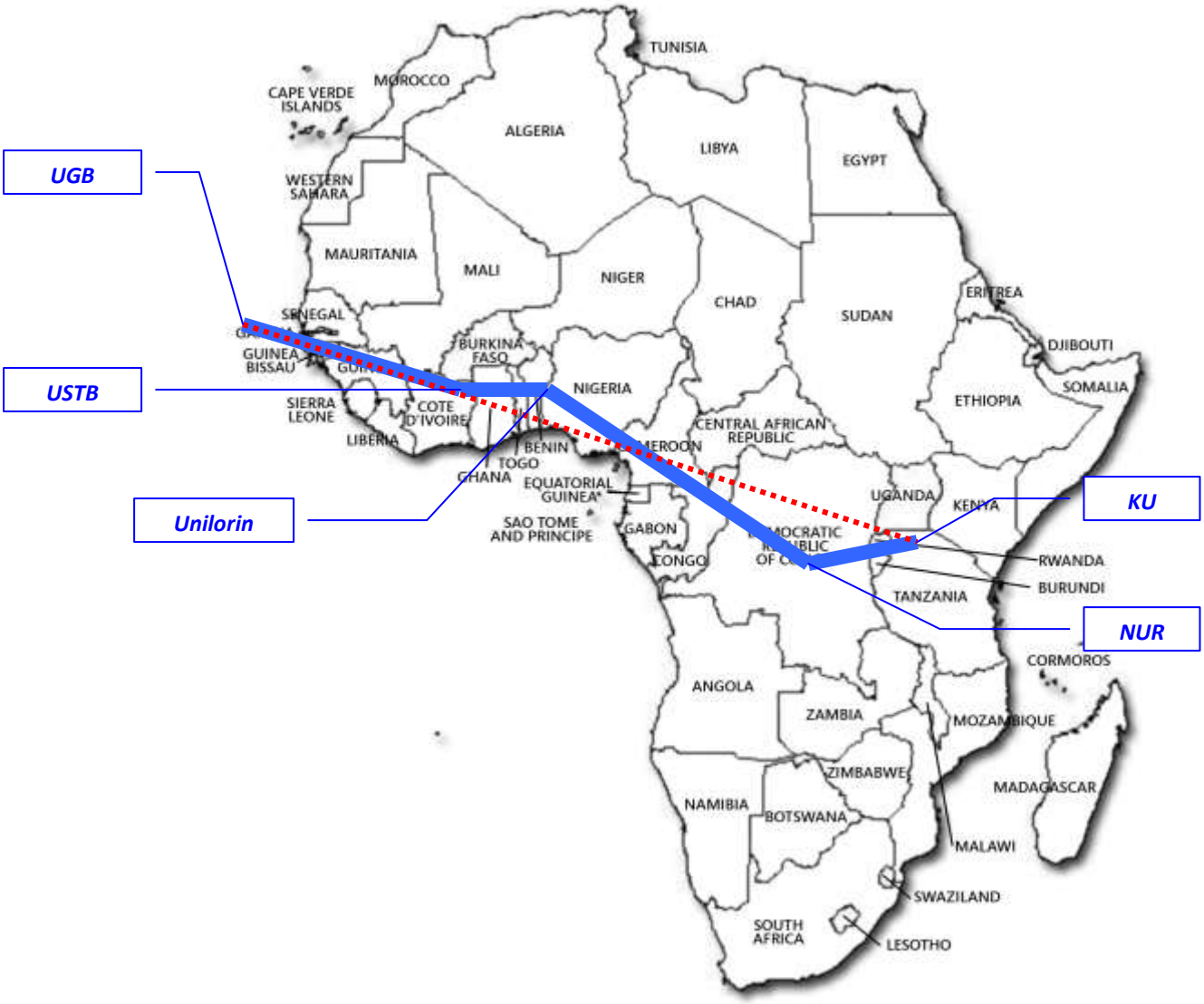
# *Changing Nature of Doctoral Studies in sub-Saharan Africa*

*Challenges and Policy Development Opportunities*
*at six universities in Sub-Saharan Africa*

International Association of Universities (IAU)



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## GLOSSARY OF TERMS

In sub-Saharan Africa, given the different linguistic traditions and higher education systems, different terms are used to describe doctoral studies programmes. To put this study into context, a series of key terms are defined below.

Research doctorates are awarded in recognition of academic research that is publishable in a peer-reviewed academic journal. The best known qualification awarded of this type is that of Doctor of Philosophy (PhD, or sometimes DPhil), awarded in many countries throughout the world. The Francophone system still awards the 'Doctorat d'Etat' but with the implementation of the Licence Master Doctorat (LMD) system imported from Europe, this is bound to disappear[1]. Different systems coexist in sub-Saharan Africa; they differ most between Anglophone and Francophone countries, yet it was possible to analyse and compare them and to identify issues of interest to all six institutions and to the global debate on doctoral education.

The term 'higher education institutions (HEIs)' refers to Universities and other higher education institutions which are accredited to award certificates, diplomas and degrees at the end of a programme of study.

The term 'doctoral studies' refers to a period of full or part-time independent research, or a mixture of independent research and course work at the doctoral level. It is designed to strengthen independent, critical and analytical skills, and must result in an original contribution to the specific field of study, and should be of publishable standard. It includes research training and supervision and is organised by a department, faculty or school of graduate studies. It leads to a PhD or a Professional Doctorate degree in one subject area/discipline.

The term 'doctoral student' refers to a full or part-time student engaged in a programme of doctoral studies, either through fully research-orientated activities or via a combination of research and course work.

A doctoral / graduate or research school refers to an organisational unit within the university structure that supports post-graduate students administratively as well as in terms of research. Ideally it has its own budget.

A doctoral research system refers to an institutional research support environment, its structures, policies and plans that promote organise and monitor research conducted by doctoral students and their supervisors.

[1] The 'new style' doctorat is also called 'Doctorat unique' by l'Université Gaston Berger de Saint Louis, Senegal, for instance, in order to distinguish it in the interim phase from the Doctorat unique..

## ACRONYMS' AND ABBREVIATIONS

| | |
|---|---|
| AAU | Association of African Universities |
| CEMAC | Communauté Economique et Monétaire de l'Afrique Centrale |
| DVCR | Deputy Vice Chancellor Research |
| DRICS | Direction de la Recherche, de l'Innovation et de la Coopération Scientifique |
| EUA | European University Association |
| FOAD | Formation ouverte et à distance |
| GDP | Gross Domestic Product |
| GERD | Gross domestic expenditure on research and development |
| GNP | Gross National Product |
| HE | Higher Education |
| HEI | Higher Education Institution |
| IAU | International Association of Universities |
| ICT | Information and Communications Technologies |
| KU | Kenyatta University, Kenya |
| LMD | Licence, Master, Doctorate |
| MDGs | Millennium Development Goals |
| NUC | National Universities Commission (of Nigeria) |
| NUR | National University of Rwanda |
| OECD | Organisation for Economic Co-operation and Development |
| ODL | Open and Distance Learning |
| REESAO | Réseau pour l'Excellence de l'Enseignement Supérieur en Afrique de l'Ouest |
| R&D | Research and Development |
| Sida | Swedish international Development Agency |
| SARUA | South African Regional Universities Association |
| UDC | University of Douala, Cameroon |
| UER | Unité d'Enseignement et de Recherche |
| UFR | Unité de Formation et de Recherche |
| UGB | University Gaston Berger, Saint Louis, Senegal |
| UNESCO | United Nations Education Scientific and Cultural Organization |
| Unilorin | University of Ilorin, Ilorin, Nigeria |
| USTB | Université des Sciences et Technologie du Bénin, Benin |
| VC | Vice Chancellor |

## FOREWORD

The International Association of Universities (IAU) is pleased to report on activities carried out as an IAU pilot project on the *Changing Nature of Doctoral Studies in sub-Saharan Africa (2009-2010)*.

This document is based on data collected in 2010 at the institutional level, by Dr. Hilligje van't Land, the IAU Director of Membership and Programme Development and by Ddembe Williams, Consultant. A comprehensive questionnaire was sent to the institutions for completion by the institutional teams created for this project and was supplemented by site visits. The data were validated during the study and research seminar which took place at the University of Ilorin, Nigeria, in November 2010.

Six IAU Member universities participated in this project, namely:

- University of Doula (UDC), Douala, Cameroon;
- University of Ilorin (Unilorin), Ilorin, Nigeria;
- Kenyatta University (KU), Nairobi, Kenya;
- Université des Sciences et Technologies du Benin (USTB), Benin;
- Université Gaston Berger de Saint-Louis (UGB), Saint-Louis, Senegal;
- National University of Rwanda (NUR), Butare, Rwanda.

Despite the fact that the 6 pilot Universities have followed rather different historical paths in their development, today they are all aspiring to increase their capacity to provide doctoral students and thus Africa's future academics with the opportunities to develop their research and other careers under the best possible conditions.

The report provides an insight into the current state of doctoral programmes at the participating HEIs, and suggestions for addressing the challenges these institutions face. It also highlights aspects of relevance for other sub-Saharan African universities and higher education institutions in general elsewhere.

## ACKNOWLEDGEMENTS

In its development phase, the IAU project benefitted from the expertise of the members of the international Task Force that IAU had set up for the project.

The Task Force is composed of:

- Is-haq Oloyede (Chair), *Vice Chancellor, University of Ilorin, Nigeria*; *President AAU*
- Patricia Pol, *Vice-President in charge of international development, Université Paris Est-Val de Marne, France*;
- Piyushi Kotecha, *CEO, Southern African Regional Universities Association, South Africa*;
- Gilles Breton, *Associate Vice-President Academic (International) and Director, University of Ottawa, Canada*;
- Wisdom Tettey, *Faculty of Communication and Culture, University of Calgary, Canada*;
- Phyllis Freeman, JD, *Professor Emerita, University of Massachusetts, Boston, Co-Editor, Journal of Public Health Policy*;
- Aboubacar Barro, *Dr. in sociology, Senegal*,
- Inger Lundgren, *Department for Long-term Cooperation, Swedish International Development Agency (SIDA) Sweden*.

IAU would like to thank them for their valuable contributions to the project.

Secondly, the project benefitted greatly from the invaluable contributions made by the participating institutions and their institutional team leaders, respectively:

- Bruno Bekolo-Ebe, *Recteur, Université de Douala, Cameroon;*
- Kolade Luke Ayorinde, *Deputy Vice Chancellor University of Ilorin, Nigeria;*
- Lucy Wangui Maina, *Kenyatta University, Kenya;*
- Omar Sougou, *Directeur de la Recherche, Université de Gaston Berger, Saint-Louis, Senegal ;*
- Frédéric Dohou, *Président du Conseil de L'université, Université des Sciences et Technologies du Bénin, Benin*
- Verdiana Masanja, *Director of the Research Commission, National University of Rwanda.*

Special thanks go to them and their teams for their work of overseeing data collection and coordinating the institutional site visits, the interviews with colleagues, doctoral students, doctoral supervisors, the graduate/doctoral schools and university top management. The members of the institutional teams involved in the study are listed in *Annex 5*.

At IAU, the project was coordinated by Dr. Hilligje van't Land, *IAU Director, Membership and programme Development*, with support from:

- Eva Egron Polak, *IAU Secretary-General*
- Nicholas Poulton, *IAU Administrative/Editorial Assistant*
- Ddembe Williams, *Consultant, Uganda*

The collection of data was far from easy and the inventiveness deployed to gather the requested data will be mentioned below and deserves special acknowledgment. The team members also provided valuable additional information via mail and during the interviews. These contributions are also duly acknowledged and appreciated. We also thank all those who contributed to this project and worked on this behind the scenes.

The project was undertaken by IAU with support from SIDA/SAREC. The IAU is grateful for the support provided and hopes that the end results of this project will be of interest to the agency and will lead to concrete outcomes in this field.

The pilot institutions not only participated in this project on a voluntary basis as they saw this as a special IAU Membership benefit but also that they contributed substantially to the project by hosting the

IAU project team during the respective site visits. The closing seminar was made possible thanks to the generous financial and logistical support offered by the University of Ilorin.

The report, its findings and recommendations reflect the views of members of the institutional teams, the IAU Task Force and the other participants in the November seminar.

## EXECUTIVE SUMMARY

Convinced that strong knowledge systems and research based knowledge are central to national development, the IAU Administrative Board decided that the Association would examine the changes taking place today in higher education institutions in sub-Saharan Africa, as part of their overall effort to improve their doctoral programmes and to enhance their research capacity and quality.

Two years ago, IAU started to work on the development of a pilot project on the changing nature of doctoral programmes in sub-Saharan Africa. IAU invited international experts to sit on its Task Force and six of its Member institutions from across the continent to take part.

A research question was developed, an institutional self-assessment instrument developed, institutional teams created and institutional self-assessments undertaken and complemented by institutional site visits. The project culminated in a study and research seminar in November 2010.

The institutions described the current state of their doctoral programmes, how they are shaped, organised and transformed. They also analysed the change processes underway; the data collected show how important doctoral programmes are for each institution and for their countries; the growing enrolment rates at doctoral level are telling, as are the changes that are being envisaged or implemented. The Pilot institutions debated the issues raised in the draft report submitted to the Ilorin Seminar exchanged notes with colleagues from other pilot HEIs, and made recommendations for the future.

Some of the major conclusions of the study and the Seminar are focused on three main areas: 1. the link between doctoral education and the institutional research strategy; 2. doctoral supervision and carreer development; and 3. on the internationalisation of doctoral education, strategic planning and the role of data collection.

On the place of doctoral programmes in the institutional research strategy, the project calls for a better defined strategic planning of doctoral programmes within the overall strategic development of each institution; the development of strong national research agendas; a research mapping exercise at both the institutional and the national levels; and better networking and access to research outcomes among sub-Saharan Africa HEIs.

On doctoral students' supervision, career development and monitoring, the project calls for the rethinking of doctoral students' supervision of at sub-Saharan HEIs; the development of institutional incentives and administrative follow-up mechanisms in order to assist and coordinate the work of the supervisors better; A code of ethics to assist the supervisors in their work; the establishment of career resource centres at the institutional level which would also include a career monitoring service as well.

