

## **The joy of sharing knowledge: But what if there is no knowledge to share? A critical reflection on human capacity building in Africa\***

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*This chapter focuses on the current trends and initiatives in human capacity building in Africa. It takes as its starting point that human capacity development is essential for Africa to become an information and knowledge society and therefore an equal partner in the global sharing of knowledge. Four knowledge areas are identified and discussed: education, research and development, brain drain, and information and documentation drain. The author concludes that there is a clear understanding in Africa that its future lies with education and that most African leaders have a strong political will to invest in human capacity building on the continent. It is also clear that much has been done, particularly with regard to primary education. Africa will most definitely benefit from this in the long run. Problem areas remain, however. These are the needed growth of research and development, and the way in which to address the brain and information drain phenomena.*

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## From Karlsruhe to Pretoria: The eye of the (knowledge) hippo

In October 2004, an international symposium on information ethics was held in Karlsruhe, Germany. It was organised by the International Centre for Information Ethics (ICIE) and sponsored by the Volkswagen Foundation in Germany. Leading international experts in the field of information ethics were invited to participate and it was a first of its kind in the world. The symposium focused on the new and challenging ethical question raised by modern information and communication technologies (ICTs) within the paradigm of globalisation and knowledge economies. The themes discussed included issues such as privacy, access to information, intellectual property rights, quality of information, security, spamming, advanced capitalism and the digital divide, which included the question of the information rich versus the information poor (ICIE, n.d.).

It became clear to all present that the African continent was not well represented at the symposium. There were only a few Africans in attendance, most of them expatriates. There were, of course, many reasons why the African scholars were not present. Some of the reasons relate to the mere fact that the scholars are unknown to other international scholars. Lack of funding to attend international events is also a stumbling block and last, but not least, not much research has been done on the African continent on this very important topic. It seems, in terms of scholarly publications, that African scholars did not have much to offer to their global counterparts on the ethical challenges facing Africa in the era of globalisation. Rafael Capurro did a search on publications related to African information ethics by African scholars and came across a limited number of publications (ANIE, n.d.).

There is therefore an urgent need to integrate leading African scholars into the international ethics debate on the impact of new ICTs in Africa. This led to the organisation of the first ever African Information Ethics conference, held in February 2007. The event took place in Pretoria, South Africa, and was attended by scholars from more than 21 countries, most of them from Africa. The theme of the conference was very appropriate: "The joy of sharing

knowledge". The lack of contribution by African scholars to the debate on information ethics presents, figuratively speaking, only the eye of the hippo, as it is symptomatic of a larger "knowledge problem" facing the African continent.

To a large degree, as will be argued in the rest of this chapter, Africa is knowledge poor, as most of its knowledge wealth is still imbedded in its people. It is not made explicit; neither is it shared with the rest of the world. The following two examples will illustrate this point. Only 1% of the global scholarly publications originate from Africa - most of these are from South Africa. Also, roughly 60% of all adults living in Africa are still illiterate. This makes Africa, in terms of its own development, vulnerable and dependent. According to the African Union (AU), Africa in many respects still lacks the intellectual capacity to address its own problems in a scientific manner (CfA, 2005).

Related to this question is the mere fact that if Africa does not invest more in education, and specifically in relevant research and development (R&D) activities, the continent will not only fall further behind economically, but also run the risk of being excluded from the global innovation networks. Nearly ten years ago, the Rector of the UN University, Hans van Ginkel, commented that if Africa does not invest heavily in its own knowledge sector, it will remain in a dangerously dependent position (UNU, 1998).

Human capacity building therefore needs to be a top priority of any agenda dealing with Africa's road to becoming an information and knowledge society. It is evident that most of the political leaders on the continent share this view. This explains why the AU explicitly stated that one of its highest priorities is to make Africa part of the global information and knowledge society (NEPAD, 2004).

