLearning 2.0' unfolds. The extent to which they recognize the changing level of involvement of their students and respond effectively to this will be a determinant of their impact on the future of knowledge and learning.

There are signs of a renewed emphasis among educationalists who are involved in using online tools to establish social networks or 'communities of practice' (Wenger and Snyder 2002) on the need to provide a collaborative environment that facilitates the creation, organization, dissemination and use of educational content. This includes the active involvement of students in remixing content and thereby constructing their own learning in collaboration with each other and their instructors. Downes (2005), perhaps pre-emptively, suggests that: 'Learning is [increasingly] characterized not only by greater autonomy for the learner, but also a greater emphasis on active learning, with creation, communication and participation playing key roles, and on changing roles for the teacher, in-deed, even a collapse of the distinction between teacher and student altogether' (Downes 2005). This may in fact not be a new way of learning but rather an already established one that is further encouraged and enhanced by the tools available on the Internet.

Quality Assurance in Higher Education in SSA

The challenge of quality assurance in HE remains a key focus of discussion globally. Despite this focus, the World Conference on Higher Education report notes that a commonly held understanding of what constitutes 'quality' in the higher education sector is yet to emerge (UNESCO 1998). As a result the term currently includes a diverse set of concepts including notions of quality as something distinctive or exceptional, quality as the maintenance of high standards, as the production of a standardized 'quality product', as the value addition derived from the educational process, and the notion of quality being value for money. This last notion is one favoured by governments and other donor agencies since it enables the 'outputs' of higher education institutions to be measured by quantitative indicators such as failure rates, completion rates, student/teacher ratios and the like.

Ekong (1998) overcomes this lack of a single definition by stressing the composite concept of 'quality assurance', which includes 'all the policies, systems and processes [that] are directed [towards] ensuring the maintenance and enhancement of the quality of educational provision within an institution. A quality assurance system is the means by which an institution confirms to itself and to others that the conditions are in place for students to achieve the standards that the institution has set' (Ekong 1998).

An emphasis on the academic standards of the educational programs on offer is included in the definition presented by the International Network of Quality Assurance Agencies in Higher Education (INQAAHE), which defines quality assurance as 'all of those attitudes, objects, actions, and procedures which, through their existence and use, and together with the quality control activities, ensure that appropriate academic standards are being maintained and enhanced by each program' (INQAAHE 2008).

Notwithstanding the ambiguities surrounding the definition of quality or quality assurance, Ekong (1998) suggests that the global discourse surrounding issues of quality has gained prominence as result of:

- rapid increases in the number of hitherto non-university institutions which have become universities with powers to grant their own degrees;
- large expansion in enrolments from sections of the population which previously had no (or at best only limited) access to higher education (the so-called 'massification');
- increasing numbers of new universities particularly in countries which before now had only few higher education institutions;
- stagnation or even decrease in government financial support / ability of governments to pay for expanded higher education systems in spite of growing societal demand for higher education; and
- an increase in the internationalization (the so-called 'globalization') of higher education.

These concerns are certainly shared in SSA by both policy makers (particularly the AU Commission) and HEIs, as is evidenced in a report emanating from a discussion of issues pertaining to quality assurance in higher education in the SSA region that took place during an online forum in 2007. The discussion forum was commissioned by the AAU on behalf of the African Union (AU) Commission and moderated by Neil Butcher and Associates (NBA). The report arising from this discussion indicates that: '[i]n implementing the Plan of Action for the Second Decade of Education for Africa, the AU Commission has embarked on a process of promoting quality assurance and developing a framework for harmonization of Higher Education Programs in Africa' (NBA 2007).

The report then details a variety of issues inherent in establishing a commonly agreed framework for harmonizing higher education provision across the African continent. Of particular interest here are those issues that seek to address the development

of quality assurance frameworks at a national, regional and continental level. Key considerations from the report include:

- The distinction the report makes between 'academic standards' and 'quality assurance'. The report suggests that quality assurance should be given priority, with academic standards then being considered a sub-set of quality assurance. This would seem to be at variance with the approach adopted by INQAAHE, which seems to afford academic standards primary importance within the wider quality assurance process. That is to say the primary intention of a quality assurance mechanism should be to ensure that 'academic standards are being maintained and enhanced'.

- The need to set up and operate systems of quality assurance that apply to the entire HE system in Africa including private–public HEIs, national, cross border, virtual education etc. In doing so. the report also takes cognizance of the need to survey all African countries and regional structures to determine whether they have an appropriate body (structure/organization) charged with setting and implementing quality assurance systems.

- The need to investigate a variety of methodologies to evaluate the quality of education systems, thus for example, a standards-based

approach (such as the ISO 9001 standards) should be considered.

In this regard, Farrando (2007) has devised a process model for quality assurance that could be adopted within a (generic) university setting:

Another major challenge for HEIs in terms of quality assurance is the 'rate of employment' of their graduates as a performance indicator. With the increased emphasis on HE as being client oriented and meeting the demands of the market, this is becoming an increasingly demanding task. Employers are now looking for graduates who are lifelong learners and who are flexible enough to be able to change their skills and competencies in keeping with the demands of national economies. Increasingly employers need to cope with international competition due to the increasing globalization of the world economy. Employers are therefore seeking a clearly defined and consistent set of attributes for graduates from HEIs that they can use to gauge their quality or 'fitness for purpose' as potential employees. They are also more willing to include in their search those graduates who may come from other countries in the region if their skill set offers better 'value for money'. Consequently the ability of HEIs to produce high quality graduates who can 'learn how to learn' in a variety of contexts is becoming of great importance.

Figure 4: "Improved Guidelines on Implementing ISO 9001 in Education Sector" by Rafael A. de Arrascaeta Farrando
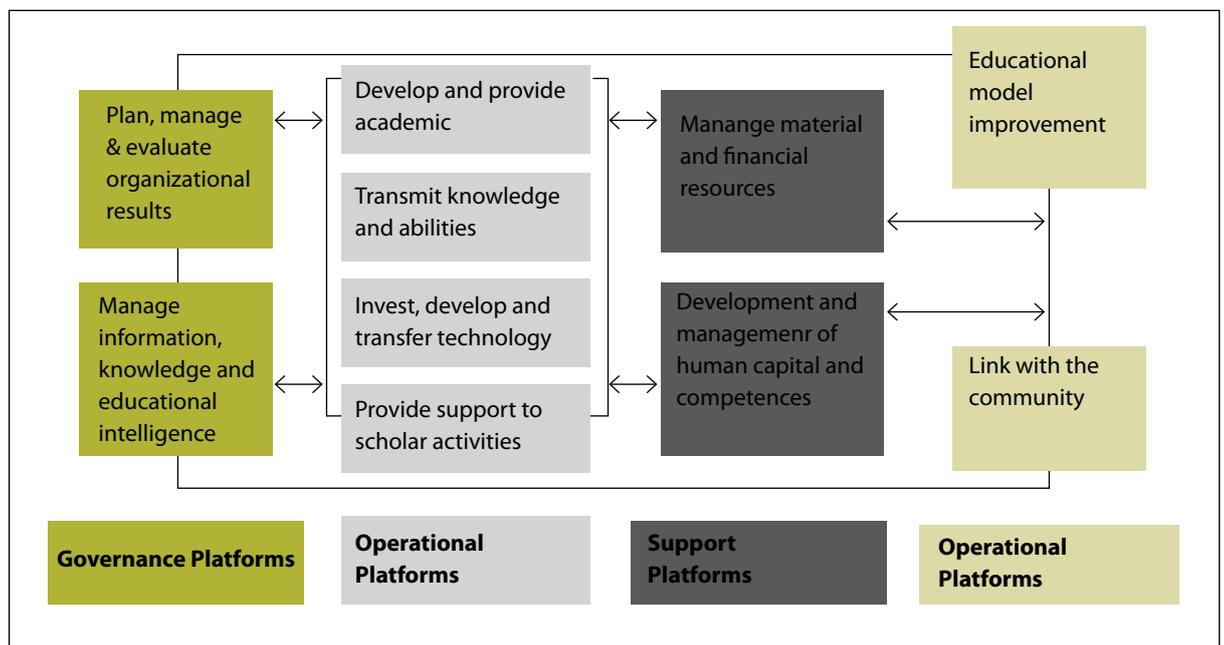
Source: ISO Management Systems (2007)

Currently there is no robust mechanism in place that would enable employers to determine the quality of non-national graduates easilyi. The work of the AU Commission in establishing a 'Strategy for Harmonization of Higher Education Programs' is a positive step which should include the establishment of national accreditation systems since, to date, these are yet to be established by many countries in the region (NBA 2007). This need becomes more urgent due to the aforementioned deregulation of the HE sector in many African countries and the subsequent introduction of free market principles when establishing HEIs. The challenge here will be to establish quality assurance mechanisms that enable the accreditation of private institutions which may be less concerned with academic excellence and more focussed on commercial considerations as they seek 'to satisfy the demands of the student market by providing access to higher education to groups who are unable to enter traditional or elite public or private universities' (UNESCO 1998).

