

## The Role of Research and Post Graduate Studies in African Higher Education

### EXECUTIVE SUMMARY

- Despite a long history of higher learning in Africa dating back to 859 the deleterious approach that favored basic education to higher education (HE) as a better investment for Africa, has resulted in the current poor state of HE systems and outputs on the continent.
- The post-2015 development agenda takes shape in a context of an ever increasing demand for HE in Africa amidst declining public spending, low levels of economic growth and widespread poverty.
- An instrumentalist approach to HE is unlikely to meet the core goal of building and valuing new knowledge. A 'knowledge economy' approach which "locates economic growth in novel ideas leading to scientific, technical, organisational, environmental or

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health innovations” (ASSAf, 2010:36) and which is not dependent on natural resources is more likely to build longer term sustainable development in Africa.

- Amidst a plethora of challenges for HE in Africa the following four areas are identified for urgent attention:
  1. **Limited funding of HE.** Limited public spending on HE coupled with limited access to research grants, decaying infrastructure and the low remuneration of academic staff has contributed to the current crisis in HE.

2. **Poor research capacity across the system.** HE research capacity in the form of published peer reviewed articles, and Master’s and Doctoral output is disturbingly low. Post graduate enrolments in Sub Saharan Africa (SSA) have remained flat at 5% between 2008 and 2012. Africa’s universities produce less than 1% of global scholarly articles.
3. **The inadequacy of knowledge production in relation to country and regional needs.** Research output should be increased in the context of national and regional needs articulated through close collaboration between research institutions, government and other stakeholders, without compromising the autonomy of research institutions. A stable and democratic political environment is well positioned to build a research driven HE system.
4. **Crippling and excessive bureaucratization and poor administrative systems at universities and research institutions.** Strong internal support and administrative systems are vital for monitoring funding, encouraging new projects and establishing an environment that encourages research.

Given the challenges identified the following recommendations are offered.

- ▶ **Formalize an African Research Council (ARC) with regional chapters.** The goal of the ARC would include the consolidation of a pan-African research knowledge system and agenda. The ARC would embody a multiplicity of roles including close collaboration with regional centres and universities. The formation of the ARC would give impetus to the idea of building consortiums of research-strong universities.
- ▶ **Improve the availability of funding for post graduate study and research.** Innovative ways would need to be developed to tap into existing funding sources and to identify new funding sources. This could include working with the ARC to obtain maximum benefit from limited resources, using multisite and multimode research mechanisms that contribute to economies of scale, training



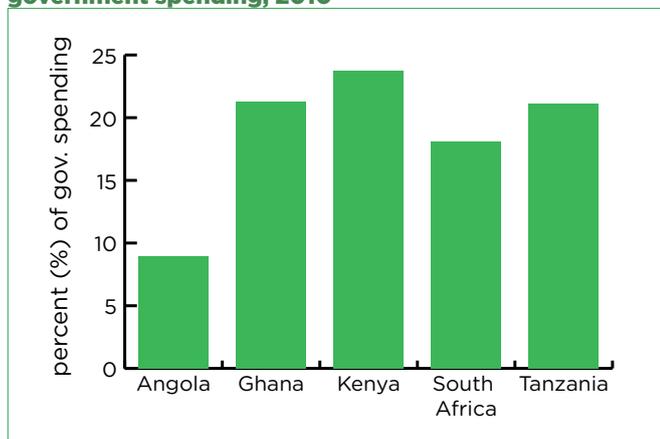
academics with the skill to make successful grant applications and working with governments to fund locally relevant research agendas.

- ▶ **Improve the supervision of post graduate study.** Training in good supervision practices together with the use of multiple models of supervision may be necessary to improve post graduate output.
- ▶ **Build incentives to develop and retain local talent and capacity.** There is an urgent need for Africa to build incentives and mechanisms that will retain local talent and entice those who have left. A stronger more supportive and responsive HE system will be well placed to do this.