The obvious reason is that knowledge forms the cornerstone of an information and knowledge society - not only the use thereof, but more so the ability to produce and export it. Knowledge is the main facilitator of growth and economic development that allows people on the African continent to reach their full potential and achieve their human wellbeing. Even though there is no lack of political will in Africa, the question still remains: How much does Africa invest in its

people, not only to ensure growth and prosperity, but also to enable them to become an equal partner in sharing the global body of knowledge?

### From primary education to research and development: The size of the (knowledge) hippo in Africa

The rest of the chapter will attempt to answer the question above. The argument is built around the different “knowledge initiatives” on the continent focused on addressing the challenges associated with human capacity building, namely:

- Education
- Research and development (R&D)
- Brain drain
- Information and document drain

#### Education

Sheer numbers and statistics make a compelling argument that some African countries are making good and steady progress in their primary and secondary educational sectors. Two relevant statistics in support of this argument are highlighted below.

Based on an analysis of OECD countries, more than 90% of primary school children are actually attending school in Africa (OECD, 2006). In comparison with most developed countries, a number of African countries, for example Kenya, Lesotho and South Africa, allocate more or less the same percentage of their gross domestic product (GDP) towards education (Table 1).

Some African countries, including Mozambique and Zambia, still fall far behind in terms of allocation of money to primary education. It is also important to bear in mind that although the percentage allocated to education might be equivalent to that of developed nations, the dollar amount is significantly lower.

These statistics are supported by a strong political will in Africa to invest in its people and in education. It is important to quote Thabo Mbeki, former president of South Africa, which is seen to be the most powerful nation in Africa:

*If the next century is going to be characterized as a truly African century, for social and economic progress of the African people, the century of durable*

Country	Population (mil.)	% GDP for education	Total GDP (\$ billion)
Australia	8	4.8	522
Botswana	1.6	2.1	18.72
Finland	5	6.3	161.9
Ivory Coast	17	4.6	13.7
Kenya	34	6.2	14.4
Korea	48	4.9	605.3
Lesotho	1.8	10	1.362
Mozambique	19.4	2.4	6.43
Namibia	2.03	7.9	15.14
Niger	14	2.3	3.43
South Africa	45	5.7	159.9
Tanzania	36.5	2.1	12.12
Ukraine	48.5	4.2	49.5
UK	60	4.8	1 795
United States	300	5.7	10 949
Zambia	11.2	1.9	5.351

**Table 1:** Comparative statistics on the allocation of GDP towards education (Source: National Geographic, n.d.)

*peace and sustained development in Africa, then the success of this project is dependent on the success of our education systems. For nowhere in the world has development been attained without universal and sound primary education, without an effective higher education and research sector, without equality of educational opportunity.*

This quotation (Butcher, 2003) was taken from Mr Mbeki’s opening address at the “Conference on education for African Renaissance in the twenty-first century”. Much of this sentiment is reflected in the priorities set by the New Partnership for Africa’s Development (NEPAD) in 2005. NEPAD is a vision and strategic framework for Africa’s renewal. The NEPAD strategic framework document was developed from a mandate the AU gave to the five initiating heads of state (Algeria, Egypt, Nigeria, Senegal and South Africa) to develop an integrated socioeconomic development framework for Africa (NEPAD, 2005a). Human development, in particular education, is one of NEPAD’s top ten priorities (NEPAD, 2004).

As part of its human capacity development strategy, NEPAD has also launched an e-school initiative focusing on teaching both school children and teachers ICT skills (CfA, 2005). Some African countries have also put their money where their mouth is and have made remarkable progress in primary education. For example:

- Mozambique succeeded in doubling the number of school enrolments over a period of five years (2000–2005).
- Zambia is currently revisiting its current policy of free education up to Grade 7, in order to introduce free education up to Grade 12.
- Kenya introduced free primary education, successfully bringing back 1.2 million children to school.
- Tanzania built more than 1 000 new schools over the past couple of years. In addition, 18 000 new teachers have been recruited (G8 Gleneagles, 2005).

Africa also faces some steep educational challenges. Many African countries simply lack the resources to address their educational needs adequately. According to the NEPAD Secretariat's weekly newsletter, more than 40 million children in Africa are not in school and have never been exposed to any formal education. There is an estimated shortage of 3 million teachers on the continent. Furthermore, Africa has the lowest average school completion rate – it is on average 60% or less. Africa also has the highest number of girls not attending school, namely 23 million (NEPAD, 2005b).