Extending these national accreditation systems into a regional accreditation mechanism will also prove a challenge given that, like other regions of the world, Sub-Saharan Africa HEIs have yet to establish a common understanding quality. The AU HEP Harmonization Strategy Report confirms that there is an ongoing debate in SSA regarding the diverse conceptualizations of quality and therefore on the different models and components that need to be put in place in order to evaluate quality across a broad spectrum of HEIs. The UNESCO WCHE Report suggests that such a model should address issues such as 'relevance, effectiveness, availability of resources, efficiency, efficacy, and processes, for each of which criteria and quality indicators are set up by the accrediting agency consistent with the type and mission of the institution' (UNESCO 1998).

The work of the AU Commission in this regard is important since, despite the fact that UNESCO's Regional Conventions on the recognition of qualifications have been ratified by more than 100 member states including 21 in Africa (where the regional convention is known as the 'Arusha Convention'[26]), and that these conventions are legally binding, this does not seem to have resulted in the development of clear cut mechanisms for establishing quality in Africa's HEIs.[27] The AU HEP Harmonization Strategy Report proposes an initial starting point from which the discussions might continue when it suggests establishing 'an effective network to coordinate African higher education. African Ministries of Education should be encouraged to submit baseline data regarding:

• Education system/ National qualifications framework for higher education;

• Number of HEIs and list of degree offering programs (in both public and private);

• Existing quality assurance and accreditation mechanisms'. (NBA 2007)

A final quality assurance challenge for HEIs in SSA relates to the use of learning outcomes as benchmarking tools for quality. While there is a need to reform curriculum design processes in HEIs in SSA in order to improve the quality of teaching and learning, using learning outcomes in the process may be problematic. There is a risk that instructors will begin to engage in a process whereby they pay lip-service to devising learning outcomes that are not related to the actual results of the teaching and learning process but are more aligned with the requirements and expectations of the quality assurance framework. In treating learning outcomes with ambivalence, they risk becoming pointless and even damaging to the educational process. Power extends this threat and warns that adopting such an approach may 'distort and undermine knowledge by reducing it to commodified, decontextualised information... and that increasing emphasis on auditing and transparency in education has led [in the UK] to the decline of trust and the disempowerment and demoralization of academics' (Power 1997 quoted in Hussey & Smith 2002).

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26   The convention was signed by only 20 African states on December 5, 1981. It provides for a regional framework for mutual recognition of qualifications and accreditation.

27   Neither does there seem to have been much uptake on Paschal Mihyo's 2004 suggestion for the formation of a body called Area of Higher Education in Africa (AHEA) to design a program for concerted progress towards the implementation of the Arusha Convention.

Co-operation between African HEIs and their Regional and International Counterparts

There are a number of structured co-operation arrangements in place between African HEIs and their regional and international counterparts.[28] However, the reality for most HEIs in SSA is that they tend to function at the periphery of the international academic community. Often, the international (mainly North South) co-operative partnerships that do exist are structured in such a way that they are unequal – with the African institutions, as a result of many of the challenges outlined previously, being less able to participate in the creation, production and adaptation of the local knowledge necessary to ameliorate their countries' most important economic and social problems. This inequality may also stem from how many of these partnerships are funded with the Northern partner often receiving donor funding and thereby having greater control over the outcomes.

This imbalance is set to become exacerbated by a recent trend towards the commercialization and internationalization of HE across borders. This challenge has been highlighted by the AAU when it identified the commercialization and trade of higher education as a critical issue that needs to be urgently addressed by African HEIs (Sawyerr 2002).

There is still some uncertainty surrounding a precise description as to what 'internationalization of higher education across borders' refers. Knight (2004) offers some clarity when she outlines 'three common terms used by the education sector to describe the international nature of education are internationalization, cross-border education and more recently trade in education. There is a hierarchy to these terms, with "internationaliza-

tion of education" being the most comprehensive, "cross-border education" being one component of internationalization and then "trade in education" being used to characterize some, but not all, cross-border activities'.

Knight (2004) also identifies a further lack of consistency in the discourse depending on who is involved in the discussions, poining out that when 'trade experts […] talk about internationalization of education they actually are referring to international trade in education services. When educators talk about internationalization they are talking about a broad range of activities some of which would have absolutely nothing to do with trade." A powerful player in these discussions is the World Trade Organization (WTO), which has included 'education services' under the General Agreement on Trade in Services (GATS)[29]. Their rationale for doing so relates to what they nobly describe as 'the crucial role of education in fostering economic growth, personal and social development, as well as reducing inequality […] Countries seek to ensure that their populations are well equipped to contribute to, and participate in, the process of social and economic development. Education enables them to face the challenges of technological change and global commercial integration. Through its capacity to provide skills and enable effective participation in the work force, education is crucial to economic adjustment' (WTO 1998).

This argument has some credibility given that by and large the public sector in SSA does not have the capacity to provide quality HE services and has failed meet the burgeoning demand. This, along

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28   For example, Association of African Universities (AAU), Association of Commonwealth Universities (ACU), University Twinning and Networking (UNITWIN), Global Higher Education for Sustainability Partnership (GHESP), International Network for Higher Education in Africa (INHEA), Conseil africain et malgache pour l'enseignement supérieur (Cames), Réseau africain de formation à distance (Resafad), Association of Universities and Colleges of Canada (AUCC); the American Council on Education (ACE); the Council for Higher Education Accreditation (CHEA); and the International Association of Universities (IAU), International Education Association of South Africa (IEASA).

29   The WTO's influence is derived from a widely held perception that being outside GATS may result in unequal access to international markets including, in this case, education service provision. This being the case, the pressure on countries accede to GATS is tremendous.

with the provisions made in GATS, has lead to the emergence of foreign private or for-profit HEIs entering the market. This may be an advantageous development as cross-border HE can supplement African HEIs and their limited capacity to provide HE. Furthermore a stable environment within which to provide services encourages foreign direct investment and its associated positive attributes including new skills and technologies that help bolster a country's wider economy.

Conversely, there is a risk that allowing foreign institutions to operate domestically may have the opposite effect in that they may eventually undermine or even supplant African HEIs and as a result further weaken their countries' ability to develop the capacity to compete in the global knowledge economy and cause them to become further excluded from the global network of higher learning (Castells 1996). Knight (2004) cautions that 'these same forces are eroding national cultural identities and instead of creating new forms of cultures through hybridization, cultures are being homogenized', which she points out, in most cases can be interpreted to mean 'Westernized'. It is therefore possible that in the future African HEIs will again face the challenge of cultural imperialism so abhorred by the likes of Ngugi wa Thiong'o (1987). Each of these risks affirms the need to establish a mechanism for the inclusion of non-national HE providers within a comprehensive quality assurance framework that will help regulate their activities.

The Role of Open Educational Resources (OER) in addressing the Key Challenges for Higher Education in Africa

The idea of Open Educational Resources (OER) was born of: a) the technological advances enabling the creation, organization, dissemination and utilization of educational resources; b) the notion that education is indeed a right; and c) a shift in the options available within intellectual copyright frameworks that enable and encourage others to benefit from knowledge resources at little or no cost. In short, OERs contribute to the learning process what educators across the globe value as a guiding principle: a willingness to share knowledge.

In the context of the limited resources available to HEIs in Africa, the OER movement has immense potential to increase access to quality, affordable education. However, issues remain which threaten to undermine the movement's expansion – not just in Africa but across the globe.

In his influential work, 'Pedagogy of the Oppressed', Paulo Freire (1970) outlined a flawed perception which can act as an obstacle when it comes to providing a meaningful educational environment – the perception is of education as a 'banking structure' where the teacher is the depositor of information and the student is the repository for it. An educational environment that lacks an interactive, or as Freire characterized it, 'problem-posing' atmosphere where the transmission of knowledge is multi-directional rather than uni-directional, cannot justifiably be considered education, rather, it is indoctrination. Instead of being emancipated, the learner is oppressed.