### CONTEXTUAL AND CONCEPTUAL BACKGROUND

The earliest recorded institutions of higher learning in Africa were in Egypt and Morocco and the universities in Timbuktu established around 988. As in other parts of the world learning in Africa was closely linked to religion while simultaneously holding dear the pursuit of knowledge for its own sake (<http://collegestats.org/2009/12/top-10-oldest-universities-in-the-world-ancient-colleges/>). The advent of colonialism brought with it a utilitarian approach to learning where the core goal shifted to serving the colonial project and training civil servants. From the late 1950s African governments sought to strengthen HE institutions in their newly independent states. However, the most deleterious turn in the history of HE happened when Africa was overrun with the assumption that an investment in basic education would yield a higher rate of return than an investment in HE. What ensued was the diminishing of HE and in many instances, to the exodus of leading African scholars to western HE institutions. Although this tide has shifted, the far reaching debilitating consequences of the marginalization of HE remain.

**Figure 1. Education expenditure as % of total government spending, 2010**



Source: World Bank database, Education Statistics: Education Expenditure: updated 05/08/2014.

This policy brief is underpinned by the assumption that an instrumentalist approach to HE is unlikely to meet a core goal of HE: the building and valuing of new knowledge. It is also underpinned by the belief that the “strength of Africa’s universities and research institutions is a key condition for its development, and their weakness is an index of, as well as a contributor to, its poverty” (Sawyerr, 2004:215). There is little doubt that natural resources is no longer the key factor in economic growth.

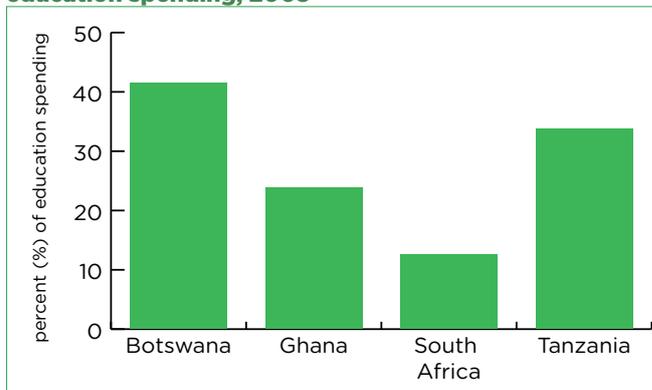
This policy brief therefore seeks to provide a framework for building HE research capacity, through theoretically sound research, and Masters and PhD graduation. Knowledge is produced through individual activity which involves original research, theory building and synthesis and where indigenous knowledge does not simply refer to the knowledge systems historically available to Africa but also to the generation of new knowledge emanating from local conditions, cultures, beliefs, research and theory.

### A STATISTICAL PROFILE OF HE ON THE CONTINENT

There is wide acknowledgement that reliable and accurate data with respect to the HE landscape in Africa is not easily available. Below is a quick scan of government spending on HE in five selected countries.<sup>1</sup> Although this is not meant to be representative, an effort was made to draw data from counties across regions. Figure 1 shows public education expenditure as a percentage of national expenditure in 2010. Although in some instances (Ghana, South Africa) the education budget is the largest slice of the national budget, in the five countries represented, the bulk of this is most likely to be spent on basic education [see Figure 2].

Figure 2 below shows that although a significant percentage of the education budget in Botswana, Ghana and Tanzania is allocated to HE, the returns on these investments remain low relative to South Africa although

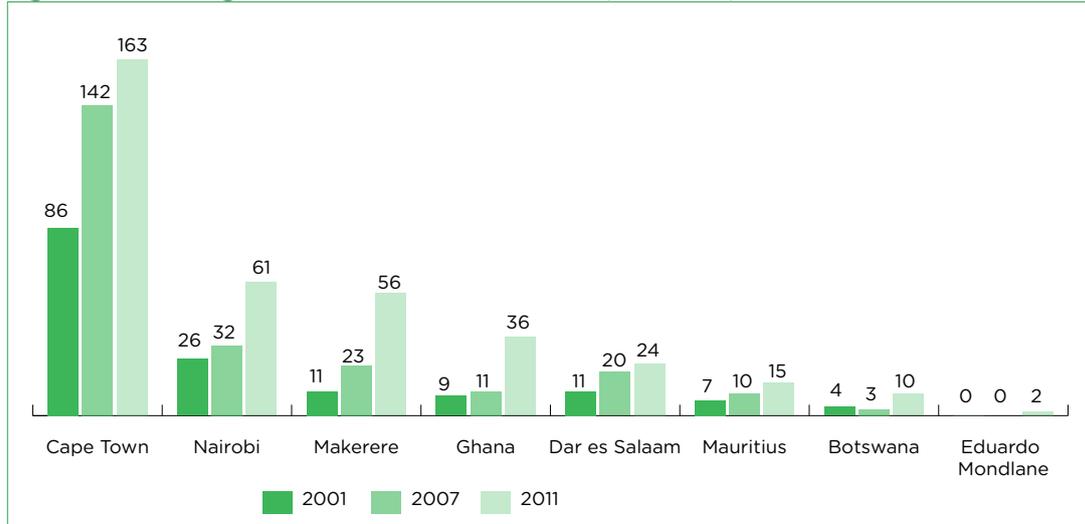
**Figure 2. Expenditure in tertiary education as % total education spending, 2009**