As for the internationalization of doctoral education, strategic planning and the role of data collection, the project underlines that integrated institution-wide and comprehensive information data management systems were an essential tool for strategic planning and institutional management; information management is imperative not only to improve the overall organization and management of doctoral studies and programmes, but also the internationalization strategies of the institutions themselves; better data collection and management would also lead to a better understanding of what funding mechanisms are required to develop doctoral programmes further; systematic information on collaborations and partnerships in which the HEIs are involved would allow further development of inter-institutional and international collaboration. And finally, it was emphasised that African higher education institutions need to improve their level of knowledge and understanding about each other and that communications among

HEIs across the linguistic divides need to be improved for a better integration of the wealth of knowledge available across the continent, as was the case all through this project.

The major recommendation made was for information and data collection on all operations relating to doctoral programmes to be systematised, institutionalised and analysed in order for institution to avail themselves from comprehensive data on which to build strategic plans for further improvement and transformation of their doctoral programmes. A suggestion for Institutional Analysis in each university is emphatically made.

The project lays the grounds for further research on this topic. Projects under consideration for the follow-up phase include the creation of a web-based information hub on doctoral education and the dissemination of the self-assessment instrument among other higher education institutions and the creation of a reporting and sharing mechanism.

# I: THE PROJECT

## *INTRODUCTION AND BACKGROUND*

Research based knowledge is a key component of development and an answer to the search for solutions to global challenges. Building research capacity in developing countries and regions is thus central to their development and to their societies. Building such research capacity is done to a large extent by assisting higher education institution strengthen their research capacity and research relevance in regards their local, national and regional challenges and related issues.

Changes within higher education institutions are being driven by the needs to better respond to the local, national but also global needs and challenges. The changes are often being supported by developing agencies from Europe and North America mainly but also more and more from Latin America and Asia. Developing agencies focus on the development of local capacities and bring with them their own expertise. Changes they bring about are thus to a large extent influenced by external actors contributing to projects and by policies and practices from around the globe.

Many higher education systems in Africa have originally been shaped by European traditions since most are based in countries that are former colonies of France, Belgium, Portugal and the UK. Today the historical influences are still visible and still impact on the very nature of the models on which the institutions operate. It is thus not surprising that the reforms carried out under the flag of the 'Bologna Process', which in 2010 resulted in the launch of the European Higher Education Area (EHEA), have found strong resonance in these countries as well[2]. Leaders of higher education in Africa systems and institutions feel the need to adapt their reforms to those taking place in Europe in order also to keep the relationships with the institutions they traditionally worked with open and operational[3]. Yet changes and reforms are also being carried out under the influence of increased internationalisation and globalisation beyond Europe. Reforms in African HEIs are thus influenced by an interesting mix of innovative practices imported from Europe, North America, Latin America[4] and Asia. Lusophone African higher edu-

[2] Cf. Cf. Khelfaoui, 2009 and see the in Focus section of IAU Horizons, vol. 16, no.2, September 2010 on: 10 Years of Bologna in Europe and in the World and in particular the "Impact of the Bologna Process in Africa", by Isaac Obasi & Akinpelu Olutayo, Nigeria, pp.20-22 (http://www.iau-aiu.net/newsletters/iaunew16-2-en.pdf).

3 In 2007 Peter Materu wrote: "The effect of the Bologna process is being felt in Africa. Inspired by this initiative, the heads of state of six countries under the Communauté Economique et Monétaire de l'Afrique Centrale (CEMAC) decided in 2005 to adopt the Licence, Master, Doctorat (LMD) system in order to harmonize and standardize tertiary education systems in the sub region. Several additional Francophone countries have subsequently adopted the LMD system. The plan is to launch the Licence (equivalent to bachelor's degree) in 2006/07, the Masters in 2007/08 and the Doctorat in 2009/10. Despite major capacity constraints, the transition to the LMD system is serving as a unifying factor that is likely to have a positive effect on regional collaboration among the countries involved. In addition, since the LMD system is very similar to the Anglophone higher education system, the change might facilitate increased collaboration and mobility between Francophone and Anglophone countries in Africa." (Materu, 2007). At the time this study was undertaken the Doctorate phase has just been launched. Much in the implementation phase is still new.

4 See Salmi, 2008; Rapp, 2008; the UK/US Study Group report 2009.

cation institutions for instance elaborate preferential collaborations with Latin American countries such as Brazil[5].

Reforms are driven by the governments, adapted and adopted by the institutions, oriented by their leaders but also influenced by other stakeholders, inside and outside, and by society at large.

Yet, like elsewhere, universities in sub-Saharan Africa are forced to reposition themselves and to rethink the way they perform their core functions in order to creatively meet the global and local changes and challenges[6]. They know that they have an important role to play in the creation of locally relevant Knowledge Societies and thus need to revisit the way in which higher education is provided and structured and by whom and how it is accessed.

Such reforms require strong staff involvement but also strong financial support. This is necessary not only to design and implement the reforms but also to make sure that these reforms as planned are adequate and locally relevant. Financial means are as well necessary to ensure that communication about their content, shape and sought impact (envisaged improvement for instance) is carried out so that social tensions, resulting from non-understanding of what is at stake, can be addressed[7].

Yet, and despite an increased demand for higher education and consequently for doctoral studies, many governments across sub-Saharan Africa are reducing their spending on higher education[8]. As we all know, this is not specific to sub-Saharan Africa but probably more crudely so in sub-Saharan Africa where ressources were already often too scarce; the puzzling exercise of matching increased demand for higher education (massification) and increased demands for reform at different levels of the system with a decrease in funding is proving difficult everywhere. In Africa, physical infrastructures, laboratories and libraries at many universities are in a sorry state. Lack of supportive teaching and research environment has also made it difficult for academics to teach and perform and to develop adequate curricula, including for doctoral programmes.

At a time when African higher education institutions need their academics and best students to stay, analysis shows that brain drain continues to weaken the continent. Many who can afford to leave their home countries to find better (academic) jobs elsewhere, do so, even more so when they are lured by HEIs outside their countries[9]. Yet some governments have started to inject significant amounts of money in their higher education systems in order to better develop their institutions and to secure better futures for their country and people. Academic and administrative staff members within Nigerian HEIs for example have seen their salaries raised substantially; Ghana reported a similar situation and also reported that the international context paradoxically contributed to an increase of influx of qualified staff to HEIs in Ghana[10].

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[5] Cf. the UNILAB project (Universidade da integraçao internationale da lusofonia Afro-brasileira) www.unilab.edu.br

[6] Chute & Dookhony, 2007; Salmi, 2008; the Economist, paper Oct. 2005; Strauss et al, 2009, UNU/UNESCO International Conference 2009.

[7] 2 examples: students strikes at the University of Lomé aiming at rejecting the application of the LMD (or three tier) system; lack of understanding of the LMD system with the higher education community in Dakar, Sénégal)

8 See Table 1 of the UNESCO Science Report 2010: Key indicators on World GDP, population and GERD, 2001 and 2007, p.3 and Chapter 14 on Sub-Saharan Africa, p.279-321.

[9] Tettey, 2010; Gillian 2006; McGreggor 2008.

[10] See Tagoe and Oloyede in IAU Horizons, Vol. 16, no.2, page 1, in : Around the World with the Administrative Board.

IAU's project builds on other projects supported financially and logistically by various developing agencies around the globe[11].

One such research project was led by the UNESCO Forum on Higher Education, Research and Knowledge (2001-2009) funded by SIDA as well and which focused on research in and on Higher Education and Knowledge; it widened understanding of systems, structures, policies, trends and developments in higher education, research and knowledge and focused on low and middle income countries. Particular attention was devoted to research on agriculture and health. The forum produced the Mouton & Waast global report on National Research Systems of 52 low and middle-income countries and which included doctoral education. The Forum looked at opportunities to develop higher education research and innovation policies in Africa that would give directions to institutions with regard to priority areas for research of relevance to this region. It considered options for research granting mechanisms (both national and regional)[12].

The Agence universitaire de la francophonie (AUF) institutional network CIRUISEF (Conférence internationale des responsables des universités et institutions scientifiques d'expression française) initiated a project on the Scientific PhD in the Francophone world[13]. It stimulates debates among members of the Network in particular on the implementation of the Licence Master Doctorat (LMD) system in Francophone countries through a series of conferences. The 2009 CIRUISEF conference concentrated on the doctoral study programmes.

The African Association of Universities (AAU) maintains the African Database of thesis and dissertations - DATAD and offers services to enhance research and excellence at African Universities. It develops a project on University Research Governance in West and central Africa[14].

EUA launched an Erasmus Mundus Project entitled CODOC – Cooperation on Doctoral Education between Africa, Asia, Latin America and Europe. The project aims at studying trends in doctoral education in different developing regions of the world and provides occasions for dialogue and networking so as to foster stronger doctoral education partnerships between Europe, Asia, Africa and Latin America[15].

Doctoral studies and associated programmes take different forms depending on the country, the historical and cultural backgrounds of each institution, and are shaped by the particular history of each institution and by the directions set by the respective leadership teams.

The IAU project concentrates on the research carried out at doctoral level. It looked at what doctoral programmes are being developed at a selection of universities; how they foster research and how this research is supported both institutionally and nationally. The project allowed mapping out how doctoral study programmes are conducted at a small sample of IAU member institutions in sub-Saharan Africa, what models exist and what delivery methods are used, what objectives and challenges higher education institutions are faced with and/or have set for themselves, and what new trends and policy reforms are setting in.

The originality of the IAU project lays in the fact that it focuses on the institutional level and on HE doctoral study programmes policies and practices in both the so-called Francophone and Anglophone

[11] Aina, 2010, Johnson, 2008; Kearney et al. 2008; Materu, 2007; Teferra, 2005 & 2009; Waast & Mouton, 2009; Breda Document, 2008.
[12] See: http://portal.unesco.org/education/fr/ev.php-URL_ID=10119&URL_DO=DO_TOPIC&URL_SECTION=201.html
13 See: http://ciruisef.com
[14] http://aau.org/; http://aau.org/?q=datad
[15] See: http://www.eua.be/eua-projects/current-projects/cooperation-on-doctoral-education.asp

countries in sub-Saharan Africa. Three Francophone and three Anglophone HEIs were invited to take part in this project so as to build new bridges of understanding and sharing between these two HE realities and traditions. The study was carried out with the institutions and the designated teams through e-mail correspondence and through face to face meetings.

The project focuses the current state of doctoral programmes and on how they are evolving, on the context in which changes and reforms are taking place, for what purpose, with what difficulties and challenges? This report concludes with a series of recommendations aiming at supporting institutions as regards the reform processes underway.

## *Methodology*

Against this background, IAU adopted an institutional focus, used its network, and built bridges for comparisons between Anglophone and Francophone HEIs, as this aspect in particular is often lacking in other research and projects carried out so far.

The project benefitted from the expertise of Members of the **international taskforce** set up for the project[16].

**Six institutions** were selected and invited to take part in the pilot project:

1. University of Doula, Douala, Cameroon;
2. University of Ilorin, Ilorin, Nigeria;
3. Kenyatta University, Nairobi, Kenya;
4. Université des Sciences et Technologies du Benin, Bénin;
5. Université Gaston Berger de Saint-Louis, Saint-Louis, Sénégal ;
6. National University of Rwanda, Butare, Rwanda.

Participating institutions were selected according to the following criteria and had had to:

a. be a Member of IAU in good standing and come from countries and regions of sub-Saharan Arica;
b. be a public institution - or private with public interests;
c. illustrate innovation towards research policy development;
d. offer doctoral programmes in several disciplines;
e. show experience in developing research agendas;

The French/English linguistic divide was also taken into consideration.

At the institutional level, the Rectors, Vice-Chancellors or Presidents appointed an **Institutional Team**[17] with which the IAU project team worked in close collaboration. To ensure comprehensive coverage and a genuine institutional approach, and full involvement of IAU Member institutions in the process, the teams were composed of individuals representing the following institutional levels / positions / areas:

- Senior University Officer (Rector/President/Vice Chancellor/Deputy Vice-Chancellor / Academic Research Deans)

[16] See Annex 1.
[17] See Annex 4.

- Dean of Graduate School / Studies
- Faculty Member
- Junior Academic
- Doctoral Student or Post-Doctoral Fellow
- A key contact person for IAU was designated.

The project started with the development of an in-depth **self-assessment questionnaire**[18] by IAU, the Task Force and with input from the members of the pilot institutions. The survey was available in both English and French. The questionnaire was divided in three sections:

**Part A** aimed at capturing the context in which the institution is functioning; the country's research system and the institutional profiles; the nature of doctoral studies and characteristics of students and supervisors associated with the doctoral programmes.

**Part B** invited the pilot universities to identify up to six key challenges institutions face in doctoral programme delivery, management and organisation;

**Part C** asked respondents to identify and comment on six policy reform opportunities that could improve the delivery of doctoral studies at institutional and national levels.

The questionnaire was submitted to the respective institutional project teams for completion. Other information gathering methods included extensive e-mail exchanges, review of institutional data as collected and collated through review of institutional and national reports as submitted mainly by the institutions, consultation of institutional websites, collection and reading of bibliographical data[19]. This data and information submitted included brochures, institutional strategic plans and research strategies, and national policies.

The information received was used as background information for the **institutional site visits** and provided a basis for an initial identification and analysis of similarities, gaps, and or challenges faced by the institutions and resulted in a draft analytical and comparative report.

This draft report was used as background for the **Study and Research Seminar** that was held at and hosted by the University of Ilorin, Ilorin Nigeria on 8 and 9 November 2010.

This report includes the comments received as well as the conclusions and recommendations made.

## *Interviews with Institutional Teams*

Institutional site visits were conducted between June and July 2010 and lasted 3 to 4 days per institution. Dr Williams and Dr van't Land visited all but one institution[20].

The visits were used to review and corroborate information provided through the questionnaires. It provided an opportunity for the institutions and the IAU teams to meet for the first time and to obtain complementary information where necessary.

The interview sessions were conducted in an open and pleasant atmosphere. The interviews mainly focused on the interviewees' ideas and therefore the path of each interview was unique[21]. An initial draft

[18] See Annex 5..
[19] See Annex 6.
[20] A site visit to the University of Douala was not possible at that time due to unavailability of team representatives over the summer. Review of information provided was possible via e-mail.
21 Detailed notes were taken. Some of these notes are highlighted into text boxes throughout the report.

report was prepared and formed the background information on which the Ilorin Seminar discussions took place. The draft comparative analysis of the institutional data collected were presented and discussed at the IAU / Ilorin Study and Research Seminar (November 2010).