A similar view could be taken of nascent OER initiatives, where information (in the form of OER) has mistakenly assumed the role of educa-tor. Indeed, some have suggested the movement itself assumes a further connotation: that of the benevolent, developed country 'providers' of OER and passive, developing country 'users' of them.[30] Massachusetts Institute of Technology Linguistics Professor, Shigeru Miyagawa, has cautioned that by not addressing these concerns, we may see a global information society that resembles 'a map of the world in the 16th century composed of those that colonize and those that are colonized' (Miyagawa 2005).

OER as a Catalyst for Pedagogical Change

OER has the potential to catalyze a positive change in the way teaching and learning take place within the HE sector in SSA. However, one of the key issues yet to be fully addressed by the OER movement is how to draw out the potential of OER within campus-based HE programs as well as ODL programs and how HEIs can use it as a catalyst to revamp the entire curriculum development process regardless of the mode of delivery. In the developed world most 'approved' OER content currently emanates from universities and is designed for campus–based program use. While such content is published and distributed via the Web and could therefore be made widely available for use in ODL programs if it were to be 'pedagogically reworked', there is a pressing need in African HEIs to revamp campus-based programs as well. It has often been the case that those engaging in the design and delivery of quality ODL programs are at the forefront in terms of 'good practice' as ODL modes of delivery necessitate a holistic and

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30   Those involved in the OER movement are quick to point out that effective OER projects include not only the possibilities of locali-zation and 'remix' of the resources but also the creation of new resources and therefore the passive user model described here is considered far from ideal.

detailed consideration of the teaching and learning process that is, regrettably, often absent in campus-based programs.

Stacey (2007) supports the notion that OER may themselves be a catalyst for change by instigating a positively disruptive effect on current educational practice: 'OER are recognized as disruptive changes to traditional educational practice. Socio–cultural factors around faculty and institutional support and involvement in developing and using OER significantly influence the potential of OER … … Personal interaction with a teacher is seen to be part of the for–credit offering and learning experience which typically has a fee associated with it. To date OER support lifelong learners, but only in a non–interactive, non–credit fashion" (Stacey 2007).

Keats (2006) is wary that the educationalists involved in the OER movement may be locked into the consumer/producer model for developing and using educational content. He believes this model arose from a time when production and distribution were difficult and despite the fact they no longer are, the model persists mainly out of habit. He cautions that '[i]f we do not change this view, then we will be guilty of superimposing 20th Century […] pedagogical models onto 21st Century technologies and onto the digital native generation' (Keats 2006).

This is a key challenge for African HEIs. If academics in HEIs no longer have sole responsibility for the development of HE programs then who else will be involved? Heller (2006) suggests that the benefits to universities (and perhaps therefore their willingness) to make this transition from the formal development of purpose made educational content for ODL that they develop and therefore 'own', to using remixed, externally produced OER for formal courses may not be widely understood as yet. Universities, says Heller, like to have ownership so that they can charge fees and compete for students. He believes that much of the development of OER will eventually take place outside the formal university setting as a result of the move towards new forms of education, and that universities will have to 'catch up later'. (Heller 2006)

If one applies the nascent blogging and podcasting practices to the online learning environment (in the form of ePortfolios for example), this means that learning content may be created and distributed in a very different manner in the future. In some institutions, students are becoming more active participants in designing their own learning as members of a community of practice. In doing so, their expectation is that they will have free access to the wealth of knowledge resources available on the Internet and beyond. Keats (2006) has penned a fictionalized account of learning taking place through international, cross-cultural collaboration that is entirely driven by students. Although he terms this 'Education 3.0', Downes (2006) has noted that this is essentially the same pedagogical model earlier described as 'eLearning 2.0'. Notwithstanding issues with the label applied, the common point is that universities will need to involve themselves in making choices regarding how to shape how eLearning 2.0/Education 3.0 unfolds. The extent to which they recognize the changing level of involvement of their students and respond effectively to this will be a determinant of their impact on the future of knowledge and learning.

The OLCOS Roadmap for OER (2007) suggests that this level of involvement by students may also be a contributing factor in the sustainability of OER initiatives: 'OER projects are more likely to flourish if they support learners in doing something themselves, for example creating, managing and sharing some content within a community of practice. Sustainability of a community-based OER project will often be not so much a matter of financial resources as of removing barriers that hinder the community from growing and maintaining momentum' (OLCOS 2007).

If the OER movement is to have a significant and long lasting impact on the way teaching and learning takes place – to catalyze change leading to improved quality, increased access, reduced costs – then there are several questions that need to be considered: What are the motivating factor(s) for those generating knowledge, specifically OER? How are OER initiatives to become sustainable? How is the quality of the resources to be ensured? What are the format and interoperability issues that need to be considered? What mechanisms are required that will allow others to 'freely' access them in pursuit of their own learning? These questions are addressed in the following section.

Motivational Factors for Participating in the OER Movement

It is becoming increasingly evident that OER creators have limited opportunities to acquire financial remuneration directly from the knowledge and information they are producing. For the creators, the real value of OER currently lies in the associated social capital associated which increases to the extent to which they can be accessed and shared by others.

Currently the mechanism in use to accrue this social capital is to acknowledge the enterprise of the creators of these shared works in such a way – often through the careful selection of a Creative Commons license – that inspires confidence in those contributing their materials while (ideally) not limiting their remix potential. This is by no means straightforward as there is still some trepidation on the part of OER creators regarding the clearance for third party copyright that may form an integral part of their materials.

This being said, the main incentive for people to make OER material available to others may in fact be linked to their conviction to the notions of 'freedom', 'access' and 'openness' – with the individual recognition and increased reputation accruing to participants being an 'added bonus'. In this sense, there may be a more altruistic motivation at play here that harkens back to early history of the open movement that perceived the sharing of knowledge as a moral obligation that is strongly linked to the 'public good' (Stacey 2007). Given the role of the public good in African HE discussed earlier, one would hope that eventually individual educationalists and their institutions would come to the realization that a key benefit (and therefore motivation) of participating in the OER movement will be that knowledge sharing in this way contributes to the realization of the 'Pan African Project'. This may take some time as the 'work for pay' ethos still features prominently in institutions where pay-scales remain a contentious issue. Further, if managed well, participation in the OER movement can provide better learning experiences for their students; potentially increase access to learning opportunities and reduce costs.

Models of Sustainability for the OER Movement

The oft-cited notion of cost savings resulting from 'volunteerism' on the part of OER developers and the 're-mixing' of OER on the part of OER users requires further consideration. There are costs involved (either to the consumers of OER or, more likely, to the producers of OER) that necessitate the development of sustainability models if the movement is to survive and thrive. Downes (2006) cautions that models of sustainability should go beyond a narrow consideration of financial viability and include wider objectives and outcomes.

The OER movement is not governed by traditional market forces and, although the need exists, there are, as yet, no well articulated business models developed that contribute to its sustainability. Most OER initiatives are supported by private foundations with one in particular, the William and Flora Hewlett Foundation currently taking a lead. Some other initiatives, mostly in the developed world, are supported by funding from government and some by educational institutions. More often than not, if academic staff wish to participate they need to do so in their individual capacity which may place them at odds with institutional policy particularly as this relates to IPR policies and mechanisms currently in place for academic promotion. Further, this individualized approach may undermine one of the key benefits of participating in the OER movement – that of engagement in collaborative educational communities of practice. It is therefore important to find models (and not just financial models) that will sustain these activities – particularly within SSA where foundation, government and institutional support are less forthcoming.

As a part of the CERI project on Open Educational Resources (OER) an expert meeting was jointly organised by CERI and the Swedish Knowledge Foundation in Malmö, Sweden in February 2006. The notes from the session dealing with 'Models for Sustainable Open Educational Resources' reveal several possibilities:

- The Replacement model – where OER replaces other use and can benefit from the cost savings

which arise as a result of this replacement. A good example of this is the Open Textbook model. It was noted in the meeting though that this model has a natural limit since it can only generate the same amount of resources as it replaces.

- The Foundation, Donation or Endowment model – where the funding for OER operations are provided by an external actor such as foundations. This model was primarily seen as a start-up model that will most probably not be viable in the long term. If this model was transferred into a government support model it could be a long-term option in some countries (mainly in the global North) but not others (mainly in the global South).

- The Segmentation model – where the provider simultaneously provides OER resources (at no cost) as well as 'value-added' services to different segments of users and charges for these services. This might include sales of paper copies, training and user support, ask-an-expert services etc. This model, together with the conversion model, is among the most used in the education sector.