A further example illustrating the education crisis in Africa is the fact that in 2000, Nigeria – the most populous country in Africa and one of the richest in terms of natural resources – only had the capacity to accommodate 12% of qualified candidates for higher education (CfA, 2005; WEF, 2003). Another drawback is the low level of literacy (Britz et al., 2006). In 2005, the average illiteracy rate on the African continent was 35%. A sign of hope is the fact that the average illiteracy rate of people aged 15 to 24 years is substantially lower at 20% (OECD, 2006:581).

### **Research and development**

Although Africa is still facing some serious educational challenges, one can argue that substantial progress is being made, particularly with regard to primary education. Investing in

children's education ensures that the next generation will be able to effectively generate and utilise knowledge that will foster economic growth and development. This leads us to the next important question: Who are the people in Africa that are actively involved in research and knowledge generation? In other words, what is the current status of R&D in Africa; who are the knowledge creators on the continent; and to what extent is Africa able to address and solve its problems by way of locally created knowledge?

It is clear that most African countries value R&D and understand that it is crucial to any economic development. According to a recent study by the Commission for Africa, there are some excellent R&D facilities in Africa. Examples include the South African Council for Scientific and Industrial Research (CSIR), the African Economic Research Consortium (AERC), Biosciences Eastern and Central Africa (BECA), as well as the Community and Individual Development Association (CIDA) City Campus in South Africa (CFA, 2005). Under the leadership of NEPAD, the number of academies of sciences in sub-Saharan Africa have increased to ten (Schneegans & Amelan, 2006).

African political leaders are, however, weary of the fact that not nearly enough money is invested in R&D activities. For example, NEPAD organised a meeting of African Ministers of Science in 2004, where it was agreed that Africa should increase its spending on R&D to at least 1% of GDP in the next decade. Current spending is less than 0.1% (SDN, 2003). This will, at least in terms of percentages, compare more favourably with the European Union's 1.93% of GDP. Japan and the US invest more than 2% of their GDP on R&D. This call for African countries to increase their spending on R&D to at least 1% of GDP by 2010 was reiterated in 2007 at the meeting of the African Ministers of Science and Technology (IISD, 2007).

Alarming, however, is the fact that nearly 60% of all R&D activities in Africa are centred in South Africa. According to the Commission for Africa Report, in the greater Congo basin there is virtually "no science at all" (CfA, 2005).

African political leaders also realised that there is a lack of an indigenous base for science and technology, which hampers the development of Africa. This led to the establishment of the

African Ministerial Council on Science and Technology (AMCOST) in November 2003, under the auspices of NEPAD and the AU. AMCOST is a “high-level platform for developing policies and setting priorities on science, technology and innovation for African development” (IISD, 2007).

The main purpose of AMCOST is to provide political and policy leadership for the implementation of Africa’s Science and Technology Consolidated Plan of Action (CPA), which was decided upon in 2003. The CPA “articulates Africa’s common objectives and commitment to collective actions to develop and use science and technology for the socioeconomic transformation of the continent and its integration into the world economy” (IISD, 2007).

With this initiative, it seems as if Africa is now trying to find answers from within and not relying as much on answers and solutions from abroad to address its unique problems. Finding answers from within also implies that one needs to find the researchers from within. This leads us to the next knowledge challenge facing Africa: the brain drain.

### **The migration of the (knowledge) hippo from Africa: Brain drain**

The economic reality of the brain drain in Africa hits African governments very hard. Based on statistics, as well as initiatives to reverse the trend, it is clear that Africa’s political leaders understand the seriousness of this condition. The migration of well-educated people to the developed world is one of the major stumbling blocks for Africa to become an information and knowledge society. The alarming fact is that the monetary value of the exodus of people from Africa exceeds the value of all the development aid that African countries have received from the developed world (Britz & Lor, 2003).