### *Limitations and Challenges encountered during data collection*

The questionnaire was initially e-mailed to the heads of the participating institutions in late March 2010. Institutions faced various challenges in collecting data, mainly because much of the information on doctoral programmes required by the questionnaire was not gathered centrally at most universities. This led the institutional teams to develop very inventive strategies to collect the data requested, including using staff CVs to gather information on research output; sending letters signed by the Rector to staff to explain the purpose of the project and inviting each to submit the information requested; individual meetings with staff members to collect the data; splitting the questionnaire up in sections sent out to different university entities and collating the information received from up to 50 different sources internally to provide the most accurate information, etc.

To name but three examples:

- KU divided the questionnaire into several sub-questionnaires which were subsequently distributed, along with personalised letters from the VC, to 13 Deans of 13 different schools, to several management people, to the registrars, the VC herself. Approximately sixty (60) different sub-questionnaires were sent out to as many colleagues around the campus. The information returned to the project coordinator was analysed and collated by three people (the contact person and two assistants hired for the project) who subsequently completed one questionnaire, finalised at the beginning of July and returned to IAU.
- NUR hired two assistants to collect the information. The institutional data was collected and entered into the questionnaire electronically. Information at national level appeared to be much more difficult to obtain and both assistants had to travel from Butare to Kigali to conduct interviews and solicit documents directly from the Ministry of Education.
- UGB worked with different institutional groups: deans, faculty, staff and management. The university had to be very inventive to actually *convince* its academic staff/faculty members to submit information on supervision, research output, publications, patents and the like. UGB even talked about the 'resistance' encountered at the institutional level. Despite all efforts, the university maintains that it could not provide the exact figures for all the sections identified in the questionnaire as not all staff provided the information requested. UGB indicated a serious lack of central data collection at the institutional level and stressed the need to start and develop a culture of institution-wide data collection.

Other institutions simply could not provide some of the requested information. The teams reported that the information, was at times difficult to locate and available centrally.

The time required for institutional data collection was long and caused delays in the project process and the subsequent analysis of the results.

However, on a very positive note, during interviews institutional project teams and university leadership expressed the value they saw in participating in this project and recognised the vital need for the devel-

opment of a systematic data collection and updating mechanisms. They stressed that this would help improve doctoral programmes and help their overall management and reform processes.

### *Expected outcomes*

The institutional team leaders reported that study helped improve the understanding of the changing nature of doctoral programmes at their institutions; it allowed them to identify gaps and challenges and opportunities for improvement.

The report presents the context in which the emerging issues pertaining to the changing nature of doctoral studies and associated programmes in sub-Saharan Africa (II); provides a comparative analysis of data collected on doctoral student enrolments, programmes, funding, supervision and research infrastructure by each institution (III); explores issues relating to institutional challenges that the 6 institutions face along with potential policy reforms and mechanisms aimed at improving the delivery and management of doctoral studies (IV); presents the conclusions and recommendations emerging from the project and more specifically from the concluding seminar which took place at the University of Ilorin in November 2010 (V). Next steps are presented at the end of this document (VI).

## II – THE CONTEXT IN WHICH DOCTORAL PROGRAMME CHANGES TAKE PLACE

In order to understand the status quo regarding doctoral education and research in sub-Saharan Africa it is important to understand how each of the pilot institutions involved in the project operates and in which environment it does so. This environment is defined by many factors, not least by social, economic, political, cultural, technological, geographical and linguistic ones. These factors also influence how teaching and research take place. The information provided in **Annex 2** briefly sketches the profile of each country and institution, setting the context in which doctoral education is being offered.

In addition, **Table 1** below provides comparable basic information extracted from the completed questionnaires submitted by the Pilot HEIs. These too set the context in which doctoral studies are taking place.

*Table 1: Institutional profiles – setting the stage*

| Institutions | *Kenyatta University (KU)* | *University of Douala (UD)* | *University of Ilorin (Unilorin)* | *National University of Rwanda (NUR)* | *Université des Sciences et Technologies du Bénin (USTB)* | *Université Gaston Berger de Saint-Louis (UGB)* |
|---|---|---|---|---|---|---|
| Date Founded | 1965 | 1977 | 1975 | 1963 | 1996 | 1990 |
| Type of HEI and legal status | Public | Public | Public | Public | Private (not for Profit) | Public |
| Date Accredited | 1985 | 1993 | 1975 | 1963 | 2002 | 1991 |
| Space avail- | 10,000 | - | 14,430 | 5,000 | 15 | 570 |

| | | | | | | |
|---|---|---|---|---|---|---|
| able (in Hectares) | | | | | | |
| Location / Setting | Nairobi, Kenya Urban | Douala, Cameroon, Urban | Ilorin, Nigeria, Peri-urban | Butare, Rwanda, Peri-urban | Cotonou, Bénin, Urban | Saint-Louis, Sénégal, Peri-urban |
| Country's colonial past | Former British colony | Former French colony | Former British colony | Former Belgian colony (francophone past) | Former French colony | Former French colony |
| Sources of Funding | Public | Public | Public 82.5% IGF 18.5% | Public funding IGF , Fees | Private 90% Public 10% | Public and Private |
| Governing body | University Council | Assemblée | University Council | University Council, Senate | Conseil | Conseil |
| Method of Appointing VC | Competitive and Open after advertisement | Presidential Decree | Competitive and Open after advertisement | Appointed by government | Elected by council | Nominated by government |
| Period covered by strategic plan | 2005-2015 - The plan focuses on MDGs[22] | 2005-15 The plan focuses on MDGs | 2008-2013 The plan focuses on deepening Research and Internationalisation | 2008-2012[23] | 2010-2014 | Not indicated[24] |
| Disciplines | Arts and humanities, Applies sciences, Admin. & management | Arts and Humanities, Applied and Life sciences | Arts and Humanities, Applied and Life sciences, Administration and Mamangement | Wide - Multidisciplinary | Sciences et Technologies | Law, Social Sciences, Admn. & Management |
| Self Rating nationally | Top 5% | Top 10% | Top 5% | Top 5% | Top 20% | Top 5% |
| Unit Responsible for Doctoral Studies | Graduate School | Doctoral College | Postgraduate School | Directorate of Research | Disciplinary Doctoral Collèges | Doctoral Colleges related to four different faculties |
| Academic Degree[25] Structure | Bachelor 3yrs Master 2yrs | Licence 3yrs Master 2 yrs Doctorate | Bachelor 3yrs Master 2yrs | Bachelor 3yrs Master 2yrs | Licence 3yrs Master 2 yrs Doctorate | Licence 3yrs Master 2 yrs Doctorate |

[22] But other documents on HE strategic development in Kenya. See Annex 5. On the expansion of HE in Kenya, see Nyaigotti-Chacha, 2004.

[23] The National University of Rwanda Strategic Plan (NURSP) and Business Plan (NURBP) 2008-2012 resulting from a comprehensive Strengths, Weaknesses , opportunities and threats (SWOC) analysis led run in cooperation with the Consortium for international development (CIDE)

[24] A new strategic Plan 2011-2015 is now available online at: http://www.ugb.sn/actualites/actu254.html

| | PhD 3 yrs | 3yrs | PhD 3 yrs | PhD 3 yrs | 3yrs | 3yrs |
|---|---|---|---|---|---|---|
| No of Doctoral Students as at 2009 | 311 | 595 | 567 | 41 | 25 | 577 |

Except for USTB, created in 1996, all pilot institutions are over 20 years old. However, the older ones were created in the 60s (KU and NUR) and the most recent ones only in 1990 (UGB) and 1996 (USTB). The development of their doctoral programmes has followed different paths. Even though the older institutions show stronger ties to academic and administrative structures inherited from their colonial past, the newer universities report being more flexible and adopting innovative practices. They readily mix the traditional European models with practices imported from North America. Yet, in all pilot institutions the changes and reforms being implemented at this time appear to be a rich blend of the academic culture that had been dominant in each country and practices imported from elsewhere. Thus each university is creating its own approach. This has both positive and negative consequences; these dynamics are building a new academinc tradition in these institutions but the resulting diversity may pose a challenge for future cooperation.

Three examples may serve to illustrate this more specifically.

- KU, traditionally 'British' as far as the management style is concerned, benefits from the fact that many members of staff including the Vice-Chancellor have studied in the United States and import new ways of operating. This particularly impacts on the way doctoral programmes are conducted. The Vice-Chancellor for instance introduced the notion of course work as part of the doctoral programmes.
- NUR is another interesting example where the more Belgian / Francophone European management style is more and more being replaced by a British/American operational mode. Since the 1994 genocide, the main language of teaching and research has moved away from French to English as staff members recruited over the last 17 years have been educated in neighbouring Anglophone countries (Uganda, Kenya, Tanzania) or in UK, Sweden or the USA. This seriously impacts on the modus operandi at all levels of the institution and has meant serious transformation in the way teaching and research in particular have been carried out.
- UGB, again a fairly 'young' institution, borrows much from the French system (same organisational chart and disciplinary structures, same promotion system etc) yet the Rector also finds lots of his inspiration for carrying out reform in other traditions and systems such as those prevailing in the Anglophone world and more particularly in the United States.

It is interesting to look at how the VC/Rector/President is elected or nominated to his/her position since this is an indication as well of the independence of the university management from government.

The reason why institutions have been invited to rate themselves in regards to other institutions nationally is to get a sense if where they fit in regarding the overall quality of their research and teaching.

Finally the total number of doctoral students enrolled show important discrepancies between the pilot institutions; yet we believe that even though not all aspects of the respective institutions are comparable,

[25] It is interesting to note that no one denomination system is used throughout Africa.

analysis of the challenges they face individually and collectively makes sense in order to better understand what is at stake in SSA.

Four institutions - Kenyatta University (KU), University of Ilorin (Unilorin), National University of Rwanda (NUR) and Université Gaston Berger de Saint Louis (UGB) - report that they form part of the top 5% in terms of research performance within their countries. The University of Douala, Cameroon (UDC) and Université des Sciences et Technologies du Bénin estimate that they should be rated amongst the top 10% and 20% respectively.

All pilot institutions submitted a strategic plan (often both an institutional and a national strategic plan[26]), including a research agenda which stipulates they are to move towards research-led university status. All universities underline their wish for increased institutional autonomy and for reinforced academic freedom for their staff and students in order for them to contribute fully and independently to knowledge creation in their respective countries.

## 1. COMPARATIVE ANALYSIS OF DATA PROVIDED AND COLLECTED

### *Doctoral students' enrolment*

The recruitment process of doctoral students varies from one university to the other as illustrated in the table below.

***Table 2: Doctoral Students Selection Process and Registration and Award***

| | ***Selection of doctoral students*** | ***Requirements and mechanisms in place for submitting a doctoral research proposal*** | ***Conditions set to obtain a doctoral degree*** |
|---|---|---|---|
| ***Université de Douala, Cameroon*** | • *The doctoral candidate submits a dossier to his /her department*<br>• *Then to the selection Committee*<br>• *The list of preselected candidates is submitted for final approval and signature to the Rector* | *In order to be able to submit a research proposal the candidate must have obtained an A or B mark at the least for their Master II and found a supervisor* | • *Three years registration,*<br>• *Pass all coursework, and*<br>• *Pass thesis* |
| ***Kenyatta University, Kenya*** | • *Advertisements are made through the mass media*<br>• *Students must have their masters qualifications and area of interest*<br>• *Applications are received from graduate school. Sent to department via the deans*<br>• *Department checks qualifica-* | • *Submission of a concept paper for approval at the department.*<br>• *In cases where there is a coursework component, the concept paper is developed after coursework.*<br>• *Student should be assigned a supervisor ac-* | • *Two year registration,*<br>• *Pass all coursework, and*<br>• *Pass thesis* |

[26] All documents submitted by the pilot institutions are listed in Annex 5

| | ***Selection of doctoral students*** | ***Requirements and mechanisms in place for submitting a doctoral research proposal*** | ***Conditions set to obtain a doctoral degree*** |
|---|---|---|---|
| | *tion according to criteria and makes recommendation*<br>• *Each department has eligibility criteria which are strictly adhered to by departmental board of postgraduate*<br>• *Records to deans committee for admission*<br>• *After formal application by the students, schools make a selection that they forward to the registrar (academics)*<br>• *Thereafter vetting and screening is done by the deans committee*<br>• *Successful applicants receive letters of admission*<br>• *Shortlisted by respective departments and the names are forwarded to dean of school who forwards to registrar (academic) for approval in deans committee* | *cording to the area of study.*<br>• *Development of proposal under the guidance of the assigned supervisor.*<br>• *Students should have a defence at the department with representation from their respective school, where the proposal is evaluated and passed taking into account necessary corrections.*<br>• *The proposal is evaluated and passed at the school board or postgraduate studies*<br>• *Corrected proposal is the sent to graduate school, where it is evaluated and approved for research.*<br>• *Substantive registration for PhD is then granted.* | |
| ***National University of Rwanda, Rwanda*** | *Applications are submitted to respective departments after making a presentation to all staff members of the department, then if satisfactory, the faculty constitutes an interview panel which when satisfied submits to the SC-GRD which when satisfied submits to RCTT-C and finally the SENATE. The student is then enrolled and is given maximum 12 months to submit a proposal for registration.* | *To enrol for PhD one must have a masters of at least second class level, if not one can enrol to do an MPhil and transit to a PhD* | • *Four years registration,*<br>• *Pass all coursework, and*<br>• *Pass thesis*<br>• *Publication of thesis* |
| ***Université Gaston Berger de Saint-Louis, Sénégal*** | *On the basis of results obtained for the DEA (diplôme d'études approfondies) or Master2, and appropriate results (mention : entre Assez bien et très bien).*<br>*The dossiers are reviewed by the competent committee; the following is considered:*<br>• *originality,*<br>• *clarity of research question submitted,* | *To enrol for a doctoral programme, one must have a masters of at least second class level,* | • *Three years registration,*<br>• *Pass all coursework, and*<br>• *Pass thesis* |

| | ***Selection of doctoral students*** | ***Requirements and mechanisms in place for submitting a doctoral research proposal*** | ***Conditions set to obtain a doctoral degree*** |
|---|---|---|---|
| | • *contribution to knowledge about the discipline/research area,*<br>• *innovation*<br>• *advancement of scientific knowledge,*<br>• *relevance and problem solving solution for internal and external use* | | |
| ***University of Ilorin, Nigeria*** | • *Online application of candidates*<br>• *Short listing of candidates*<br>• *Interview of candidates by their departmental post-graduate Committee*<br>• *Recommendation of successful candidates to post-graduate school board*<br>• *Forwarding of list of successful candidates to the senate*<br>• *approval of the candidates by senate* | • *Pass all the required courses in the relevant area*<br>• *Two (2) Seminar presentations on the proposed topic.* | • *Three years registration,*<br>• *Pass all coursework, and*<br>• *Pass thesis* |
| ***Université des Sciences et technologies du Bénin, Bénin*** | • *Doctoral study programmes are dependent on the originality and relevance of research proposal*<br>• *Doctoral students are selected on the basis of the dossier they submit* | • *Entry level : DEA , Master + exam (concours)*<br>• *Validation of knowledge by highly qualified professionals + Concours (competition results) + research methodology course + epistomology course and deliberation with a mixed jury (faculty 70% + Professionnals 30%)* | • *Three years registration,*<br>• *Pass all coursework, and*<br>• *defend thesis* |

*Figures 1 and 2* present enrolment trends from 2005 to 2009 and show that the total number of doctoral student increased from 373 in 2005 to 1,454 in 2009 in the pilot universities. 492 PhD students were enrolled at UGB, 467 at Unilorin, 310 at KU, UDC with 138, NUR 90 and USTB with 45.