- The Conversion model – where 'you give something away for free' and then convert the consumer to a paying customer. Some OER proponents argue that this model is too far removed from the essential principles underlying the OER movement.

- The Voluntary support model – that is based on fund-raising campaigns. Another version of this model is the Membership model where a coalition of interested parties – organisations or individuals – is invited to contribute a certain sum as seed money or on an annual basis.

- The Contributor-Pay model – where the contributors pay the cost of maintaining their contribution – the rewards being peer recognition perhaps. A provider then makes these contributions available for free. This model is used to give open access to scientific publications (as in the PLoS model described earlier) and might work also for OER. (OECD 2006)

Downes (2006) suggests that what may arise is an eclectic mix of sustainability models that are applied according to their appropriateness in diverse contexts and depending on the outcomes each OER initiative seeks to achieve. According to Downes, '[i]n some cases, direct funding is provided by organizations who see OER as constituting part of their mission, while in others the free distribution of OER may promote or support different objectives, including commercial objectives. In some cases, the resources providers themselves believe that the OER are important enough to fund, either directly or through fundraising efforts, while in other cases the resource providers are able to obtain the support of third parties. In some cases, funding is applied directly to operating expenses, while in others funding offers seed capital or even a sustainable endowment. Each of these approaches reflects the interests of the funding party, the needs and the motivations of the resource producers, the nature and expense of the project, and the level of funding available' (Downes 2006).

For HEIs in Africa it is likely that a transition from the current, largely externally (donor) funded model for OER development will, over time, take place towards a more sustainable model in which the institutions themselves (or perhaps consortia of institutions) are able to fund their own OER development processes. This replacement model will only work if due recognition is given by the HEIs involved that there is a cost associated with the production of learning materials and that while engaging in OER development might distribute these costs more widely (via consortia), it will not diminish them. The adoption of this model requires careful consideration in an environment that already has severe constraints acting upon it in terms of the inadequate resources currently made available for curriculum and materials development processes.[31]

Quality Assurance of Open Educational Resources

With the advent of Web 2.0, the numbers of individuals who are empowered to develop digital content in its many and varied forms is expanding rapidly, along with the tools available to do so.

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31   While further investigation is required as to whether or not existing resource levels for program and materials development are indeed adequate, it is likely that HEIs in SSA may actually have to increase their resourcing to acceptable levels before proceeding with OER development.

As a result, it is becoming increasingly difficult to differentiate between what constitutes knowledge, information, entertainment and learning. The academic world no longer dominates the generation of new knowledge nor can it continue to determine how knowledge will be used to further the education of diverse communities of potential learners. The model of a single subject academic degree developed and offered by 'traditional' HE providers may no longer be able to meet the demand for HE provision in the 21st Century. This model may also becoming increasing irrelevant in the context of Web 2.0 with is inherent flexibility and the new learning opportunities that are becoming available.

This presents a range of significant challenges for the existing quality assurance (QA) systems devised by traditional universities. Diversity in the authorship of materials that the OER movement encourages results in less authority to govern the design of educational content. This, in turn, leads to less ability to apply institutional quality assurance mechanisms that are perceived to guarantee the currency and credibility of programs and impacts significantly on maintaining the relevance of the current criteria and frameworks used to ensure that standards for assessment of qualifications and awards. In most of SSA, due to the lack of the ICT infrastructure and expertise required to pursue OER development processes outside the HE sector, it is likely to be some time before the above issues become pertinent.

However, other changes in the provision HE in SSA will require adjustments to be made to QA systems that those engaged in the OER movement would do well to note. Daniel and Kanwar (2006) suggest that the current delivery model for HE will in the future be marked by three key changes:

1) private (profit making) institutions will increase their share of the HE market;

2) the use of ODL methodologies will increase; and

3) as a result of employing ODL methodologies a larger amount of HE provision will be transnational with some students staying in their own countries while others opt to study at an institution based in another country. (Daniel and Kanwar 2006)

If these changes are to be supported by the development and use of OERs, the quality of HE provision will be increasingly linked to the quality of the OERs developed. In the context of SSA, given the inability of campus–based programs to accommodate the number of students, participation in the OER movement is likely to be focussed in HEIs that want to increase access to their programs either through ODL or blended delivery of their programs. Some purely campus-based HEIs may opt to participate in OER development for use in their programs – but this is likely to be in the form of their participation in consortia in order to offset the production costs as well as any deficit in program development capacity they may have. Whatever the nature of their involvement, HEIs in SSA will need to consider carefully the QA mechanisms they put in place when developing programs that include OER.

Several authors (Atkins; Seely Brown & Hammond 2007; Keats 2003) have suggested that a part of the solution to QA issues in OER may lie in establishing effective peer review mechanisms. This would entail replacing traditional pre-publication review processes that are currently adopted by content developers with a post-publication review by an open community of third-party reviewers based on their experience in using the materials. In this way post-publication OER are credentialed through their use by a network of practitioners. Keats reminds his readers that the FLOSS movement had previously had great success in adopting a similar mechanism for quality assurance for the development of free/open source software (Keats 2003).

Others have advised caution in relying on a peer-review model in all contexts. Middlehurst (2001) suggests that *'[s]elf-evaluation as the central methodology in external quality assurance falls short in a context where several partners are involved, transcending national borders, evaluation cultures and QA policies. Alternative methods that focus on agreements, contracts and outcomes may be more appropriate'* (Middlehurst 2001). This advice may be particularly applicable in the Sub-Saharan African context where ICT-supported peer review

mechanisms may not be easily implemented and where there is a high likelihood of multiple HEIs being involved in the authoring process.

An additional QA consideration stems from the likelihood that as more OER-infused programs become available the materials produced for these will be used by other institutions.[32] Historically, the early developers of OER (*viz.* those involved in MIT's OCW initiative) established QA mechanisms that were linked to already existing institutional QA frameworks and were as a result considered to be effective (MIT-OCW 2004). However, it is possible to envisage a scenario in SSA in which the re-use/remixing of OER content does not result in the development of programs that retain this prominent institutional warranty nor that make use of the original institutional QA mechanisms when being delivered. The point here is that OER-infused programs could conceivably influence the overall quality (for better or worse) of HE service provision in SSA over time.

The Need for an OER Policy Framework for SSA

In SSA the wide-spread adoption of ICT-supported teaching and learning has not yet materialized and so has not resulted in the types of reforms in educational practices that would result in educational institutions supporting the knowledge society. Similarly, the widely held expectation that the use of ICTs in HE would result much improved student-centred and collaborative pedagogies has also not been widely realized globally. Without a clearly articulated policy that informs the above, the likely result is that such reforms will continue not to gain traction. As the OLCOS Road map (OLCOS 2007) suggests: '[p]olicies emphasise educational innovation and organisational change in educational institutions'. Without effective policy to guide actions – these actions rarely take place effectively. Furthermore, without clear policy, the task of introducing new elements into a system (such as OER) is likely to be thwarted.

A discussion forum moderated by the OECD (OECD OER Policy Forum 2006) enabled OER practitioners from around world (from both developed and developing countries) to put forward their ideas regarding what should be considered in formulating OER policy within HEIs. Below is a summary of their inputs:

- There needs to be a real commitment to OER at the institutional management/ decision-making level.

- Policy development should involve stakeholders to ensure that 'bottom up' activities and initiatives are taken into account. Institutional OER policy should aim to reach traditionally neglected target groups.

- Policies should have a regular review and updating process to ensure they stay current.

- OER policies should form part of an overarching strategy to improve teaching and learning that emphasizes the scholarship of instruction.

- Academics need policy support in OER production in technical, editorial and information/ knowledge management areas.

- Incentives, supported by policy, are needed to encourage academics to produce OER, for example, through reducing other work tasks if an academic is spending time on OER production. or by treating OER production as valid for recognition in promotion

- Institutions need to establish policies to reward academic publication in OER formats, for example:

  - establishing rigorous academic open access publications, then realigning career advancement criteria to reward academics that choose to publish their materials in them;

  - establishing ePortfolios to record and assess staff career development, then encouraging academics to make parts of their teaching portfolios available as OER.

  - Policies should encourage working in partnership since an open approach lowers technical barriers and encourages true collaboration; it can be particularly useful for the developing world.

The forum also indicated that policies should also promote OER use since encouraging the use of OER made it more likely that stakeholders will also

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32   Among these are likely to be private institutions. The implications of state funded HEIs providing OER-infused programs that are used by their 'for-profit competitors' is something the OER movement in SSA will need to monitor in the future.