Education Expenditure: World Bank database, Education Statistics: updated 05/08/2014.

1 Selection made on the availability of data

**Figure 3. Doctoral graduates in Sub-Saharan Africa (2001-2011)**



Source: Cloete and Bunting, 2013:9

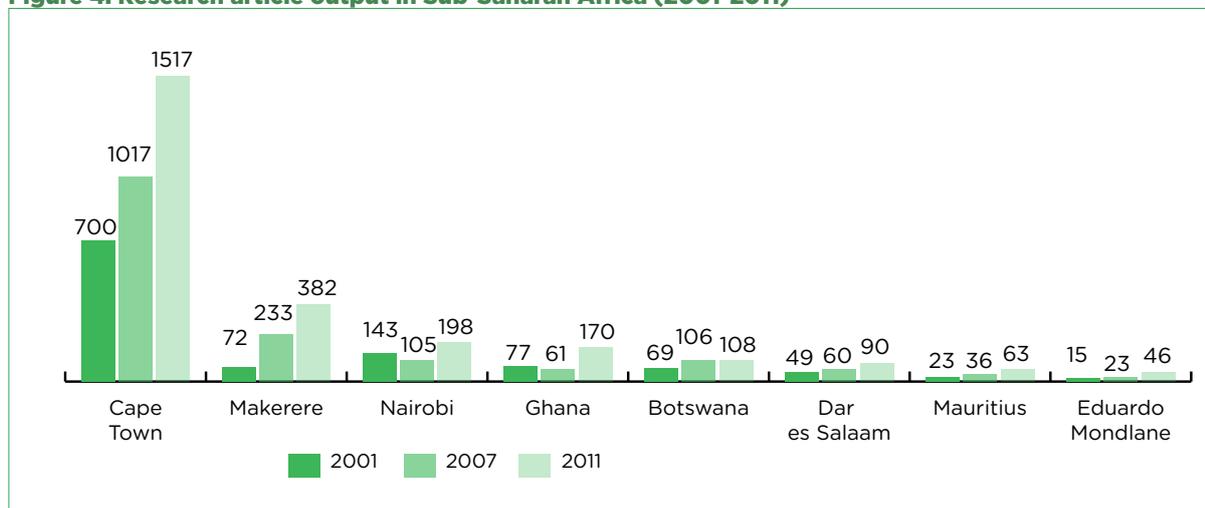
the percentage spent on HE in South Africa is lowest relative to the others [See Figures 3- 5]. This may be explained by the historical investment in HE in South Africa which was one of the few countries on the continent that did not fall prey to the compulsion to invest in basic education at the expense of HE, with such investments still paying dividends today.

What follows is a brief statistical overview of research capacity measured in terms of peer reviewed published research articles and graduated Masters and PhDs, in selected countries. This section draws primarily on the data collected in the HE Research and Advocacy Network (HERANA) projects and refers to the country “flagship” institutions selected. Of critical importance with respect to participation in a knowledge economy is the number of Masters and PhD graduates in a country. Although there has been an overall 12% increase in Masters’ outputs between 2001 and 2011 what is disconcerting are the very low levels of PhD outputs. Figure 3 shows that the total doctoral graduates in the same

period rose from 154 to 367 with the Universities of Cape Town, Makerere and Nairobi producing 80% of the total (Cloete and Bunting, 2013:9).