It is however necessary to reiterate that data on doctoral student enrolments is not collected systematically in all pilot institutions. The institutions indicated that a margin of error of up to 5% should be factored in when considering the numbers they submitted.

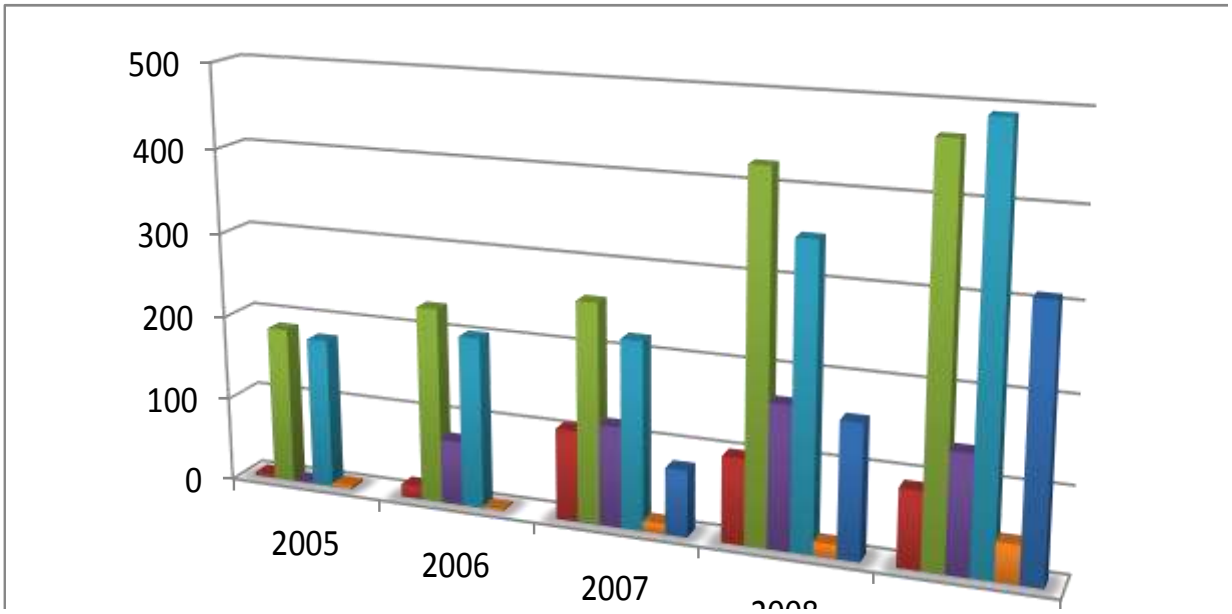


*Figure 1: Doctoral Students Enrolment Growth (2005 – 2009)*

*Figure 2* below shows percentage changes in doctoral student enrolments between 2005 and 2009.

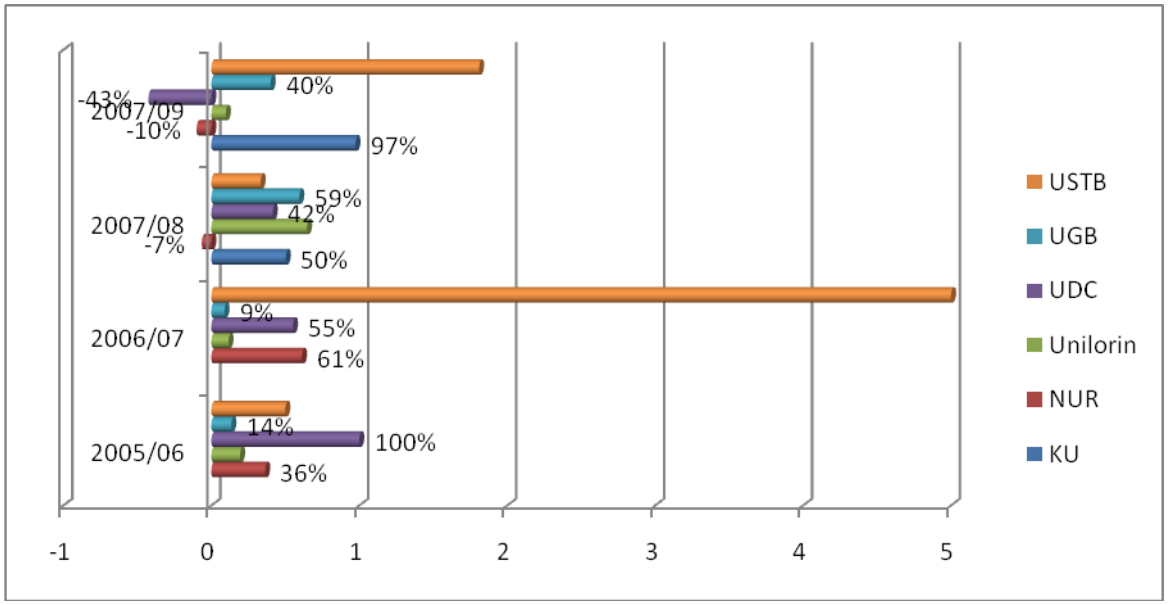


*Figure 2: Percentage change of Doctoral student enrolment by University (2005-2009)*

In 2009 UDC and NUR experienced net decreases in doctoral student numbers by - 42.5% and - 10% respectively. Unfortunately no specific explanation was offered to explain this phenomenon. The highest average annual growth rates in enrolments between 2005 and 2009 were experienced at UGB, + 55.2%[27], followed by Unilorin at + 50.2% while KU experienced an overall growth rate of + 97% between 2007 and 2009.

[27] This growth could have been even more important if the leadership of UGB had not countered the government pressures to give access to more students. UGB insists that the university (created in 1990) grants access to a number of students that matches the size and potential of the university and as well does not exceed the infrastruc-

Most changes experienced in doctoral student enrolments were due to an increase in the enrolment of female students. Figures show that, in 2009, there was an increase in female enrolments of 23% at KU, 38.9% at Unilorin, 48.8% at UGB and 33.3 % at USTB. Data indicate that women tend to enrol mostly in Education, Social Sciences and in the Humanities.

According to the members of the institutional teams, enrolment growth rationales include the following:

- doctoral studies would allow students to gain a better social status;
- the title (PhD/ Doctorat) or even simply being enrolled in a doctoral studies programme is often used to secure senior management positions outside the university[28];
- only few would enrol to actually become either university professors or researchers.

At the same time, and this was not captured through the questionnaire but rather through discussion during the institutional site visit, Kenyatta University referred to the low quality of enrolling students. KU noticed (without empirical evidence) that their best students often seek 'better jobs' outside academia instead of starting a PhD. Some may return to university at a later stage, but undertaking doctoral studies does not mean that those students who return to academia wish to pursue an academic carrier. .

This in turn impacts on the overall aging of PhD cohorts. The data collected confirms this as the average age of doctoral students is actually quite high (see page 26)

## *Doctoral Programmes*

### *Programme requirements*

Doctoral programmes in many university systems take different forms; however all prescribe some form of independent research benefitting from senior supervision along with some form of research training / coursework. Doctoral research training or coursework mainly focuses on methodological aspects relating to undertaking research. During his/her doctoral studies, the doctoral student is to carry out independent research and is to benefit from guidance of, preferably, an experienced academic supervisor and the research he/she carries out is to contribute to knowledge creation. The duration of independent research or research training varies from one semester to two years, depending on whether the doctoral programme is by research only or partly by coursework and thus a combination of the two. Most usually, the research results are expected to be published.

### *Management*

Doctoral programmes are run fully by the respective departments offering such programmes. This seems logical. Yet, the wish of the pilot institutions is to see a gradual transfer of tasks relating to doctoral programmes to doctoral/graduate schools, and more particularly the administrative ones. Where available today – like at Unilorin, in a nascent state at UGB, newly established at KU for instance -,

tural capacities of the institution. This is to avoid the University Cheikh Anta Diopp syndrome (Dakar) wich counts 70.000 students while its actual capacity is to register 25.000 students. This in effect is the result of the government's attempt to find a proper answer to the social tensions that exist in Sénégal by opening access to more students, providing them with scholarships or other kind of assistance and thus to 'mask' the effects of unemployment).

[28] Cf Kotecha, 2010

these schools seem to merely provide administrative support, to register student proposals and the supervision they are to benefit from. Thus, for now, such structures play more of an administrative rather than scientific role. The development or reform of such structures encounters resistance on both the administrative and academic levels.

This has much to do with what Dill eloquently called "academic rivalry"[29], a phenomenon known in northern hemisphere HEIs but not less in developing country institutions.

Indeed if a doctoral school is to take over tasks traditionally assumed by the respective departments where research is undertaken, how will this impact on recognition of work from the different people involved in the processes relating to doctoral programmes, what financial impacts would this have? The insecurity factor introduced by the increasing competition induced by decentralised search for funding (block grants from the government are often if not always to be matched, by funds secured via other donor instances - research councils, development agencies, the world of business, etc.) and this increases academic rivalry and directly works against centralisation of administration of work related to doctoral programmes (See Dill, 2011). Yet if ensuring a better overview of all the aspects relating to doctoral programmes - research topics, student numbers, length of study, supervision, research and supervision funding and more – benefits the university as a whole, not sharing data on resources for instance may on the other hand impact negatively on the individual research and researcher who could 'lose' his/her autonomy and even access to personally secured funds.

Competition and academic rivalry are major barriers to centralised collection and administration of comprehensive data on doctoral programmes and research. Comprehensive data collection on all the aspects pertaining to doctoral studies would help define strategic developments and reforms for universities wishing to improve the overall governance of their doctoral programs.

***Distribution by discipline and by gender***

*Figure 3* below presents the spread of doctoral students by broad subject areas and per institution. It shows that most doctoral students are enrolled in the arts and humanities, and much less in life sciences, science and technology or medicine.

Over time, this results in a shortage of senior academics and experienced supervisors in all fields and especially also in science and technology (S&T)[30]. Science and technology research requires specialised laboratory equipment, experimental materials which universities and other higher education institutions under current funding arrangements in SSA may not be able to afford. This in turn becomes an obstacle to enrolling more doctoral students in S&T areas; explains why even at school level there are not enough teachers to support students interested in S&T, and generates a shortage in students able to even apply to study in these fields.

[29] Dill, 2011, p.4,: James D. Watson's personal account of the discovery of the structure of DNA over 30 years ago clearly demonstrated that rivalry is intrinsic to the academic life. Academics have long competed for research grants from national research councils and for academic prestige via peer reviewed publications and international scholarly awards such as the Nobel Prize.

[30] See McGreggor 2008; see Mohamedbhai, 2009; Teferra, 2006. UNESCO Science Report 2010.

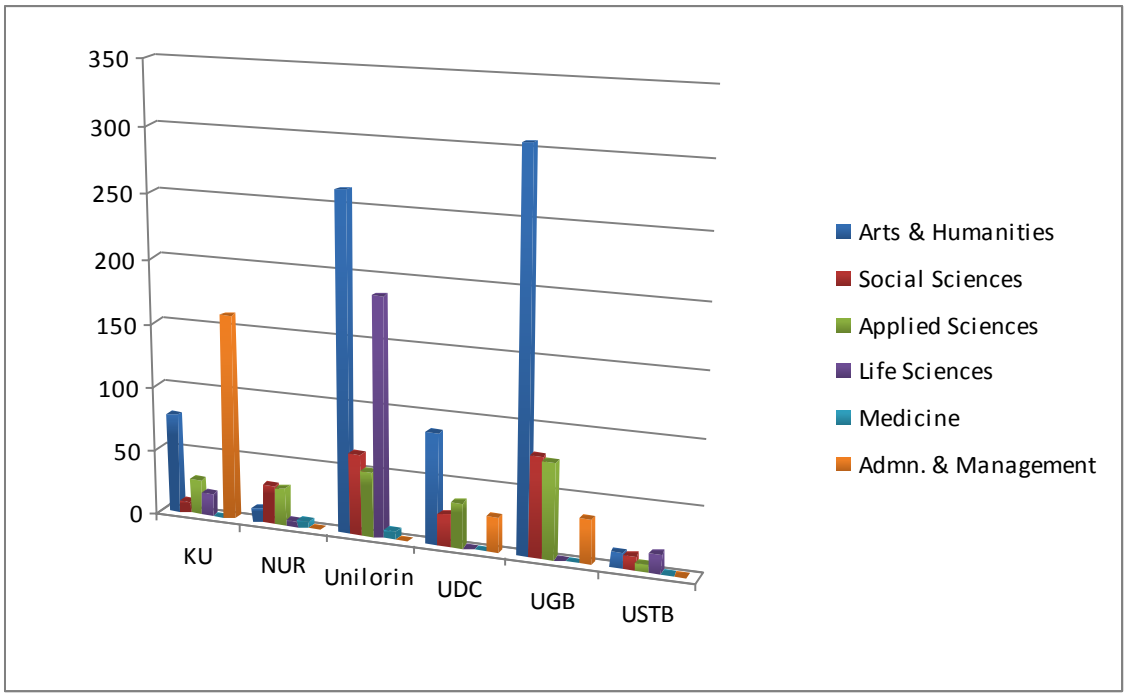


*Figure 3: Enrolments of Doctoral Students by University and Broad Subject Area in 2009/2010*

On the other hand increasing enrolment in the arts and humanities brings about other challenges (space, student staff ratios, funding, support and more).