The World Bank (2002) estimates that more than 70 000 highly qualified African scholars leave the continent on a yearly basis to work abroad, many never to return. It is estimated that Africa spends more than US\$4 billion annually to replace these lost skills. Some African countries have introduced radical measures to retain and/or benefit from Africans in the diaspora. A few of these initiatives are listed below.

- *Intellectual diaspora networks.* More than 40 countries in Africa are part of these networks (Meyer et al., 2001). Their main aim is to maximise the use of expatriates’ skills and knowledge in such a way that they can contribute to the particular country’s development. This initiative is based on the idea that a pool of knowledge must be potentially available without the expatriates having to return permanently to their home countries (Brown et al., 2001).
- *Transfer of Knowledge through Expatriate Networks (TOKTEN).* This programme was initiated by the UNDP. It is closely related to the abovementioned initiative and the main aim is to promote greater use of well-skilled expatriates to train Africans at home. The focus is, however, on short-term service in economic and social development (TOKTEN, 2006).
- *South African Network of Skills Abroad (SANSA).* In South Africa, a similar programme, known as the South African Network of Skills Abroad, has been initiated. The idea is to encourage expatriate South Africans to make their body of knowledge and skills available, so as to continue contributing to South Africa’s development without having to return to the country permanently (NRF, 2002). According to South Africa’s National Research Foundation (NRF), contributions can include activities such as the participation of South African scholars in training or research with South African counterparts abroad; the transmitting of knowledge, information and results of research that are not locally available, as well as the facilitation of business contacts abroad (SANSA, n.d.).
- *Renewing the African University project.* This is yet another initiative to change the threat of African brain drain into an opportunity. The Association of African Universities and the Association of Commonwealth Universities have played a leading role in initiating this project, whose main aim is to enhance higher education in Africa. Renewing the African University is a ten-year partnership programme, with an estimated cost of US\$500 million per annum. The G8 Commission on Africa Report strongly recommends that the international community should support this initiative (Renewing the African University, 2005; CfA, 2005:138).

These initiatives by Africans and others abroad not only to counter the brain drain, but also to change its threat into an opportunity, must certainly be applauded. Their success has, however, not yet been determined and very little data is available on the achievements (be it success or failure) of these projects. The Renewing the African University project is also ambitious and costly, and it is uncertain where the necessary funding will come from to ensure its success.

### **The starving of the (knowledge) hippo in Africa: Information and documentation drain**

A further contributing factor to Africa's inability to share in the joy of sharing knowledge relates to the international trade in information and documentation, referring specifically to the international flow of scientific and scholarly publications. It is a well-known fact that only a small proportion of the world's scholarly and scientific literature that is published in high-ranking journals and indexed in key research tools originates from developing nations. Africa, for example, is responsible for only 1% of the world's scholarly publications (Britz & Lor, 2003; Gibbs, 1995; De Koker, 1995).

Contributing to the lack of African publications are the obstacles that most of these scholars and scientists face when they wish to contribute to the international body of scientific and scholarly knowledge. Based on the findings of an article I published with Peter Lor in 2003, a number of these barriers are summarised below.

Scientific research that is done in African countries is sometimes viewed as of lesser quality or inferior. Apart from this prejudice, it is unfortunately true that some of the research undertaken by African scholars is indeed of poor quality. Factors contributing to this state of affairs include poor training or education, lack of equipment, and a poor command of English and/or French.

Much of the research that is done in Africa therefore ends up being published in the "grey literature". Due to poor bibliographic control, among other things, it can therefore remain inaccessible to the global scientific community. In addition, the number of academic journals in Africa is declining, and academic libraries

around the world are reluctant to subscribe to these journals because they are poorly managed (Rosenberg, 2002:51, 54, 55). Most of these journals are also not indexed in the major indexing databases. This has also led to the perception that these journals are not up to standard and that the content is of a lesser quality.