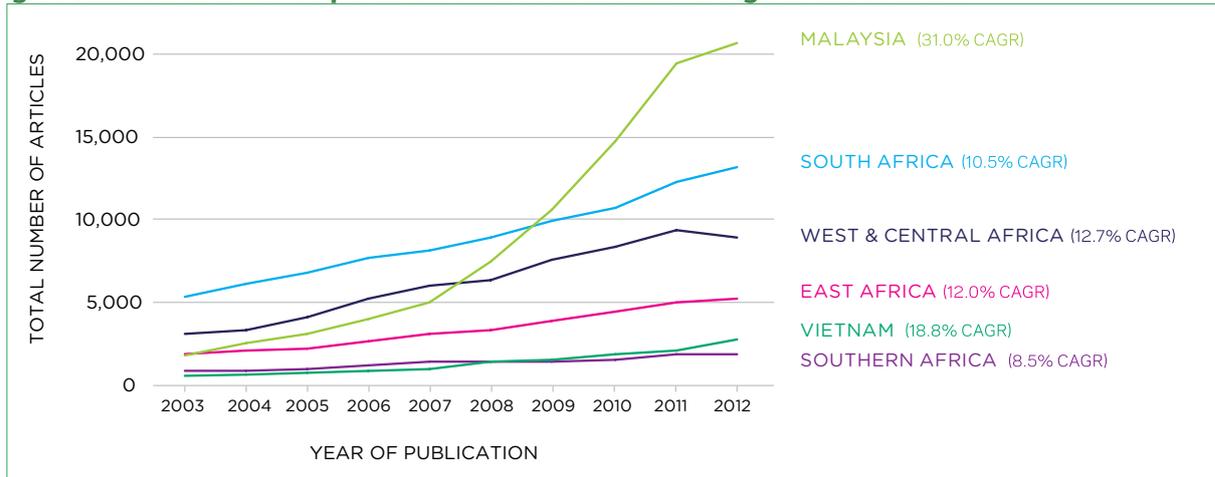
Again, the increase in doctoral outputs is small with the best performing institution showing an increase of only 21 graduates between 2007 and 2011. In 2013 South Africa was producing on 29 PhDs per 1 million of the population (up from 26 per million in 2007), with only 13% of females and 14% of males registered for PhDs in South Africa graduating [extracted from Department of HE and Training (DHET), South Africa, HE Management Information Systems (HEMIS)]. The Southern African Regional Universities Association (SARUA) report on doctoral education in Sub Saharan Africa (SSA) shows that Master’s and doctoral enrolments in SSA have remained fairly flat at 5% between 2008 and 2012. However a more disturbing element is that if South Africa is taken out of the picture, doctoral enrolments in SSA drops from 1% to 0.17% (SARUA, 2012a).

**Figure 4. Research article output in Sub-Saharan Africa (2001-2011)**



Source: Cloete and Bunting, 2013:10

Figure 5. Research article output in selected Asian and African regions and countries



Source: World Bank Compound Annual Growth Rate (CAGR) in SSA 2003-2012

Another core indicator of research capacity and knowledge development is the number of peer reviewed published articles. Figure 4 below shows the number of research articles (excluding chapters in books and published conference proceedings) produced by the eight universities. Figure 4 shows that the total number of research articles increased from 1148 in 2007 to 2574 in 2011. A World Bank (WB) study cites the research output in SSA to be less than 1% of global output, although 12% of the world’s population lives in SSA (WB, 2014).

Figure 5 shows that the growth in research output in SSA is slow and starts from a low base, except in South Africa. Relative to a developing country like Malaysia with a population of 30 million people, research output in SSA with a population of approximately one trillion, is miniscule.

In reading Figure 4 and 5 alongside Figure 6 it is evident that African universities do not have a viable number of senior academics (professors and associate professors with doctoral degrees) to produce research articles or to successfully supervise doctoral students to graduation.

The limited data presented here paints a bleak picture. If research outputs in the form of Master’s and Doctor-

al graduates and research capacity in terms of senior academics and peer reviewed published articles are taken as markers for the continent’s place in the knowledge economy, then Africa has an arduous path ahead. In Africa’s favour is the eagerness to ‘fix’ the HE system (Mohamedbhai, G.2013).

THE PRIORITIES AND DEMAND FOR HE

There is little doubt that the increasing demand for HE is a welcome trend for Africa’s growth. However, the increased demand for HE takes place in a context of limited government spending on HE, severe shortages of qualified academic staff and low economic growth across the continent (SARUA, 2012b:6).

A survey of recent literature points to the following key interrelated challenges and therefore areas of priority for the development of research capacity in Africa.