Focused resources should be allocated to possibly redress the uneven distribution of students across disciplines. Policies to reinforce R&D in S&T have been adopted but are not yet (fully) implemented; ultimately the implementation of these policies will help better address the socio-economic needs of each country[31].

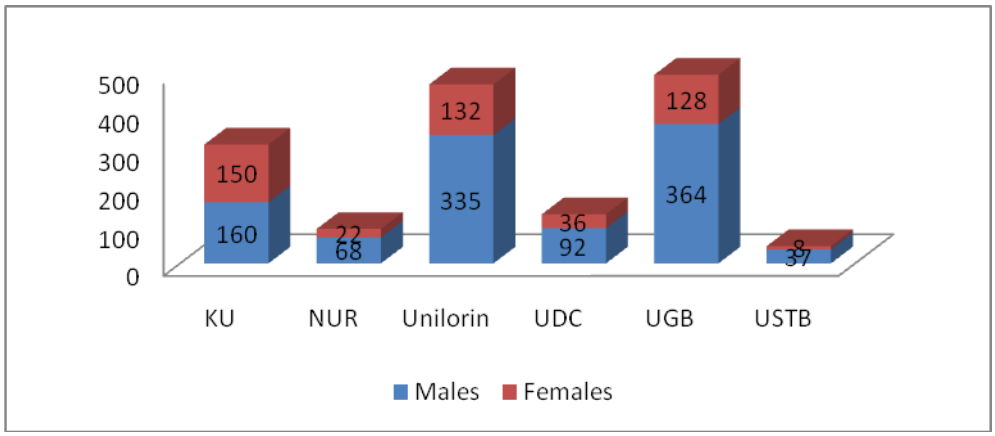


*Figure 4: Distribution of students by university and gender*

Similarly, *Figure 5* provides a comparative table and shows that Unilorin, UDC, UGB are still male dominated at 78.7%, 76.6% and 71.2% respectively. For a better gender balance and increased partici-

[31] See UNESCO Science Report 2010, the African Union Reports, the AAU projects amongst others. On funding see Okwach Abagi, 1995as well.

pation of women in doctoral programmes, institutions recognised the need for better institutional incentives including affirmative action strategies to be developed.

The institutional self-assessment questionnaire also asked for data on distribution of doctoral students per age at each participating University.

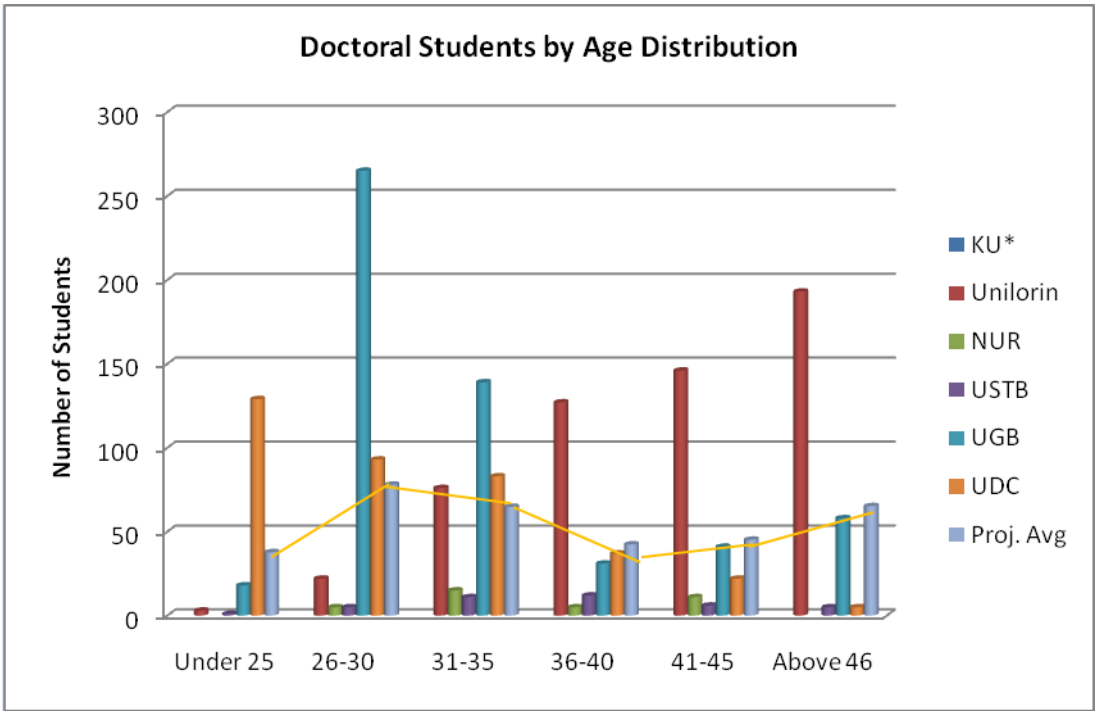


*Figure 5: Doctoral students by age groups*

The age distribution reported in Figure 6 above shows great varieties between institutions. It indicates that a large number of doctoral students are 36 years old and above; the age of doctoral students at the University of Ilorin ranges between 36 & 40, 41 & 45, and above 46 years. At UGB and UDC the situation is quite the opposite: most of their doctoral students are between 26 and 35 years old. Doctoral students at NUR and USTB are between 26 & 45 years old[32].

In discussing the age of their doctoral students with the institutional teams, it appeared that, often, the relatively 'advanced' age of the students can be explained by the fact that most 'students' are actually full staff members and that the university has put in place mechanisms to strongly incite their staff to secure a PhD, thus increasing the academic level of its staff, in order to enhance the profile of the university by increasing research capacity overall. The aim is also to increase the supervisory capacity of the staff. This is the case in particular at Unilorin, where most doctoral students are indeed faculty members who have a secure job at the university, need to complete their doctorate and are supported by the institution to do so. It is to be expected that the next generations of PhD students at Unilorin will be younger in age and will probably be those that will have finished their Masters and will start a PhD right after graduation.

[32] A historical factor needs to be factored in here, i.e. an interesting cultural difference between Anglophone and francophone traditions: indeed professional life is valorized very early in the personal development of an individual; this in part explains why people study, work and then return to higher education. In the francophone tradition on the contrary, studies were to be undertaken and to suffer no interruption. But this difference tends to disappear and each culture now feels the need to valorise both practices at the same time: both work and study.

Today at KU 45 % of staff now are PhD holders. Olive Mugenda, Vice Chancellor at KU, wishes for this number to be raised up to 70%. For her, MIT and Stanford are the standards KU should aim for. In order for the university to achieve this, a specific mentoring programme has been put in place by the Vice Chancellor. She estimates that in order for the university to perform better and reach higher standards throughout (in teaching, research and all operations), quality of staff needs to be improved. Better educated and equipped staff will help enhance teaching, research and supervision capacity. Financial incentives have been put in place to enable staff to undertake a PhD and finish it within reasonable time limits and as well to facilitate other support structures for staff to perform better and to ultimately enable them to supervise PhD studies under improved conditions ( for instance: restricted number of PhDs to be supervised; some financial incentives offered).

The situation at UGB is different. Doctoral student enrolment takes place mostly directly after students have obtained their Master's degree.

Doctoral programme funding impacts on both the age of the students and on the duration of PhD studies [33]. Indeed that those students who benefit from government support through scholarships may start their studies earlier and are likely to complete their doctoral studies within 4 to 5 years. The 'self-funded' students usually start doctoral programmes at a later stage and need more time than those who benefit from financial assistance to complete their studies since they need to secure finances through work next to studying. Indeed, after graduation, most students seek remunerated working positions that eventually may allow him/her to return to university to enrol in a doctoral study programme and complete a doctorate. The self-funded students will often enrol on a part time basis instead of full time, again due to the need to secure financial means for the study itself and for the family he/she is responsible for. This again impacts on the average age of doctoral students in a given country and on the duration of the research undertaken.

These figures are telling and indicate on the one hand that pilot institutions still often have to ensure that their staff members are brought up to speed and are provided with the assistance needed to undertake and finish their doctoral studies in due time; on the other hand, the project allows us to state the obvious: funding doctoral studies and providing financial support to doctoral students through scholarships or by offering doctoral students research positions within the institutions is the best way to help ensure that doctoral programmes are completed successfully and in time.

Finally and to conclude this section on the age distribution of doctoral students, the institutional teams also indicated that enrolment rationales also impact on the age distribution. The members of the institutional teams indicated that students in part enrol in doctoral programmes because:

- doctoral studies allow them to gain better social status;
- the title or even only the study is often used to secure senior management positions;

*"In broader terms there is a need for access to information. Most of us are members of staff and need more information on opportunities to network and participate in conferences. We lack access to internet facilities and more specifically to senior academic supervision." (KU)*

*"There is a big problem of access to recent scholarly publications and a lack of access to ICT tools and information; these are among the greatest challenges we face"*

*(Doctoral Students comments collected at KU).*

[33] See page 36 as well.

- only a selection of those students enrolling in doctoral programmes envisage an academic career and plan on applying for a university professor's and/or researcher's position.

These factors equally explain why individuals enrol at a later age and not right after graduation.

***Distribution by region of origin and student mobility***

*Figure 6* below shows doctoral students' enrolment by region of origin. This figure shows that home students are still the largest cohorts of students across all pilot institutions.

Unilorin, UDC and KU attract almost only local students.

NUR has very few doctoral students on site (only 5); most of their doctoral students are trained in Sweden. And when talking about 'international students', NUR often refers to Rwandan people re-attracted back to Rwanda from the Diaspora.

USTB counts the most regional and international students respectively.

One should not underestimate the impact that the country's political profiles have on student mobility. Nor should one underestimate the cost factor of any mobility. Without political stability or adequate financial support, it is very difficult for students to engage internationally. As of today, considering the social, political and economic situations that prevail in the countries under consideration, the outbound flow is more frequent than the inbound mobility. Besides, the fact that scholarships available for participating in an international exchange are mostly available for students wishing to pursue their studies 'outside Africa' also needs to be factored in. Only very few scholarships are offered to attract foreign students in and when they exist they are not well-known.

Only very few scholarships are offered by the HEIs participating in the project which would help attract foreign students from the region and internationally. The scholarships offered by Unilorin serve as a good example of such scholarships[34]. Offered to graduate, doctoral and post-doctoral students, these scholarships mainly attract Nigerian nationals back to Nigeria to study at Unilorin. Yet the scholarships are available to all, no matter the nationality. The current project allowed for USTB and Unilorin and now UDC and Unilorin to develop specific partnerships. The concluding study and research seminar held in Nigeria in November for instance led to the signing of MOU between UDC and Unilorin and mobility flows of staff and students between both institutions and countries.

[34] See: in 2010, The University of Ilorin offered a series of scholarships for master, PhD and post-doctoral research.

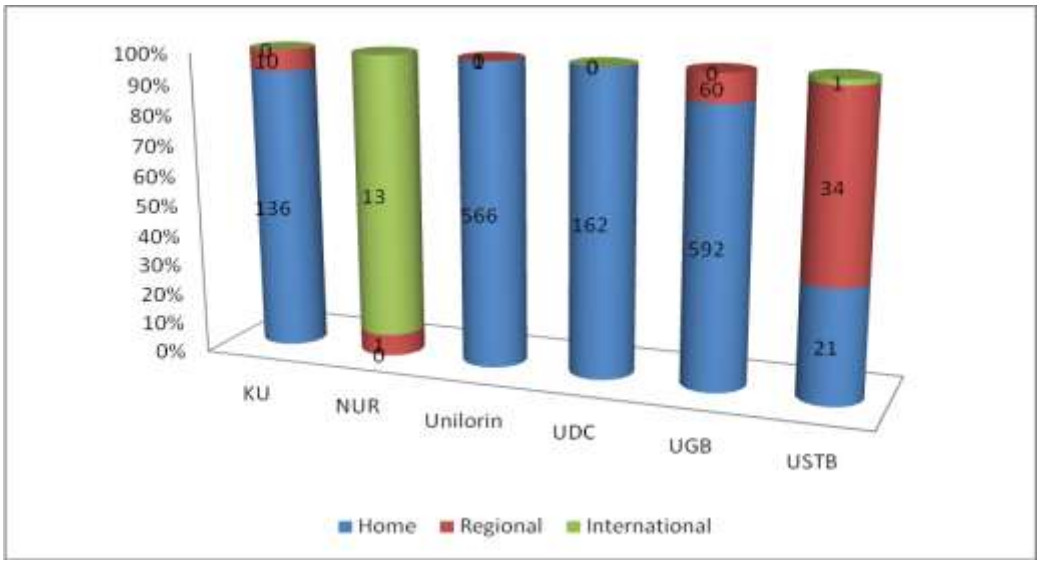


*Figure 6: Doctoral student enrolments by region of origin*

*Figure 6* show that apart from NUR little internationalisation has been achieved. It can be concluded that in sub-Saharan Africa, regional and international / continental collaborations are not effectively exploited as a way to internationalise the institutions and the doctoral programmes in particular.

***Doctoral programmes assessment***

Doctoral programmes assessments vary substantially from one university to the next. The assessment methods used by pilot institutions are presented in *Figure 7*.

Unilorin counts the largest number of doctoral programmes, 55 in total; 20 of these programmes are assessed through the writing and defence of a thesis, others are assessed through coursework and others again through a combination of coursework and oral defence.

The introduction of coursework is seen by some, and particularly by KU, as a way to reorient PhD programmes and research so that doctoral students are better prepared to carry out academic research and to succeed on the one hand, and better equipped for the world of work outside the university on the other. Why? Because coursework is presumably more practically oriented.

Today, HEIs in Africa (as well as elsewhere) are pressured to reinforce their links with society and with the business world; they see the introduction of course work as one of the ways to address this.