Table 4: OER Policy Issues by Level (Dantoni: 2006)

Level Issues	Institutional	Local	Provincial/ State	National	International
Promotion/awareness	Target traditionally neglected groups Offer training for academics Open OER collections to the general public	Offer training for academics Exchange knowledge and approaches between local institutions	Encourage/oblige publicly funded institutions to produce some teaching content as OER	Encourage/oblige publicly funded institutions to produce some teaching content as OER Include sessions on OER in statutory training for educators Promote rigorous academic Open Access journals	Promote OER to policy makers and academics via studies and research
Faculty support/ recognition	Credit academics for OER production Encourage use of teaching profiles in OER format	Organise local competitions to reward excellent OER	Encourage use of teaching profiles in OER format Organise regional competitions to reward excellent OER	Encourage use of teaching profiles in OER format Organise national competitions to reward excellent OER	Promote support for academics in OER production to national Ministries of Education
Localization/adaptation/ translation	Offer training for academics	Offer training for academics	Stimulate and facilitate exchange and adaptation of OER between institutions	Stimulate and facilitate exchange and adaptation of OER between institutions	Offer funding for localizations etc. particularly to developing countries Stimulate OER exchange between countries
Intellectual property	Create or revise institutional policy on IPR and open standards	Set up suitable IPR regime Coordinate work on standards and interoperability	Create or revise and disseminate IPR policy and guidelines Coordinate work on open standards	Create or revise and disseminate national IPR policy and guidelines	Promote international debate on IPR and open standards Facilitate international agreements on IPR and open standards.
Quality assurance	Devise quality criteria for academics Validate OER produced according to criteria Encourage submission of work to academic OER journals	Promote quality criteria among academics Offer guidance to institutions on devising quality criteria	Encourage uptake of a national quality standard for OER Offer guidance to institutions on devising quality criteria	Stimulate research on quality in OER Develop national quality standards for OER Promote rigorous academic Open Access journals	Stimulate research in quality in OER Determine commonalities between national quality approaches to enable exchange of equivalent quality materials

Level Issues	Institutional	Local	Provincial/State	National	International
Technology/infrastructure	Ensure easy access particularly for underserved groups Offer technical support to academics		Coordinate access opportunities	Provide local access opportunities Develop national technical infrastructure	Encourage international agreement on standards and interoperability Lobby governments to invest in technical infrastructure
Standards	Devise clear and simple guidelines for OER production	Devise clear and simple guidelines for OER production Sponsor institutional work on standards	Monitor regional/state institutions for compliance with national standards	Set national standards for OER	Set international standards for OER
Financial support/sustainability	Research OER production and business models	Research OER production and business models Public Private Partnerships (PPPs)	Research OER production and business models PPPs	Fund training for academics and policy makers Include provision for OER in R&D budget Use and encourage PPPs	Fund training for academics and policy makers Include provision for OER in R&D budget Use and encourage PPPs

act as a producer/refiner of those resources. Finally, the group indicated that policies are needed to facilitate change in teaching and learning paradigms since OER offer flexibility in access and an 'on-demand' approach to learning materials. (OECD OER Policy Forum 2006)

Joyce (2006) cites Dantoni's draft matrix for the policy related issues surrounding OER that emanated from the forum. Although very much a work in progress, it provides a valuable overview of the thinking that is currently taking place on OER Policy at a variety of levels.

The above offers those involved in the OER movement in SSA a framework from which institutional OER policy might be derived. It also pre-empts several potential blockages that might be encountered by individuals or institutions endeavouring to participate effectively in the OER movement and as such could provide a meaningful starting point for the policy drafting process aimed at addressing these.

Localization and Adaptation of Open Educational Resources in Africa

The notions upon which the OER movement is premised hold particular value in the context of SSA if they are applied appropriately. Butcher (2002) has indicated that one of the major monetary costs to African educational systems is that of acquiring pedagogically sound learning materials for learners. Currently these materials are scarce in most SSAn educational institutions at all levels – from primary schools through to universities. With access to ICTs on the increase in Africa, their potential application in increasing access to quality, affordable and cost-effective education is much discussed among educationalists and policy makers alike.

But these positive changes are not self generating – there is a need to upgrade and re-skill teachers' pedagogical approaches and instructional design capacity, and to encourage the adoption

of outcomes-based learning. While some progress towards realizing the above is being made in selected countries of SSA, resourcing these changes places additional strain on the already overtaxed education systems of most SSAn countries. It is clear that the potential of collaborative efforts among African HEIs seeking to reform their education systems can draw much from the OER movement. However, the context within which the OER movement will operate is substantially different to that of its developed world counterpart.

Currently, most OER projects are undertaken in the developed world. Even those intended to benefit Africa. This often results in the materials being developed by educationalists who do not have insight into the context and challenges of educational delivery in Africa. In addition, it perpetuates the perception of Africans as consumers of products created in the developed world rather than creators and innovators within their own right. This phenomenon is reinforced by donor funding of OER-related projects that primarily emanate from institutions (mainly universities) in the North. When African partners are included, the relationship established is often unequal and questionable in terms of the real value it adds it to African institutions.

This is not to say that African education institutions could not make use of OER emanating from the developed world and adapt it for appropriate use locally. However, investing in OER creation, organization, dissemination and utilization methodologies that are 'home-grown' should be seen as an opportunity to enhance African practitioners' capacity to produce high quality programs and materials. In doing so they will also gain the understanding necessary to ensure that the underlying and potentially transformational effects of producing and using quality OER materials can be realized. A key benefit of African OER projects then is not just the materials produced, but also the opportunities for real knowledge creation and sharing that accrue from the process of developing and using them effectively.

Unlike many OER projects in the developed world that emanate from highly motivated individuals, to

be sustainable and widely adopted, OER development in Africa needs to be closely aligned to institutional strategic planning and accreditation processes from the outset. Individual academics are less likely to have the same opportunities to 'go it alone' than their developed world counterparts. Furthermore, a major problem with initial efforts to adapt OER from outside Africa is that education institutions that will seek to make use of them are, by and large, anonymous to the developers. Developers from outside the SSA region are mostly unfamiliar with the context within which their African counterparts work and the common assumption that OER can be 'freely' and easily remixed into African curricula is false with much of the material being of poor quality (particularly in terms of its instructional design) or inappropriate to African conditions.

The skills and support systems[33] required by African academics to re-author this material are also lacking for the most part. Therefore, localized capacity development that include meaningful collaborations with both African and non-Africa partners within communities of practice are critical for African institutions that are committed to using OER in their programs. A further consideration has to do with the fact that the vast majority of resources are currently developed in English, which may service parts of the African HE system but results in few OER being available for Franchophone, Lusophone and Arabic speaking countries in Africa.

In a resource-strapped environment such as the one in which African HEIs operate, the decision to invest in OER development needs to be well considered. Experience from the AVU (Bateman 2006) suggests that financial and human resource investments in OER initiatives intended to support academic program development will need to be considerable and sufficiently well planned to ensure high quality programs. This will be particularly challenging for an individual university and may well require a collaborative development model (perhaps, as earlier stated, via university consortia) to be adopted. Given the potentially large investments required by members of African university consortia, a key challenge with OER will be to ensure that participants work together to ensure that

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33   These support systems include adequate ICT infrastructure, adequate time allowance and/or payment for additional work, adequate training, adequate institutional mechanisms to incorporate OER derived programs into the system and so on.

the resulting educational resources are educationally effective and that they adhere to high quality assurance standards that are commonly agreed across these consortia.

The role of research within the OER movement in SSA

Without doubt, in these early days of the OER movement within SSA there is dearth of research available regarding of how best to incorporate OER into HE systems. As with any innovation there is a need to undertake both basic and applied research in order to establish a solid foundation from which to implement OER-related projects.

In an online discussion conducted in March 2006 by IIEP, participants were asked to brainstorm a research agenda for open educational resources. The OER research topics reflected the key concerns raised by a community of some 500 people from across the world. Over 100 research questions were elicited from the participants, which when categorized suggested that OER research topics should include collaborative authoring, dissemination, quality assurance, access (in the broad sense covering cost, re-usability, licensing, discovery, connectivity, equality, socio-cultural factors, etc.), current levels of use, learning from the free/libre and open source software movement, the role of technology, and an exploration and reporting of what can be learned from existing OER initiatives.