1. **Limited public spending on HE coupled with limited access to research grants.** Linked to this are the inadequate facilities, equipment and research infrastructure as well as limited funding to maintain and expand infrastructure. In addition the low remuneration of academic staff, high teaching loads and

Figure 6. Senior academics holding doctoral degrees in African universities (2009-2011)



Source: Cloete and Bunting, 2013:10

limited time for research does not create a climate conducive to knowledge generation. According to a report on doctoral education in Africa, Asia, Latin America and Europe, the Southern African Development Community (SADC) spends 23% of its resources on research, 65% on teaching and 11% on community outreach (Jorgensen, T.M., 2012). It has been argued too that the low remuneration of academics has created a climate conducive for the proliferation of consultant reports for external agencies without strengthening the continent's ability to generate new knowledge of value for itself.

2. **Poor research capacity across the system.** Although undergraduate enrolments have increased rapidly, graduations have only slowly improved. The low level of undergraduate success limits the pool for post graduate studies. Although post graduate enrolments are slowly improving, graduations remain abysmally low. In South Africa, the conversion rate from Masters' to doctoral degrees between 2000 and 2006 was 37% (Cloete and Bunting 2013). Of the universities included in the HERANA report, only the University of Cape shows 40% of its senior academics to be holding doctoral degrees (Figure 6), signalling a limited capacity to produce post graduates and peer reviewed published articles. Africa's universities produce less than 1% of global scholarly publications (SARUA, 2012:10 and WB, 2014).
3. **The inadequacy of knowledge production in relation to country and regional needs.** This is linked to two related problems. The "lack of institutional autonomy due to political appointments into senior university positions; [and the] lack of national research systems and strategic planning of doctoral studies which often leads universities to produce inadequate knowledge with little relevance locally, nationally or regionally" (SARUA 2012a:22). Institutions need to integrate research capacity building into the core of its institutional strategic plans and to give practical impetus to how such plans may be achieved. In addition, the isolation of universities from other sectors of the country does not bode well for its location as an integral element of a nation's development agenda. An atmosphere of political tolerance, of cultural diversity, one that cherishes the pursuit of knowledge is invaluable to promoting research and striving for research excellence. To this end strengthening multi party democracy offers a stable context for a growing research-driven HE system.
4. **Universities are crippled by excessive bureaucratization and poor administrative systems.** It is vital to build administrative systems that support research and that seek to enhance coordination of various intra- institutional and external sectors. This includes the ability to monitor funding and resources. The increasing demand for HE calls for a stronger institutional management and system level responses to the research imperative.

## PARTNERSHIP POSSIBILITIES BETWEEN GOVERNMENTS AND HE INSTITUTIONS TO SUPPORT RESEARCH AND POST GRADUATE OUTPUT

Much has transpired since the Association of African Universities (AAU) declaration in 1972 that the position of the African university was too critical to be left to its own devices and that government control of African HE was necessary. Indeed Saint (2009) and Moja *et al.* (1996) quoted in Bailey (2014) point to the often conflictual relationship between universities and governments. There is little doubt that the direct control of HE by governments is unlikely to lead to a thriving research environment. In a context of frequent political instability and intense contestations for political power, the autonomy of HE institutions is vital. However autonomy without accountability to national needs and priorities will not serve the post-2015 development agenda. Coordination of a research agenda within a country, regionally and continent wide is critical to building a strong pan-African research profile.

The role of country based, regional and continent wide HE councils may offer viable mechanisms for coordination and support for building research capacity. Such councils and commissions may be well placed to facilitate synchronization between government, universities and research centers at national, regional and continent levels.

Bailey (2014) points to the various roles adopted by HE councils and commissions:

- The regulatory role is one which, inter alia, determines norms and standards for the sector, licensing of programs and accreditation of new institutions and programs.
- The distributive role is one where budgets for the sector are drawn and monitored.
- The monitoring role refers to the collection and analysis of system level data and monitoring the quality of the HE system.
- The advisory role refers to the provision of expert and evidence based advice to policy makers.
- Finally the coordinating role refers to the provision of a platform for interaction between key stakeholders in the system, ensuring strategic and overall coordination of the system (Bailey, 2014:26).

It would be critical to view such functions as a package of responsibilities rather than individualized mutually exclusive functions. Research councils and commissions may be well placed to ensure coherence between national policies, government departments and research institutions and other key stakeholders. Research councils can speak to the need to build areas of specialization and excellence with the recognition that all cannot do everything well. This will lower costs and increase regional and inter institutional collaboration. This approach may enhance the ability to mutually strength-

en research capacity at more than one institution or country simultaneously.