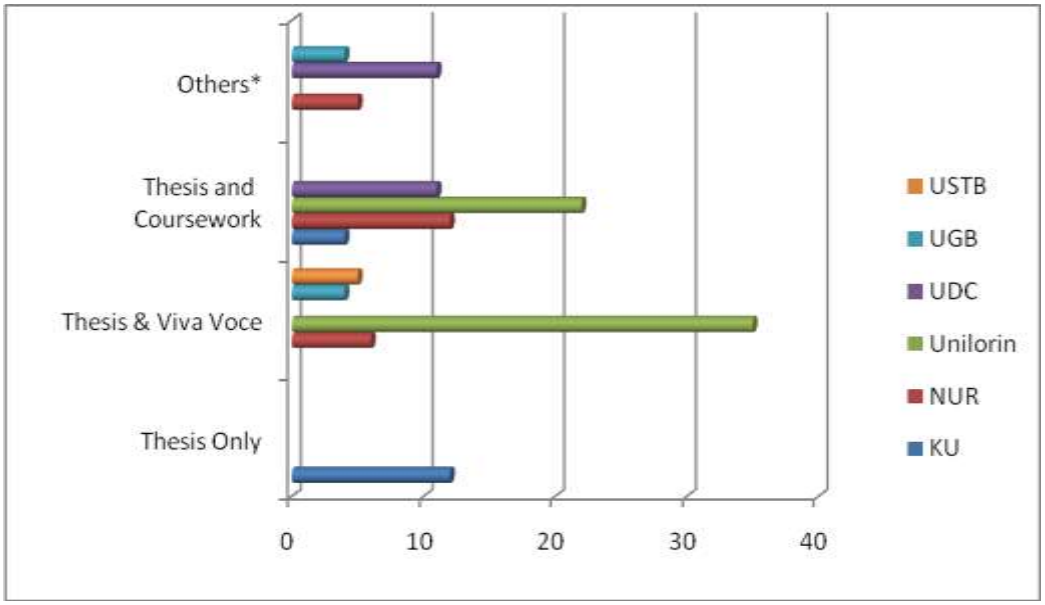


*Figure 7: Assessment methods for doctoral programmes at pilot institutions*

This leads to consequent reforms of the programmes as far as they are organised, administered, run and assessed. The 'older' system leaving the student developing his/her research in a more independent way moves to a new style doctorate: more focused, including coursework and individual research, run within a stricter time frame and with an expected closer exchange between student and supervisor. The move from one system to the new, along with the reforms that this entails, needs further support both financially and administratively, and both institutionally and nationally, if not regionally. The reforms under way need further mapping and research.

## *Research and educational infrastructure for doctoral studies*

*Figure 8* below provides an overview of the institutional evaluation of the different technical research infrastructures available, including seminar facilities, libraries, laboratories, ICT resources, which doctoral students can benefit from at each institution. 1 (one) is the lowest grade possible and 5 (five) the highest.

The quality and quantity of each are key to successful completion of the doctoral programmes; both vary considerably from one institution to the next.

Unilorin considers itself to offer quality facilities, with an average score of 4.7, followed by NUR (4) and by UGB and KU with 3.5 each respectively. All three reported that, on average, their library facilities are 'correct' and their seminar facilities as well. On the contrary, ICT and network connectivity was reported as being too limited. Labs and special workshop facilities and other research facilities were generally indicated as being inadequate.

On the contrary, UDC and USTB consider that the research facilities provided are inadequate, with an average score of 2.5 and 2.8 respectively. Library facilities and holdings, and seminar rooms were deemed relatively poor; ICT resources should be put in place to explore how regional or national specialised laboratory facilities could be accessed through a regional research network or "nodes" of excellence.

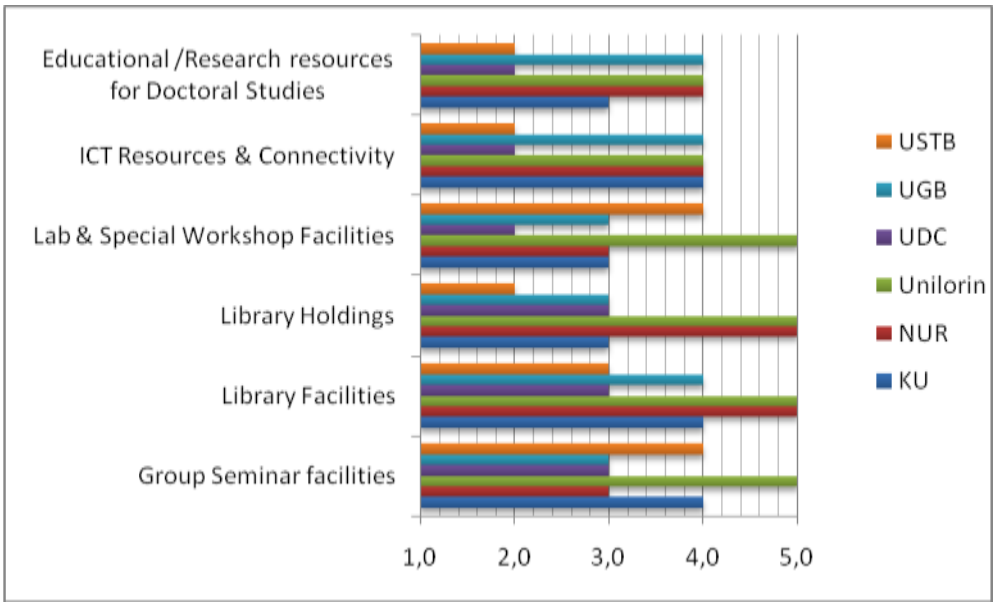


*Figure 8: self-evaluation of quality and availability of research facilities*

Persistent problems reported by all include slow internet access and regular network overload. Disruptions due to power failure and national fibre-optic network cuts are common place in most African countries. In addition, UDC reports that due to lack of finances, bills are often paid with (much) delay; this too often result in lack of power supply to the institution as a whole and the research labs in particular.

The site visits also allowed the visiting team to note that most facilities would benefit from renovation and modernisation.

## *Doctoral supervision*

The quality of an institution of higher learning depends to a large extent on the quality of its academic staff. Likewise, the success of the doctoral students depends heavily on the quality of the supervision they can benefit from[35]. Academic staff is responsible for learning and teaching, knowledge creation through research, supervision of students' research and dissemination of their teaching and research findings, including through publications[36]; supervisors are to provide expertise, time and support to help ensure the production of a thesis of acceptable institutional, national and international standards.

Academic qualifications, research output in the form of publication in peer reviewed journals of those habilitated to supervise are examples

*"Changing supervisors often leads to non-completion of do**ctoral studies; the multiplicity of viewpoints linked to the multiplication of supervisors generates conflicting situations often preventing students from completing their studies".***

***"We are not required to publi**sh in order to complete our PhDs but it counts for career development within the University".*

*"We have full time programmes but students enrolled in them also work full time and that is unmanageable" (Quotes from the KU institutional project team project)*

[35] Cf. The Vth EUA Salzburg conclusion and recommendation: The crucial role respect of individual doctoral candidates, arrangements for supervision and asse parent contractual framework of shared responsibilities between doctoral candic tion (and where appropriate including other partners). See Salzburg conclusions *Salzburg recommendations* II, 2010.

[36] The number of scientific publications recorded in the Thomson Reuters's Sci most commonly used indicator for scientific output.

of important indicators of their experience in research and – as is assumed – warrant – quality supervision.

Phillips and Pugh (2006) suggest that in selecting potential supervisors two factors come into play, namely:

a) Research experience and level of research activity;
b) Experience in the field of supervision and current commitment to the supervision of research students.

Supervisors, who in most cases are professors or senior academics, are to monitor the doctoral students' work and provide feedback on progress and problems; they are expected to provide discipline-specific and expert advice on the topic the student is specialising in; they are as well to ensure that their student's research contributes to innovation and possibly responds creatively to certain societal needs.

In order to ensure the above, supervisors need assistance and institutional support. Some pilot institution leaders underlined their responsibility in this and noted that, as VCs, Presidents, Rectors, they are probably those who can and should lead the staff the 'extra mile' and make changes happen throughout the institutions. They indicated that they were committed to see their administrative and academic staff (deans of schools, heads of departments, full professors, etc) complete their studies at the highest level, benefit from lifelong learning opportunities and to offer them with opportunities to participate actively in international exchange programmes in order to increase their knowledge about what is at stake world round. They are convinced that this can only have positive repercussions on the way staff and in particular doctoral student supervisors will accompany their own doctoral students during their study and will help them perform in reasonable periods of time (4 to 6 years). Better synergies between older and younger research generations should as well help foster innovation. The pilot institution teams requested that special incentives be developed to make this happen.

The departments/school the student is registered at should be in charge of allocating the adequate supervisor. *Figure 9* below presents an overview of academic staff habilitated to supervise doctoral students at each pilot institution (this table reflects the situation as at 31st December 2009).

Unilorin counts the highest number of senior academic staff and counts 120 full professors, 40 associate professors and 186 senior lectures. KU takes second highest position in senior academic staff with 29 full professors, 49 associate professors and 105 senior lecturers. This is followed by UGB with 15 full professors, 19 associate professors[37]. On the other hand, USTB counts only 9 full professors, 32 associate professors, the remaining are assistant professors and 23 senior lecturers.

[37]UGB obtained 8 new associate professors and 3 professors at the CAMES session in July 2010 and following the concours d'agrégation. L'UGB thus counts 47faculty members (out of a total of 159 teachers) habilitated to supervise doctoral studies and research. The supervision capacity stands at 29,5 (5%). For information, in Senegal, only full professors and associate professors are allowed to supervise doctoral research. UGB counts one DVC research one VC research and the DRICS (Direction de la Recherche, de l'Innovation et de la Coopération Scientifique) which has the same position.

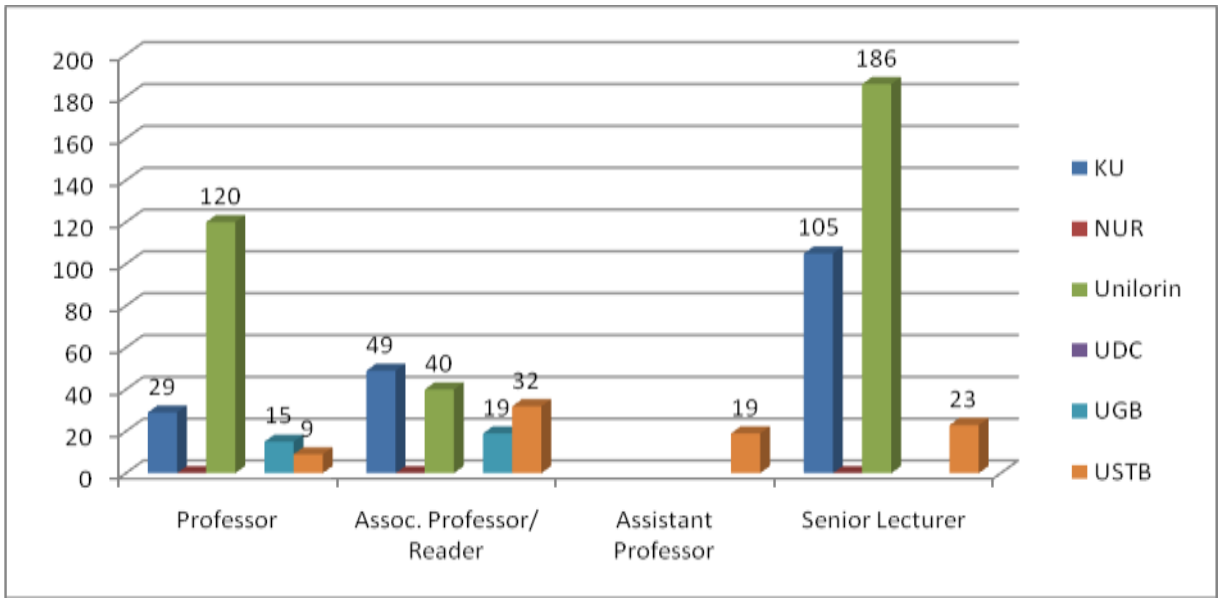


*Figure 9: A Comparative table of doctoral student supervisors by academic position in 2009*

*Table 3* presents the student / staff ratio policy as far as doctoral students' supervision is concerned.

Ideally, a supervisor should not supervise more than three to five doctoral students on a full time basis and three students on a part time basis at most. Yet the official and non-official figures contradict each other. Indeed, if the answers compiled from the questionnaire completed by KU show a low 1.7 ratio, the supervisors the project team met in July 2010 reported to supervise up to 11 students at a time.

| *University* | *Number of staff enabled to supervise doctoral students* | *No of doctoral students* | *Student/staff ratio* | *Institutional policy on students / supervisor ratio* |
|---|---|---|---|---|
| *KU* | 183 | 310 | 1.7 | 2 |
| *NUR* | 0 | 90[38] | 0 | - |
| *Unilorin* | 346 | 467 | 1.4 | 5 |
| *UDC* | 0 | 138 | 0 | 5 |
| *UGB* | 34 | 492 | 14.5 | 7 |
| ***USTB*** | **40** | **45** | **1.2** | **3** |

*Table 3: Supervision capacity at participating universities in 2009*

Universities with a higher concentration in the arts and humanities show a higher student/supervisor ratio compared to those specialising in science and technology where the ratio is lowest. High student/staff ratios impact on the quality of the supervision provided and the resulting learning outcomes.

[38] Currently all NUR Doctoral Students are educated abroad and mainly in Sweden. And this is the case since the university reopened after the 1994 genocide. Students come back after completion of their doctoral studies pursued in sandwich mode and often take up positions opened at NUR.

In a short cut it can be said that this in turn impacts negatively on the development of sub-Saharan Africa as a whole.

It appeared that at most universities no consistent registration and tracking mechanism of doctoral programme supervision was in place.

This study points to the fact that pilot institutions should try and improve the doctoral student / supervisor ratio towards ideal levels. The institutional teams indicated the need for more faculty with supervision accreditation / *habilitation* to be recruited; staff retention strategies to be consolidated or developed; and e-supervision to be developed (nationally and internationally). Internationalisation of doctoral programmes may help address some of the shortfalls of supervision capacity at higher education institutions in sub-Saharan Africa.