The fact that local journals from Africa are not always well managed, and in many cases not indexed in prestigious international indexing and abstracting databases, has inclined many African authors not to publish in their local journals (Britz & Lor, 2003:164). This trend poses a serious threat to the survival of African-based journals. Furthermore, many scholars and scientists from Africa choose to publish in high-ranking international journals, because it is more advantageous to their own professional development and careers (Fernandez, 1999:23; Cao & Suttmeier, 2001:968).

The inadequate flow of scientific literature from the developed world to Africa also makes it difficult for African researchers to gain access to the cutting edge of work in their respective fields. One of the main reasons for this inadequate flow is the high costs that are involved. High-quality scientific journals are expensive and most research libraries in Africa cannot afford to subscribe to them.

These factors have led to asymmetric power relationships. To access and use their own scholarly and scientific knowledge, many African scholars and researchers need to access the international indexing and abstracting services. These services are mostly located in developed countries, thereby making scholars in Africa dependent on those countries to access their own scientific knowledge.

Closely related to the above is what Peter Limb has labelled "document drain" (Limb, 2002:52). This refers to the initiatives by some major research libraries in the developed world (mostly the West) to purchase materials published in Africa and other parts of the developing world. These well-resourced libraries include the Library of Congress; the Melville J Herskovits Library of African Studies, Northwestern University, Evanston, Illinois; the Centre for African Studies Library at Leiden University, the Netherlands; and the School of Oriental and African Studies Library, University of London, England (Britz &

Lor, 2003). The implication of this trend is clear – scholars from Africa and other developing countries will find more comprehensive and better preserved collections of their own body of knowledge in these libraries than in their own.

Africans and also the larger international research community are aware of the scale of this problem and some initiatives have been taken to make scientific and scholarly research more accessible to African researchers. Two of these are a local African endeavour, as well as an international project to make healthcare information more accessible.

The local initiative referred to is African Journals OnLine (AJOL), launched in 1998 in an effort to make Africa's own body of scientific and scholarly knowledge more accessible to Africans and to the rest of the world. As a service, AJOL displays the tables of contents of African journals and provides an article delivery service to scholars. This is done free of charge for African scholars. The project is run on Open Source software and is managed from South Africa in partnership with the National Inquiry Service Centre (NISC). It currently covers over 220 titles. The NISC also launched the NiPAD database, which provides access to over 2 million African records in 40 databases, some with full-text links (NISC, 2006).

Health InterNetwork Access to Research Initiative (HINARI), an initiative of the World Health Organisation (WHO), is an international project aiming to make research on healthcare more accessible. Its main focus is the distribution of health information to developing countries, in particular Africa. As a service it provides free, or highly subsidised, access to major journals in biomedicine and related fields to selected non-profit organisations. These include universities, medical libraries, hospitals and government offices in developing countries that meet eligibility criteria based on per capita GDP (HINARI, 2005). African countries such as Ethiopia and Sudan are eligible for free access, but richer nations like South Africa pay a fee based on their GDP (Aronson, 2003).

Six major international journal publishers joined HINARI in 2001: Blackwell, Elsevier Science, John Wiley, Springer Verlag, Wolters Kluwer International Health Science, and Harcourt Worldwide STM Group. More publishers have

joined during the last few years and the number currently stands at 70. The total number of titles available exceeds 2 000 and includes some full-text articles.

## Conclusion

This chapter looked into the current status of the knowledge sector in Africa. It asked the question, "To what extent is Africa able to become an information and knowledge society, thereby being an equal partner in the sharing of global knowledge?" Four knowledge categories were discussed: education, research and development, brain drain, and information and documentation drain. We can arrive at the following broad conclusions:

- There is a clear understanding in Africa that its future lies with education.
- Most African leaders have a strong political will to invest in human capacity building on the continent.
- Much has been done in this regard, particularly with primary education, and Africans will most definitely benefit from the efforts in the long run.
- There seems to be few short or medium-term solutions that will successfully address the lack of local R&D activities in Africa.
- Brain drain is a reality. It must be accepted and the current initiatives to reach out to Africans in diaspora must be supported to ensure success.
- The information and document drain can be partially turned around if enough resources are made available and the distribution cost of information products and services can be substantially reduced.

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