## RECOMMENDATIONS

Although the HE landscape requires extensive renovation and revitalization, the four recommendations below focus on key and immediate priorities.

### Recommendation N°1: Formalize an autonomous African Research Council and regional and national chapters

This brief reinforces the recommendations of the African Union Commission Task Force to establish an African Research Council (ARC). The goal of the ARC would include “consolidating a pan-African knowledge system; ... building a solid constituency for scientific research on the continent; forging partnerships that could contribute to the advancement of the frontiers of science in Africa” (African Union Commission, 2011:16). The ARC should embody a multiplicity of roles from research coordination, providing a regulatory framework and monitoring and evaluation of research output. In addition, regional chapters in close collaboration with universities and other stakeholders could potentially collaborate in creating relevant research agendas aimed at building local and regional knowledge economies. This would not preclude country-based research councils and agendas. This does not point to centralization and control of research but rather to enabling research. Finally, the ARC may be well placed to provide reliable and comparable data for the HE system in Africa.

In a concept note aimed at improving research capacity in Africa, Habib and Price make a call for an alliance of research universities in Africa premised on global evidence that a consortium of institutions focused on improving capacity is likely to be more efficient than building individualized local systems (Habib and Price, nd: 4; and Mohamedbhai, 2013). Habib and Price (nd) make a strong case for selecting “research strong universities that will lead the African knowledge project” (nd:3). The ARC would be well placed to give impetus to such consortiums which would share resources and increase efficiencies. A WB study indicates that intraregional research collaboration in SSA ranges from 0.9% to 2.9%, excluding collaboration with South Africa (WB, 2014:8).

Linked to this is the need to facilitate the movement of students across African countries with limited bureaucratic encumbrances while recognizing the sovereignty of each country over its borders. This vision would be greatly enhanced by a regional qualifications framework

that would allow for the mobility of students.

### Recommendation N°2: Improve the availability of funding for post graduate study and research

A central element of improved funding is the availability of multiple funding sources. The Academy of Science of South Africa (ASSAf) study on doctoral education in South Africa showed that one of the predictors of successful doctoral study was the availability of multiple and sufficient funding. In the African context post graduate study is often undertaken by older students<sup>2</sup> many of whom are first generation graduates supported by and often supporting an extended family. In such circumstances the ability to study full time is remote. An improved funding environment is likely to encourage greater numbers of full time students who stand a better chance of graduating. It is feasible that the formation of an ARC will facilitate making funding sources more available to potential students (Cape HE Consortium (CHEC), 2014).

Improved funding may also be realized through university consortiums which could potentially pave the way for more efficient economies of scale. The use of multi-site research and study opportunities (online and on site), may contribute to better efficiencies thereby making more funding available. In addition, national education, science and technology departments are encouraged to work with universities to build research agendas that may be funded through the government. The CHEC makes reference to focused funding for fewer initiatives rather than spreading limited funds over many projects. Increased funding would also be required for improved infrastructure. Across Africa the problem of infrastructure in need of repair, limited space due to overcrowding and outdated equipment thwarts research capacity.

It is vital too that academics in the system be informed of available research grants and be guided through the process of applying for such grants. Successful grant applications require high levels of expertise. Given the limited research capacity on the continent, the use of teams led by local experienced researchers partnering with less experienced researchers may be one way of increasing funding and improving capacity simultaneously.

### Recommendation N°3: Improve the supervision of post graduate study

The success of post graduate study rests to a large extent on good supervision. This includes providing experienced input on research methodologies, theoretic

<sup>2</sup> The ASSAf study indicates that the average age of doctoral students in South Africa is 30 years.

cal framing and the ability to guide students' through data analysis. Given the small numbers of academics who are active researchers and who hold PhDs, training in post graduate supervision may be a useful mechanism for building post graduate output. Where possible, good supervision should also be accompanied by mentorship, possibly from another source, where non academic matters and negotiating institutional cultural challenges are addressed.

The ASSAf report suggests that the apprentice model of one student one supervisor may not be optimal for increased production of doctoral graduates and posits the feasibility of a cohort model which provides a critical mass of students and supervisors and offers economies of scale. The cohort model may also serve as a mechanism for supervisor training and offers opportunities for building internal learning communities where consistent discussion and debate with peers and academics are encouraged.