*Figure10* provides an insight of the proportion of doctoral students that are being supervised by local or foreign faculty. More than 70% of all students in the pilot universities are supervised locally, except for NUR and USTB where 80% and 90% of students are supervised by foreign faculty. While full foreign supervision is not desirable, neither is full internal supervision, as is the case at Unilorin (100%). Supervision is provided by local staff to up to 90% at UGB, to 80% KU and 40% at UDC.

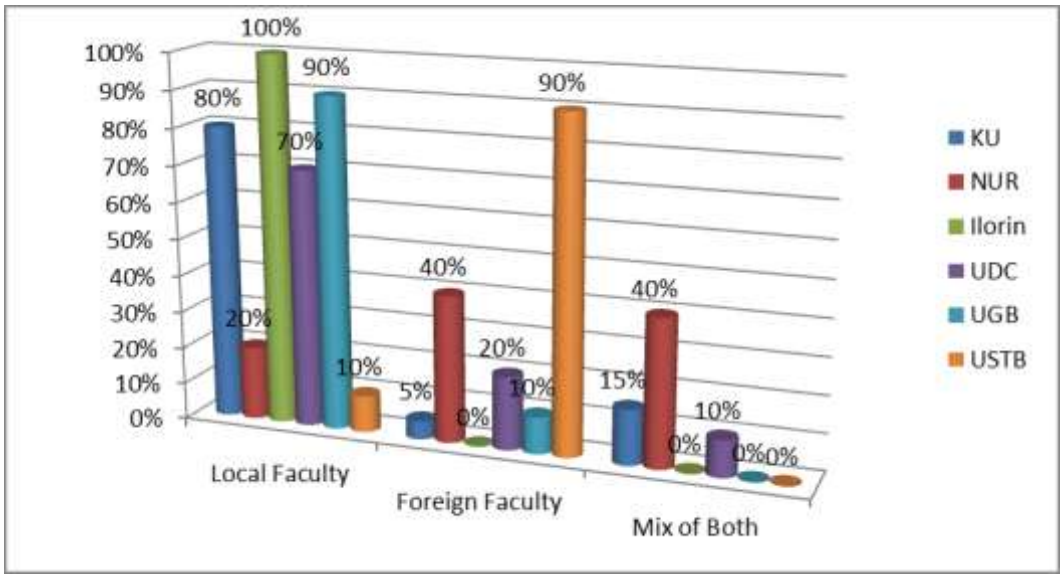


***Figure 10: Institutional doctoral students' supervision***

Mixed supervision (local and national/regional/international supervision) helps expose students to other ideas and research cultures, thus offering them with opportunities to broaden their views and to potentially increase their learning outcomes. HEIs address this issue creatively by hiring adjunct professors from other institutions, by attracting retired academics and other specialists from the business world to teach and offer expert supervision, by developing e-supervision with senior faculty outside of the country. This sometimes results in sharing of research networks with the doctoral students and in innovative research career prospects in academia and even in industry. The impact on the research carried out by doctoral students is significant.

Publications and grants sought and secured by academic staff leads to promotion; associating their doctoral students to sponsored projects can only benefit the students as well.

This said, the questionnaire and interviews revealed the following challenges that many of the institutions face to differing degrees:

*The supervisor underlined:*

- insufficient time allocated for supervision;
- supervision overload: despite figures provided, many members of staff habilitated to supervise doctoral students complained about supervision overload;
- lack of overview of who each member of staff actually supervises; there does not seem to exist a systematic tracking of progress made by students at all institutions, not even by the supervisors themselves;
- moonlighting: lack of funding of academic staff often leads staff to accept revenue-generating positions outside their regular position (they accept other teaching positions at neighbouring private institutions, thus contributing to academic moonlighting or embark on lucrative consultancy projects which takes time away from their university tasks) the regular absence of the supervisors inevitably impacts on the availability of the supervisor and on the quality of the supervision;
- lack of transparency: senior staff may accept to supervise a student, sometimes because the institution has put in place financial incentives to encourage their staff to supervise doctoral students but then leaves much of the work to an assistant. This again impacts on the quality of the supervision provided.

*The students stress the following:*

- study and work conflicts: even though students enrol in full time programs they also often have to financially support their families, and thus have to juggle their study with work: this slows down the process and hampers success in the end. As a result: doctoral studies are reported to last far longer than initially foreseen; the delays are also at time likely to lead to non-completion of the studies and thus to a waste of time for all; students find it difficult to find time to attend doctoral classes and to actually meet with their supervisors, or to set times convenient for both.

*Overall HEIs reported:*

- lack of overview of research undertaken: HEIs called for systematic registration of doctoral subjects in order to avoid overlap and duplication and in order to increase efficiency and relevance;
- lack of internal evaluation of the quality of research carried out;
- lack of evaluation of the quality of doctoral candidates registering for a doctoral programme;
- brain drain: pilot institutions reported on the high faculty and other staff turnover they have to work with. Senior academic staff members leave their university especially in key areas of science and technology. Issues contributing to staff turnover include: poor remuneration, better job opportunities or working conditions elsewhere, consultancy for international organisations, early retirement or dismissal, resignations and death. Developing strategies to set up targeted incentives and improved working conditions for academic staff, transparent reward schemes and access to fellowships / grants etc. can foster retention, improve quality and ensure better performance of doctoral students.

During the institutional site visits the following comments were noted:

*"Universities call for a university directory of theses by subject and discipline, and for a listing of doctoral students supervised and by whom. 'Professors often do not really know how many students they have accepted to supervise' (UGB) – no official tracking system available yet.*

*"There is a real need to better look at the qualifications of the entrants. There is also a need for institutions to internally evaluate the research carried opportunities. In Francophone countries all evaluations are carried out by the CAMES" (UGB)*

*"Most doctoral students are enrolled in full time programmes; yet most work outside of the institutions as well. Reconciling study and work is a challenge. Even making appointments with supervisors is sometimes very difficult". (Unilorin)*

*"Supervisors are too often faced with work overload" (KU)*

*"Teaching staff are often bound to 'moonlight' to make ends meet. In Rwanda, it is not uncommon to teach in Butare and in Kigali as well. This leaves little to no time for 'free' supervision of students" (NUR).*

*Combining heavy teaching and research responsibilities with increased consultancy results in the fact that there is no time left for good supervision. The most successful people leave the university to better positions when they are offered interesting opportunities (NUR)*

Regional associations of universities and indeed the AAU and IAU have a role to play in advocating for reforms in this area[39].

### *Funding Doctoral Students and Programmes*

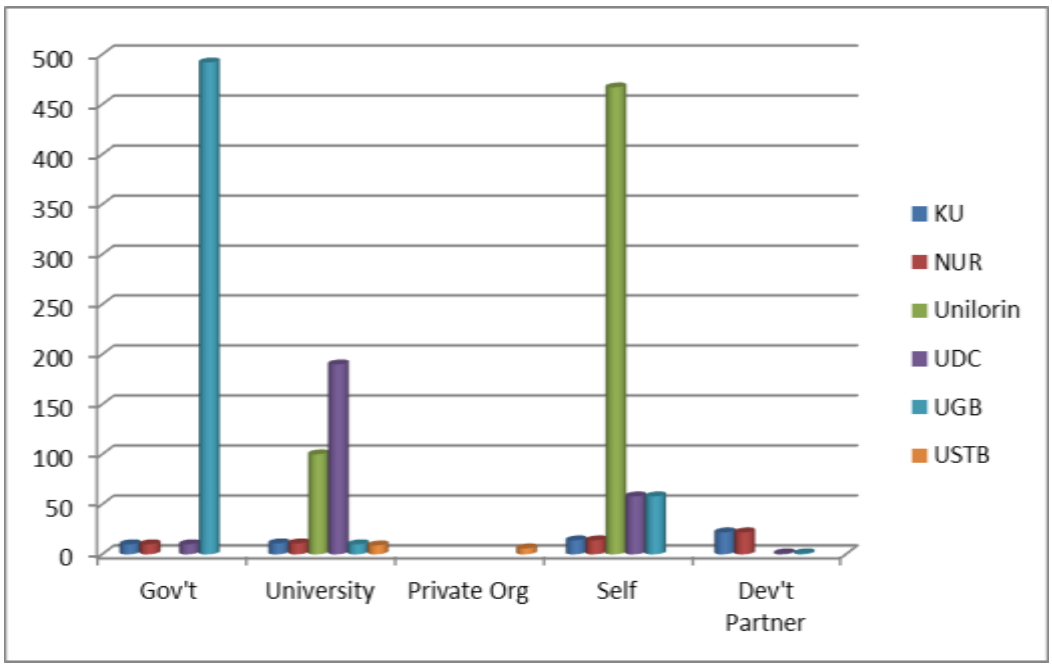


***Figure 11: Sources of funding for doctoral students at pilot HEIs***

[39] See for instance the cooperation prospects with the CAMES; AUPELF-UREF, the Commonwealth and the IAU suggested in Chapter 6 of "Higher Education in Africa" Dakar 1998.

*Figure 11* indicates the potential funding sources on which doctoral students can rely. It shows that at Unilorin the majority of students (83%) are self-funded and the remaining 17% are university funded. At UGB nearly 88% are Government funded[40] and 10.2% self-funded respectively.

KU, NUR and USTB show mixed sources of funding. A unique pattern emerges at UDC where a significant number of doctoral students (190, i.e. 70%) are university funded while the rest are self-funded.

Public higher education in sub-Saharan Africa is mainly financed by governments but certainly also to a large extent by the private sector (parents and entrepreneurs) as well as donor agencies (mainly international development partners and funding agencies). Expensive programmes, including doctoral programmes in science related fields, do not receive enough funding to cover the cost of their development and management.

Research capacity in African universities is limited and is weakened by the persisting phenomenon of brain drain. This problem is well know and different initiative are underway to address this including through increased funding of doctoral programmes as is highlighted in Chapter 14 of the UNESCO Science Report 2010 on sub-Saharan Africa:

> *"there is a significant move by a growing number of African countries to enhance their S&T capacity as part of poverty alleviation strategies. In 2008 alone, 14 countries requested UNESCO's assistance with science policy reviews. Although GDP per capita rose in the majority of African countries between 2002 and 2008, it remains low by world standards, a factor which has an impact on investment in STI. Moreover, GERD (Gross Domestic Expenditure on R&D) still attracts less public funding than the military, health or education sectors.*
>
> *South Africa is the only country which comes close to the 1% mark for R&D intensity (0.93 in 2007). South Africa also dominates scientific publications, representing a 46.4% of the sub-continent's share, far ahead of the two next most prolific countries, Nigeria (11.4%) and Kenya (6.6%). Of note is that the number of articles recorded in the SCI has progressed for all sub-Saharan countries […].*
>
> *A major challenge is the low literacy rate and poor quality of education, even if both literacy and enrolment rates have climbed in the past decade. To address these issues, the African Union issued a Plan for Action for the Second Decade of Education for Africa in 2006. Another major challenge is brain drain: at least one-third of all African researchers were living and working abroad in 2009. A growing number of countries are tackling the root cause of this problem by raising the salaries of academics and providing other incentives. Cameroon for instance used the writing-off of part of its debt to create a permanent fund in early 2009 which triples the salaries of academics overnight. The number of academics appears to have already swelled by about one-third and the volume of scientific articles produced by state universities has likewise risen.*
>
> *Five years after the adoption of Africa's Science and Technology Consolidated Plan of Action (CPA) covering the period 2008-2013, progress has been made in biosciences and water research and the first set of pan-African R&D statistics is due to be delivered in 2010.* (UNESCO Science Report 2010, p.22).

Funding of doctoral students and programmes is key to ensuring that sub-Saharan Africa graduates can participate fully in the development of knowledge for their respective societies. High quality doctoral education and research training along with good research conditions play a key role in re-attracting and retaining researchers in and to sub-Saharan Africa. The case of Cameroon cited above in the UNESCO

[40] This is part is to be explained by the selection process that prevails at UGB. For the last ten years, the state of Sénégal is trying to generalize its scholarship system to all (bourse d'excellence + social aid). UGB selects the 'best' students at registration the first year and apply a numerous clauses system in order to make sure the number of students is in adequacy with the actual registration (infrastructural) capacity of the university. UGB is thus certain to secure a high percentage of scholarship holders among its student population.

Science Report citation is confirmed by Nigeria, and in particular by practices at Unilorin which increased the salary of its staff, improved the life on campus and R&D facilities, devoted substantial financial means to the development of their IT capacity and as a result indicated to have attracted quality academics and researchers to Ilorin.

Analysis of institutional budgets indicate that research and doctoral programmes on average constitute a very small fraction of the overall budget, meaning that many higher education institutions are still mostly considered as teaching rather than research institutions. Yet given the relatively recent history of higher education in Africa it is not surprising that doctoral education has received more attention only recently. Yet it is to be hoped that governments will invest fully in its development continent wide from now on and in the future.

*Figure 12* below shows that among the pilot institutions, UGB benefits from the highest budget for research and doctoral programmes (US$ 506,343) while UDC has US$ 132,000, KU has US$ 160,000, Unilorin US$ 175,676 and USTB US$ 380,000[41]; NUR did not indicate a specific budget allocation since the university has not started running doctoral programmes of its own yet (all students are enrolled in sandwich programmes with Sweden and other universities from 'the north'. Each year approximately 130 NUR students study in Sweden, Belgium, France, the Netherlands and Germany).