In addition to participating in the above 'global research agenda' for OER, there is a need for further research into OER that, ideally, emanates from African institutions themselves. Currently, there

is practically no formal research available that analytically describes and evaluates good practice for OER practitioners in SSA. For some institutions this likely to affect their willingness to participate in the OER movement – particularly if this requires them to invest scarce resources. In line with the research topics suggested by the IIEP forum above, the areas HEIs in SSA would do well to specifically target include OER sensitization, OER sustainability, OER development processes and their incorporation into education systems, OER and pedagogy (including the impact of Web 2.0 tools and collaborative learning environments), OER and technology, OER and access (including its role in ODL program development), and the impact of OER on education reform in SSA and how this leads to the realization of national development goals.

Academics within HEIs in SSA may need persuading that this relatively new phenomenon of OER is a worthy investment of their limited time and research budgets. In keeping with the collaborative emphasis extolled by the OER movement, the research process would ideally be supported by the formation of online communities of practice that enable researchers to engage each other in discussions leading to formal and informal research outputs. In doing so, these academics begin to participate in a meta-cognitive discourse aimed at empowering Africans to engage in knowledge creation for Africa. In a small way, this discourse begins to refocus African scholar's attention onto the wider issues surrounding the reclamation of the African academy and thereby contributes to the development of an African philosophy of education.

Conclusion

This paper addresses the key challenges faced by many HEIs in SSA. These include historical issues, social issues, economic issues, educational issues, capacity issues and philosophical issues. Many of these issues are interconnected. Some are also cross-sectoral in that they originate or move beyond the educational context in which HEIs operate and as such HEIs may not always be able exert sufficiently wide influence to overcome them.

Nonetheless, the OER movement offers a substantial opportunity as a catalyst for reform within the HE sector. A central tenant of the movement on which Africa could capitalize is the power that comes from sharing knowledge in all its forms and at all levels. Substantial advances can be made by policy-makers, academics, administrators and students who freely and openly share their experiences, their challenges and their innovative solutions in collaborative communities of practice. While there are technical and infrastructural challenges associated with meaningful participation in the movement in SSA, it is still possible to envisage such communities collaborating around the devel-

opment of quality educational content, the development of supportive policy frameworks and their experiences of implementing them, collaborating around the changing education methodologies and how best to support these, and collaborating around learning itself whether this be researchers collaborating on exploring uniquely African solutions to the challenges faced or students working together to enhance their learning experiences.

For OER Africa, providing HEIs in SSA with an environment in which to collaborate along with the tools they require to do so is a valuable contribution to the knowledge-sharing endeavor. With careful targeting of the initial communities of practice around those best able to participate along the lines suggested in this paper, OER Africa could facilitate the ongoing expansion of indigenous knowledge creation, organization, dissemination and use across the entire HE sector in SSA.

Appendix 1: Financing Higher Education – Forms of Cost Sharing

Table 1: Forms and Stages of Cost-Sharing(in Approximate Order of Increasing Political Resistance to Implementation)

Type of Cost-sharing	African Country Example[s]	Other Country Example[s]	Potential Revenue Impact	Potential Political Acceptability
1. Small earmarked fees (e.g. registration, examination, or "caution" – but not yet tuition)	Most African countries	India, Egypt	Generally small	Quite acceptable
2. Freezing (lessening the "real" value) of student grants	Most African countries	U.S. (Pell grants), Russia, other post-Communist countries	Generally small but continuous	Relatively acceptable
3. Reducing or eliminating some student support grants)	Most African countries	U.K. eliminated mandatory grants)	Small to large	Unpopular (protest in Ghana, 1991; also in Kenya and Tanzania).
4. Encouraging and even providing revenue to support the tuition-dependent private sector	Kenya, Tanzania, Uganda, Ghana, and other countries	Pervasive (especially the Phillipines, Japan, Korea, Brazil, Russia, etc.)	Significant over time but requires tuition fees	Quite acceptable
5. Introducing fees for lodging and food	Most African countries	Most OECD countries, China, Vietnam, Mongolia	Can be large	Unpopular, but can be done gradually and has precedent
6. Introducing tuition only for students not given a free slots (dual or parallel track)	Uganda, Kenya, Ethiopia, Tanzania	Russia and other countries of the former Soviet Union and most countries of post-Communist cultural and Eastern Europe.	Can be large	Acceptable: provides opportunities to students who had none.
7. Introducing tuition only for certain public institutions or programs	Nigeria (tuition for state, but not federal institutions)	Mexico (state and federal universities other than National Autonomous University of Mexico).	Medium to large	Relatively acceptable
8. Introducing tuition mainly in the form of deferred contributions	Reportedly under consideration in Ethiopia	Australia, New Zealand, Scotland, Wales, proposed for U.K.	Government-held loan notes essentially insalable in priate capital market; all revenue impact in future.	Relatively acceptable
9. Introducing up-front tuition fees at all public institutions	South Africa, Mozambique	Britain, Netherlands, Austria, China, Mongolia, Vietnam	Large	Unpopular
10. Enhancing recovery on student loans	South Africa (successful); Kenya and Ghana (attempting)	U.S.	Potentially significant, but extremely difficult to effect.	Relatively acceptable
11. Large increases (beyond the rate of unit cost increases) in tuition: increase in % of costs recovered.		U.S.	In response to state cuts, so no net revenue impact.	Angers politicians and press; moderately unpopular with public

Table 2: Cost-Sharing in Sub-Saharan Africa, Selected Countries

	Cost-Sharing Policies	Student Loan Policies/Programs
East Africa		
Ethiopia	Cost-sharing open policy goal, but only pocket money eliminated to date. Dual-track tuition: tuition, lodging and food covered for regular (not evening or summer) students.	Goverment considering (2003) a loan program modeled after the Australian HESC in spite of likely problems with multiple and unreported sources of income and minimization of parental contributions.
Kenya	Tuition and user fees fior lodging and food introduced in 1992, but tuition fee rolled back due to student opposition. Dual-track or parallel module II tuition began 1998, University of Nairobi.	Comprehensive loan program intoduced in 1970s but failed with virtually no cost recovery. Program reinitiated in 1995 as Higher Education Loans Board, with mandate for "near self sufficiency".
Tanzania	Cost-sharing officially begun 1992, but at slow pace. Maintenance grants and lodging/food subsidies reduced in mid-1990s. Only dual-track tuition, but comprehensive tuition intended in future.	A "loan" scheme implemented in 1993–1994 as part of Phase II of cost-sharing to cover part of lodging and food costs. As of 2003, no interest rate stipulated, no collection machinery, and no recovery.
Uganda	Makerere University famous for aggressive and financially successful dual track tuition, with more than 75% of students paying fees.university reaps considerable financial benefits.	Under discussion: no operational student loan program as of 2003.
Southern Africa		
Botswana	Limited cost-sharing measures reportedly introduced in 2002–2003 with efforts to improve collection of loans.	Under discussion: no operational student loan program as of 2003.
Mozambique	Tuition ranges from $70-80 to %500+. Cost-sharing appears to have been reluctantly accepted.	Under discussion: no operational student loan program as of 2003.
South Africa	Tradition of tuition fees and cost-sharing generally, although still resisted. Complicated by issues of redress and planned institutional closures. Tuition in range of $1,000 - $3,500.	Successful means-tested income contingent loan program collected by employers. Reaches about 20% of student population. Interest is 2% real;repayment is 3–8% of income over threshold.
West Africa		
Ghana	Cost-sharing limited to small fees and user fees for lodging and food; no tuition fees.	After collapse of 1970s plans, a new scheme in 1988 was linked to social security national insurance trust, contributions to which guaranteed repayments. High subsidies and collection diffiulties persisted.
Nigeria	Government expects 10% of costs to be from nongovernment revenues, but cost-sharing is controversial, with nominal fees for lodging and food, and tuition at state, but not federal, universities.	As in Ghana, the 1972 Nigerian Student Loan Board failed to collect and was suspended in 1992. A new Education Bank is constructing measures to increase collections and interest rates.
Francophone		
Burkina Faso	In spite of francophone no-fee tradition, Burkina Faso began to cut grants and charge modest tuition in 1990s. An increase from ca. $12 to $24 in fall 2003 brought fierce student opposition.	Comprehensive program of small, means-tested loans, "prets FONER", begun 1994. The second and third cycle students receive subsidized and income-contingent loans at 1/6 of salary; little or no recovery to date

Source: The University at Buffalo Center for Comparative Studies in Education International Higher Education Finance and Accessibility Project. Webpage: http://www.gse.buffalo.edu/org/IntHigherEdFinance.