#### **Recommendation N° 4: Build incentives to develop and retain local talent and capacity**

A significant challenge to the growth of research capacity in Africa is the loss of minds to more developed countries. According to a United Nations Educational, Scientific and Cultural Organisation (UNESCO) study, in 2007 47% of Ghana's educated elite lived abroad and between 35-55% of highly educated people from Africa lived in Organisation for Economic Cooperation and Development (OECD) countries (UNESCO, 2008:8). While there is value in the recommendation by ASSAf to embrace brain circulation, this does not detract from the imperative to retain Africa's intellectual capacity. There

is an urgent need to develop incentives and mechanisms for Africa to retain its intellectual talent. A stronger more supportive HE system can play a decisive role in enticing those who have left to return. Alongside this is the need to address the weaknesses of post graduate study programs. Although there does not appear to be extensive systematic reviews of post graduate education programs on the continent, there is repeated reference to the poor quality of such programs. This is often cited being causal in the movement of research capacity out of Africa (Urama, Swilling and Acheampong, 2012: 9).

#### **CONCLUSION**

A viable cost effect and efficient HE system that produces relevant and sufficient research output is critical to the post 2015 development agenda of Africa. To achieve this the continent would have to confront an urgent and compelling need to extensively reconfigure and revitalize its HE system.

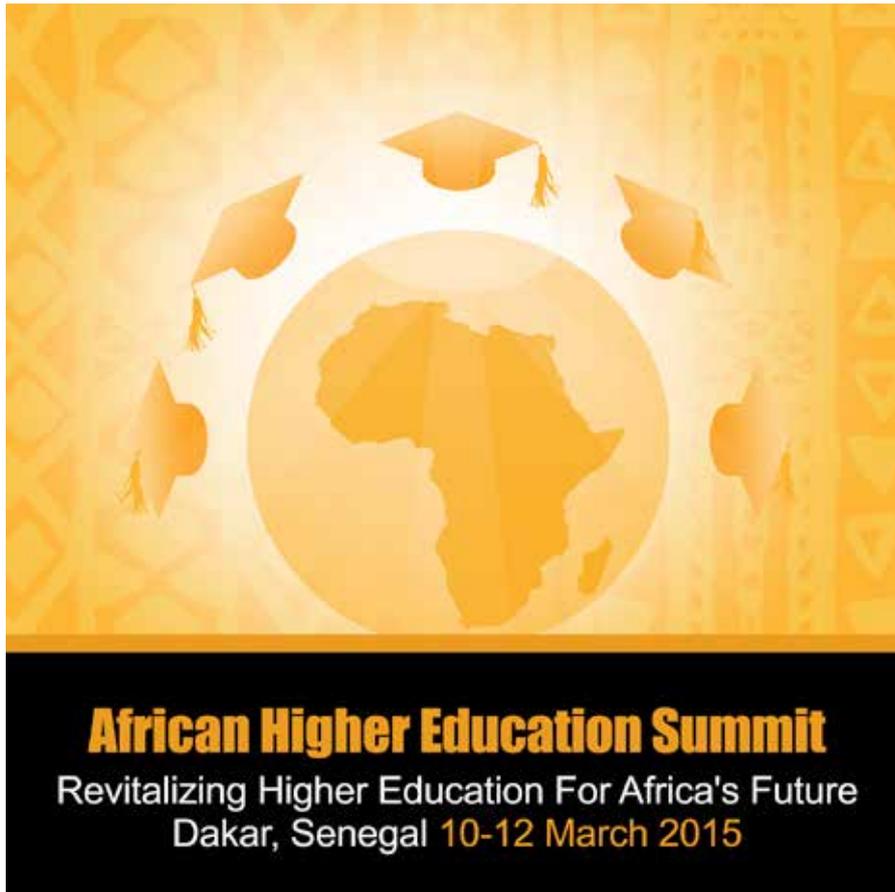
#### **The author**

##### **Venitha Pillay**

Is an associate professor at the University of Pretoria in South Africa and is currently based in Washington DC. She has extensive experience in HE research in Africa and is deeply committed to building research capacity on the continent. She also works as a consultant with the World Bank and other international organizations with respect to improving the quality and quantity of basic and higher education outputs in Africa.

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