Appendix 2: Cost Sharing – Considerations for Policy Makers (Johnstone 2003)

1. "SSAn universities and other tertiary level institutions need to supplement their limited governmental, or taxpayer, revenues with revenues from parents and students."

2. "These revenues should take the form both of user charges for governmentally- or institutionally provided lodging and food, and of tuition fees to cover a portion (say, one-quarter) of institutional costs of instruction."

3. "Given the inevitable political resistance to cost-sharing, a multi-year progression of stages should be presented, with further shifts of costs on to parents and students clearly supplemental to governmental funding, and tied as much as possible to: (a) improvements in the quality of higher education, (b) expansion of opportunities and enrollments, and (3) extension of participation and accessibility to hitherto under-served populations."

4. "Universities must actively and transparently continue seek efficiencies (even at some disaccommodation and pain) that minimize the per-student costs of instruction without jeopardizing quality."

5. "The imposition of a tuition fee should be accompanied by a program of means-tested grants, drawing on clearly identifiable and verifiable characteristics (i.e. proxies for income) such as parental occupation and educational levels, prior schooling, and type of housing."

6. "A single-track, up-front tuition fee (albeit one that can vary by institution and/or by program) is preferable to a dual track system that rations a small number of tuition-free places according to measured academic preparedness – and thus inevitably rations according to the social class of the aspiring students."

7. "Politically-acceptable language and euphemisms for tuition fees such as 'contributions' may be necessary, but should not have the effect of substituting a larger (albeit deferred) contribution from students for an up-front contribution (a tuition fee) expected from parents (to the limit of their financial abilities to pay). Similarly, an expected student contribution via a student loan program (income contingent or otherwise) is probably a good step, and it may be a way to accommodate an up-front tuition for some students. But it should not be adopted as a wholesale substitute for an upfront tuition to be collected wherever possible from parents or extended families."

8. "The setting of tuition fees should be as de-politicized as possible. Countries should consider an independent (albeit politically accountable) board, buffered from both the government and the universities and other tertiary institutions, to establish the base year tuition fee[s] and also to establish annual increases thereof."

9. "A student loan program should be designed to collect (according to the present value of the reasonably-expected repayments discounted at the government's borrowing rate) something close to the amounts lent – less losses from defaults and other purposefully designed subsidies or repayment forgiveness features."

10. "Student loan programs must be equipped with legal authority to collect, technology to maintain accurate records, collectors who can track borrowers and verify financial conditions, advisors and repayment counselors in the universities, and the ability to enlist both the government's tax-collecting authority and employers in the collection of repayments."

11. "An income contingent repayment mode should not be employed unless incomes can be reasonable verified. If income contingency is politically necessary, it should not be the 'default' repayment obligation, but rather an optional means of payment that requires the borrower to demonstrate that he/she can discharge the repayments by paying a percentage of earnings from a single employer that represents the a dominant earnings stream."

12. "Mechanisms need to be added to the repayment process, especially if the repayment mode is a conventional fixed-schedule mode, to accommodate borrowers whose earnings are low, either temporarily or permanently. In short, a conventional loan needs the same kind of genuine low earnings protection that is presumed to follow by definition from an income contingent form of repayment obligation."

13 "A loan program needs to have a collection agency that is viewed as professional, incorruptible and technically expert. Universities and other eligible tertiary level institutions must be enlisted as partners in the program, especially in impressing upon the student recipients that loans are legally enforceable obligations that must not be taken lightly or used in excess, and in keeping track of the borrower's whereabouts, at least during the in-school years."

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Appendix 3: NEPAD ICT Infrastructure Program

According to the NEPAD website, the key features of the NEPAD ICT Infrastructure Program are:

• The establishment of the submarine cable for Eastern Africa (EASSy), which completes the optic fibre ring around the African coastline in conjunction with other fibre submarine cable systems;

• Rationalization and development of the ICT Broadband Network for Eastern and Southern Africa. Connecting countries to their neighbours and ensuring that each land-locked country is connected to at least two cable landing stations.

• Rationalization and development of the ICT Broadband Network for Central, West and Northern Africa. Connecting countries to their neighbours and ensuring that each land-locked country is connected to at least two cable landing stations. (NEPAD 2007)

Until the formulation of the NEPAD program, the few African countries that were engaged in meaningful ICT Infrastructure programs were doing so in isolation with the result that there was little coordination between these projects. The prime objective of the NEPAD ICT Infrastructure Program is to form and integrated broadband fibre-optic network across the African continent by harmonizing ICT Infrastructure initiatives that would enable trade, social and cultural interchange – including, and important for OER initiatives, providing support to various National Educational Research Networks or NRENs.

To this end, NEPAD in collaboration with the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC), the Inter-Governmental Authority on Development (IGAD) and the Southern African Development Community (SADC), as well as other stakeholders, have undertaken to integrate and rationalize their ICT Infrastructure plans.

This has resulted in NEPAD developing an ICT Broadband Infrastructure Network for Eastern and Southern Africa comprising of a submarine

segment, and a terrestrial segment, as illustrated in the figure below.

A similar process has been initiated for the Central, West and No he process involves the governments of the region, the Regional Economic Communities: the Arab Maghreb Union (UMA), the Community of Sahel Saharan States (CEN-SAD), Economic

Figure 1: ICT Broadband Infrastructure Network for Eastern and Southern Africa (NEPAD: 2003)

Figure 2: ICT Broadband Infrastructure Network for Central, West and North Africa (NEPAD: 2003)
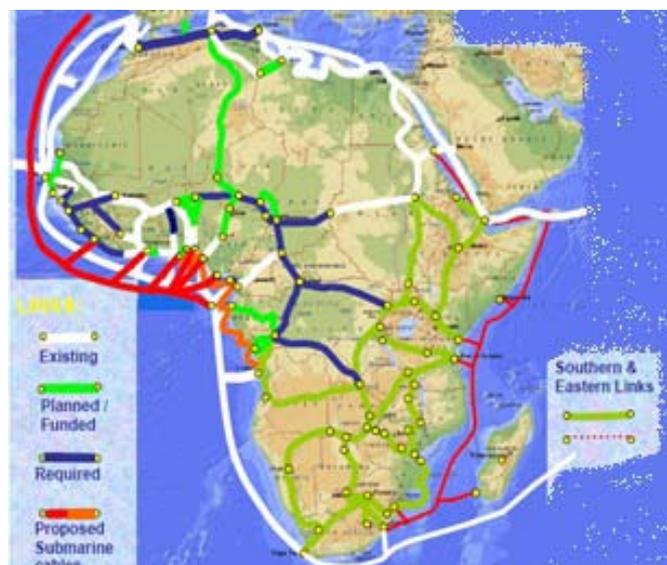
Community of Central African States (ECCAS) and the Economic Community of West African States (ECOWAS).

Consequently, a similar plan has been developed by NEPAD for an ICT Broadband Infrastructure Network for Central, West and North Africa. This is illustrated in the figure below.

In each of the sub-regions mentioned, NEPAD's ICT Infrastructure Programme is aimed at achieving:

- high speed, high bandwidth connectivity to Africa;
- high bandwidth products and services;
- high capacity optic connectivity within Africa and the rest of the world;
- reduced unit costs for regional and international connectivity with lower end-user charges;
- significantly reduced payments to foreign satellite telecommunications service providers;
- the socio-economic development of the region; and
- support for the growing telecommunication needs of high bandwidth users such as Internet Service Providers and mobile operators.

NEPAD also seeks to play a facilitating role with development partners such as the World Bank Group (WBG), Agence Française de Développement (AFD), Development Bank of Southern Africa (DBSA), Department for International Development (DFID), and the African Development Bank (AfDB) to ensure that each are kept aware of the progress towards and importance of the regional networks. Notably however, the NEPAD program does not explicitly refer to the increased ability for knowledge sharing that would be facilitated via the upgraded network. The eSchools initiative (a related initiative) does acknowledge content sharing as an outcome of increased connectivity.

Importantly, NEPAD's approach has been to seek a clear alignment between its ICT Infrastructure Program and national and regional Poverty Reduction Strategies. It intends to do this through promoting national ownership of the fibre optic cables. The Kigali Protocol, a policy and regulatory framework that articulates the details of Special Purpose Vehicles (SPVs) that will form a consortium that will own, operate and maintain the

NEPAD network, was developed and accepted by a number of governments in Eastern and Southern Africa. Governments of the region are also urged to amend, where necessary, their existing legal, policy and regulatory frameworks to be consistent with the Protocol.

The e-Africa Commission, under which the ICT Infrastructure Program falls, has developed a partnership program called the Information Society Partnership for Africa's Development (ISPAD). ISPAD conducts its work through creating and fostering partnerships between governments, business and civil society with the intention of bringing together the skills, resources, capabilities and other contributions of the various stakeholders.

The NEPAD e-Africa Commission also worked with government ICT experts, ICT policy advisors, executives of telecom companies, regulators, civil society, legal experts, and donor organizations to develop a policy and regulatory framework within which the ICT network would be developed. It was agreed that the integrated ICT Broadband backbone should be based on the principles of:

non-discriminatory open access;

- equitable joint ownership of the backbone infrastructure across the region;
- separation of ownership of the infrastructure from its use;
- use of special purpose vehicles (SPVs) to build, own and operate the Broadband ICT network; and that the
- Broadband ICT infrastructure should be viewed as a 'public good' and operated on a cost-recovery basis.

To date 12 countries have signed the protocol. However, some controversy surrounding the protocol indicates that NEPAD's efforts to implement multinational infrastructure projects are by no means straightforward. As earlier stated, the protocol commits the signatories to modify their regulatory frameworks in order to accommodate its provisions. According to the Government of Kenya, this is illegal as the protocol will potentially override national laws and overrule the current regulatory agreements in Eastern and Southern Africa. As a result, Kenya was among the 16 countries that failed to sign the Kigali Protocol resulting in delays in its implementation.

A further issue cited by those countries who have not signed the Kigali Protocol is that the principles of open and non-discriminatory access upon which the integrated ICT Broadband cable system was founded may not, in fact, be the case in reality. Some of the consortium operators seek to limit the use of the cable to members only (i.e. those that have signed the protocol agreement). This would also limit participation to Internet Service Providers (ISPs) with international gateway licenses. For Kenya and several other states that have liberalized their ICT sector in the last few years, and have therefore seen a fall in Internet and telephone charges, (Balancing Act 2005) it is unacceptable to return to an era of state control and monopolistic tendencies as is being suggested by some consortium members.

A contributing factor the lack of agreement surrounding the Protocol has been the perception that 'South Africa has been dominating the EASSy[34] cable project' (Ochieng 2006) through what is considered by some to be its overly influential involvement in NEPAD. Writing in the February 2006 issue of Openspace, a digest of the Open Society Initiative for Southern Africa (OSISA) and the University of Botswana, Console Tleane, head of the media and ICT program at South Africa's Freedom of Expression Institute-observed that 'For some, the relationship that South Africa has with other SADC member states, and the continent as a whole, is that of self-imposing sub-imperial power which will stop at nothing to exert its influence and extract as many benefits from every relationship that it develops' (Tleane 2006).

Although the Kenyan Government has not completely abandoned NEPAD's ICT Infrastructure Program EASSy cable project, in an effort to ensure it obtains the connectivity required it has also commenced work on the TEAMS (The East African Marine System) cable. This alternative cable will be owned by the Kenyan Government (up to 40%), while Etilsat of the United Arab Emirates will hold a 20% stake. Private investors – who to date have yet to be secured – will hold 40%. The cable will run from Fujairah in the UAE to Mombasa, Kenya. In a further development, in mid 2006, the Kenya Data Network (KDN) announced it had finalized a deal with India's Flag Telecom to construct yet another link a between Yemen and Mombasa at a cost of some US$115 million. The KDN cable may in the future be extended to a landing point in South Africa.

A fourth fibre optic cable project is the SEACOM marine cable system. This is a 13,000 km undersea fibre optic network that will provide connectivity between South Africa, Madagascar, Mozambique, Tanzania, Kenya, India and Europe. SEACOM is owned by the American Heracles Telecom. The SEACOM cable is planned to come online the first quarter of 2009. It is being designed with a nominal capacity of 1,280 Gb/s comprised of two fibre pairs expected to connect South Africa, Mozambique, Madagascar, Tanzania and Kenya to India and Europe with an option for a landing point in the UAE (Ochieng 2006).

The construction of the terrestrial (backhaul) fibre optic network required to link the above submarine cables to end-users on the continent – particularly those in landlocked countries – is an ongoing concern (Fibre for Africa 2007). In March 2007, the World Bank announced the Regional Communications Infrastructure Program (RCIP) for East and Southern Africa.

RCIP is funded by a grant of US$164.5 million in financing for Burundi, Kenya and Madagascar as the first tranche of a total grant of US$424 million. In an interview later in 2007 with the Collaboration on International ICT Policy for East and Southern Africa (CIPESA) RCIP Team Leader Laurent Besancon explained how the backhaul infrastructure is planned to mesh together with the planned sub-marine cable systems described above. He indicated that 'while a separate proposal by International Finance Corporation (IFC is the private sector arm of the World Bank Group) is focussed on the EASSy submarine cable, the World Bank-financed RCIP operation focuses on the terrestrial elements of the overall regional communications infrastructure and on activities generating demand for the infrastructure being put in place. As such RCIP and EASSy are complementary. It is important to note that RCIP will be equally complementary to EASSy, SEACOM, TEAMS

or FLAG Africa, should any of these East Africa submarine cables materialise' (Besancon 2007).

When quizzed as to whether or not the fibre built by RCIP financing would be subjected to Open Access principles Besancon responded that: '…one of the founding principles for World Bank financing under RCIP is indeed Open Access, broadly defined as an equal opportunity for operators to have unfettered access to given infrastructure or services under similar terms and conditions. It is expected that the principle of Open Access as well as cost-based pricing will be enshrined into the Public Private Partnerships arrangements…' (Besancon 2007).

While these development augur well for the development of a comprehensive and rigorous Internet backbone for East Africa the uptake of the Internet by universities in the region will remain hamstrung by: (i) the high cost of Internet access; (ii) the high cost of personal computers available in the region; and (iii) the low ICT literacy rates. HE initiatives will need to consider carefully how to effect a positive change while waiting for these circumstances to improve.

Appendix 4: Recommendations from Ubuntunet Alliance Regarding 'Optical Fibre for Education and Research Networks in Eastern and Southern Africa'

'The telecommunication policies and regulatory environments are reasonably open regarding private academic networks and international traffic in most countries involved in the study, with the most notable exception of South Africa. Most of the countries are in a transition from a parastatal monopoly to an open competitive market and support the idea of licensing private academic networks for universities. South Africa, however, is in a transition between a monopoly and a duopoly and there seems currently to be no opening for a private academic network license, let alone allowing trans-border traffic.

It turns out there is fibre available in Africa, and more fibre is being rolled out as we speak, in power grid extension programs, along pipelines and in other infrastructure projects. Although establishing NRENs connecting most of the major universities by 2008 will not be impossible due to lack of fibre, there are, however challenges involved in getting to it:

- The fibre is not everywhere and/or not always possible to use due to restrictions in telecom policy and regulations, such as in South Africa.
- Low volume/high pricing business models used by most incumbents often make terrestrial connections even more expensive than satellite links.
- Lack of business models for leasing dark fibre, which can be expected to become increasingly available from power utility companies.
- Major universities, their regional organisations, especially SARUA, and governments support the idea of National Research and Education Networks connecting all tertiary level universities and research institutes.

All the involved countries either already have an NREN organisation or are in the process of organiz-ing one and developing plans for establishing a network. The issue of regional interconnection, as in the proposed Ubuntunet Alliance, seems also to be non-controversial, at least in those countries where we have had the opportunity to discuss the matter at the government level.

The situation provides unique opportunities for universities, Ubuntunet Alliance and NRENs to con-tribute to a dynamic development of society, not only in the education area but in all sectors. Univer-sities offer a neutral and non-commercial meeting place where even competitors can participate in pre-competitive development. By inviting all stake-holders for time-limited development cooperation, say three years during the period 2006-2009, for a give and take learning period, the development could take of immediately.

Besides the universities themselves, the group of stakeholder could involve fibre owners, operators, content developers, users in all sectors of society, regulators and policy makers, as well as financial organisations and donors.

The Ubuntunet Alliance, empowered by the NRENs and backed by the universities and their regional organisations, is the only possible champion currently identified that could establish common interests in an EASSy consortium to balance the disparate commercial interests between different sized operators. This Ubuntunet Alliance influ-ence could also simplify relations with external stakeholders representing societal interests, such as regulators. The big advantage that NRENs have in this context is that they will not compete with commercial operators. Ubuntunet Alliance as a member of EASSy will facilitate this role of NRENs to the benefit of the greater structure and balanc-ing tensions between operators with different commercial interests.' (Pehrson & Ngwira 2006)

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