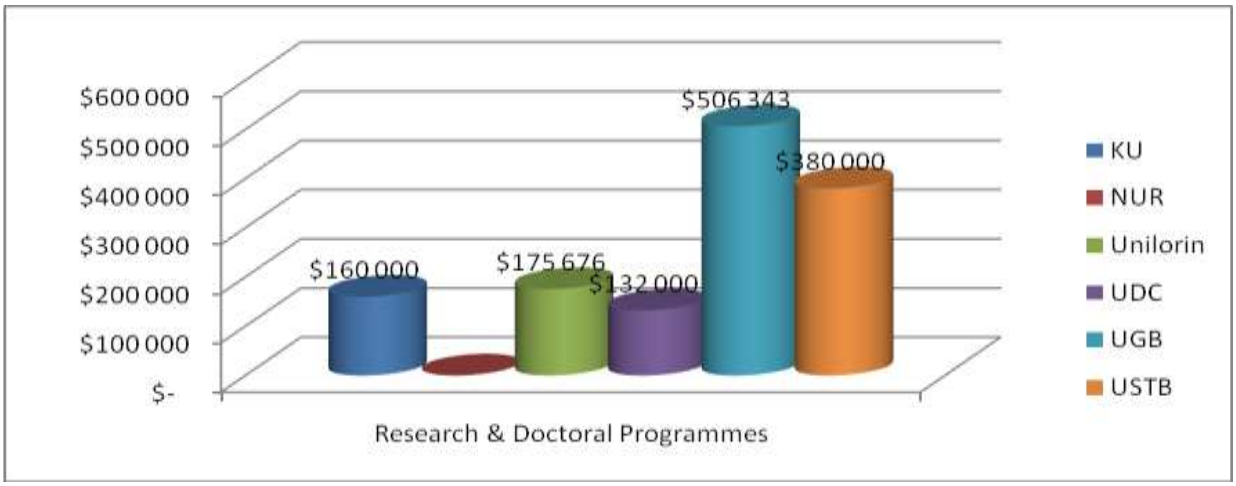


***Figure 12: Doctoral programmes budget in relation to institutional budget 2009/10***

Moving towards a research led university would require a significant reallocation of funding to research and doctoral programmes budgets. Complementary alternative external sources for university funding may play a vital role in the development of these programmes.

The comparative table below presenting the institutional distribution of research funds across faculties and by broad subject areas shows the disciplinary concentrations of each pilot institution.

41. These figures would have been more telling if the exact percentage of the research amounts compared to the total budget of the institutions would have been indicated. As a next step, it would be useful as well to analyse the exact costs for a student to undertake a PhD as 'self-funded', and the exact costs per student for each institution - probably difficult if not impossible to calculate given the current weak data collection mechanisms in place.

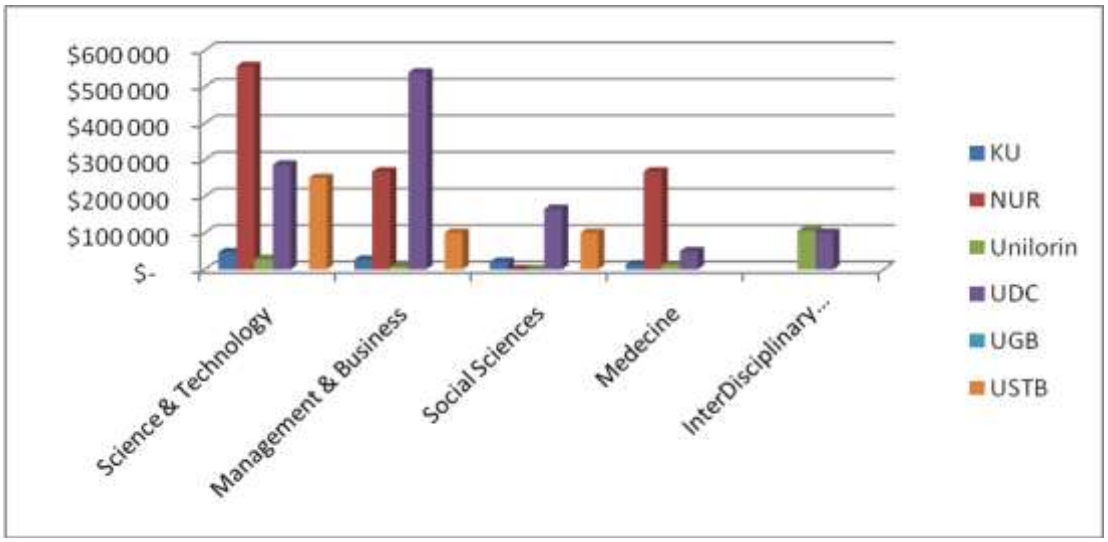


*Figure 13: Distribution of institutional research budget across broad subject disciplines*

As already observed in this report, more information is needed on funding mechanisms for doctoral students and programmes; this would help seize how best to finance doctoral research. Better funding would as well allow for doctoral research to better investigate and match sub-Saharan Africa's development needs.

Furthermore, there is a need for development of funding co-ordination mechanics at institutional, national and regional levels. Better co-ordination will lead to better efficiency and use of doctoral research funding, will foster better development of programmes and thus make doctoral studies in sub-Saharan Africa more relevant and more attractive internationally.

## *Monitoring Career development*

Career development monitoring is in fact tightly linked to funding of doctoral programmes and this for two reasons: career development monitoring is increasingly seen as an important tool that could help develop a research pool of highly skilled researchers that could be re-attracted to their home institutions. Participating universities indicate that career development and management form part of the services offered to their doctoral students and even part of their doctoral programmes. *Figure 14* below lists the areas in which doctoral students from participating universities seek employment. They seek teaching and research positions at universities, careers in industry and government or aim at becoming consultants for local and international organisations.

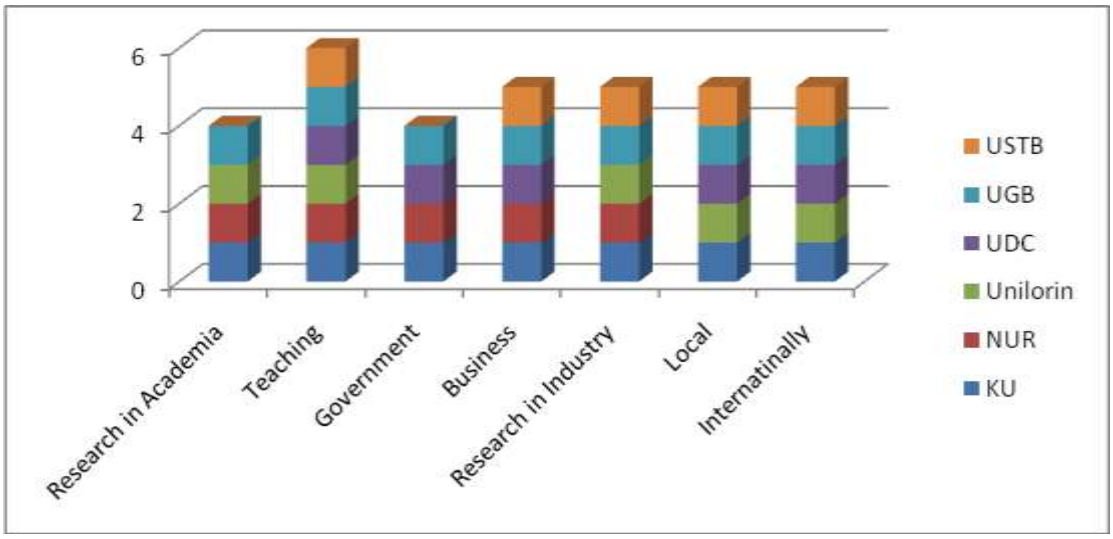


*Figure 14: Careers sought by doctoral students after graduation*

Monitoring career development of doctoral students after they have left their alma-mater provides information on the external perception of the institution, of doctoral programmes offered and their valuation by public and private sectors. Interviews showed that only two institutions, namely UGB and NUR, have a tracking mechanism in place, while the remaining four institutions, USTB, UDC, Unilorin and KU, do not.

All pilot institutions deplored the fact that too many of their best PhD holders leave the academic world to pursue better paid careers in the private sector (at other private higher education and research institutions and centres, or at private companies) and internationally.

## III - INSTITUTIONAL CHALLENGES AND OPPORTUNIES FOR REFORM

Analysis of the questionnaires, matched with comments received during the interviews undertaken, indicate that strategic data collection, improvement of research facilities, improvement of supervision, request increased funding, and are the most pressing challenges facing institutions wishing to strengthen and develop their doctoral study programmes, and to improve their management and organisation.

### *Institutional Challenges*

Participating universities were asked to list up to six (6) challenges that their institutions face with regards to the management of their doctoral programmes.

Responses to this question were collated into *Figure 15* below. The phrasing of the challenges was reviewed and compared with one another and those similar or related themes were condensed into 14 categories of challenges core to the current study. The six (6) challenges have been ranked by order of priority as indicated by the respective HEIs.

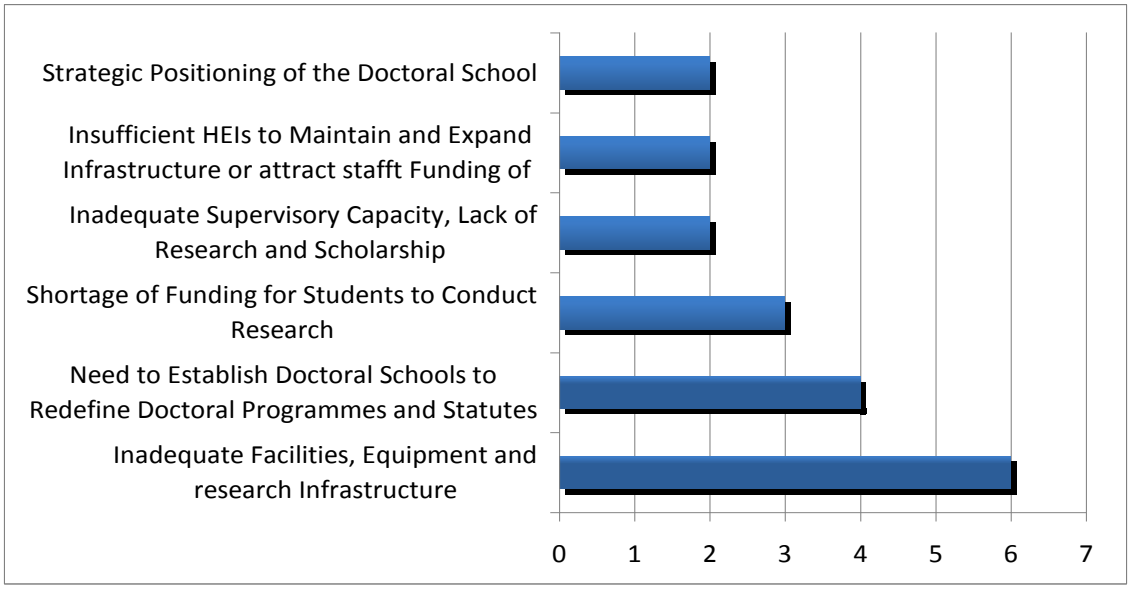


*Figure 25: Key institutional challenges*

The rank order provides information on key challenges that have been identified as having strong implications for university research, teaching and management and also for policy development in sub-Saharan Africa.

Integrating research policy and national innovation systems and mentoring the next generation of academics also form some of the six areas identified as requesting policy reform.
We will get back to this in chapter 4 below.

## *Opportunities for Policy Reform at National and Regional Levels*

Doctoral study programmes are relatively young throughout sub-Saharan Africa but are developing rapidly. Most universities participating in this project are undergoing changes and plan reforms based mainly on their institutional, national and regional strategic development plans.

The pilot universities were asked to list up to six (6) areas which they perceived as key policy areas for development / reform that they needed to address in order to improve their doctoral programmes. Figure 13 presents six (6) key areas for reforms.

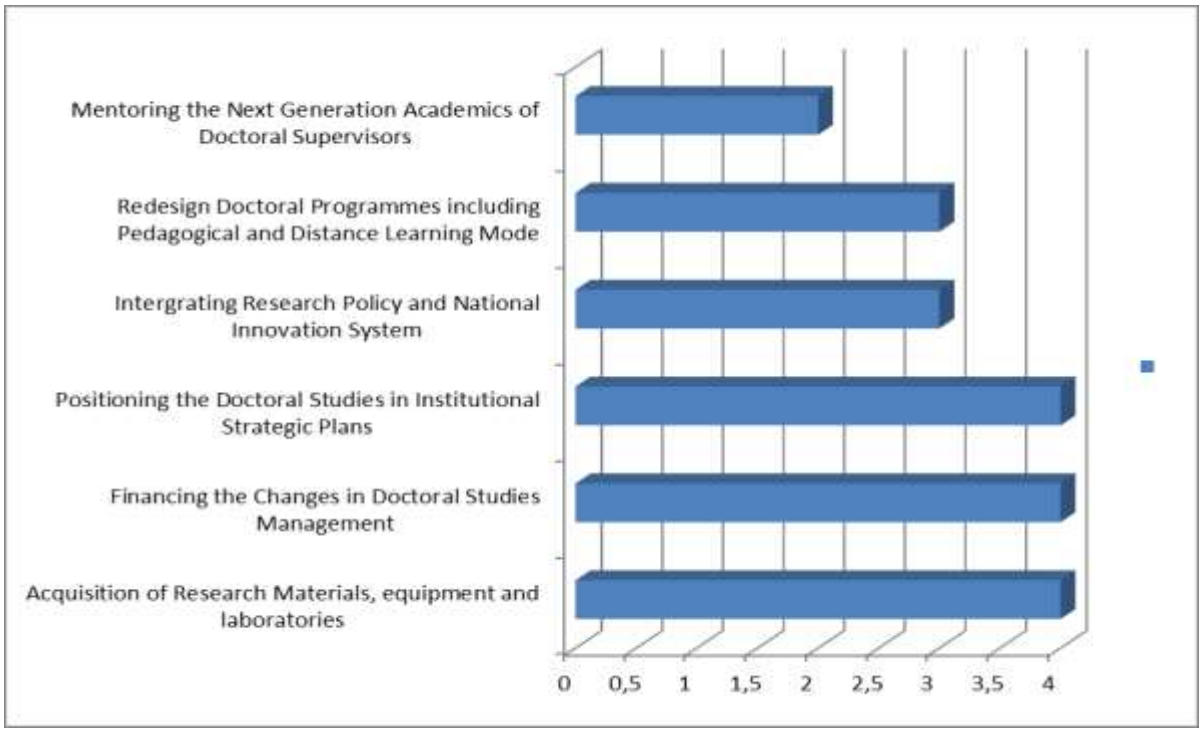


*Figure 3: Key Policy Reform Areas*

Acquisition of research facilities, changes in doctoral programmes and positioning doctoral studies in the overall institutional strategic plan topped the list.

## IV - CONCLUSIONS AND RECOMMENDATIONS

The project was found to be a valuable experience and an "eye opener" to participating institutional teams and university leadership as well. Indeed if most leaders and main doctoral programme actors thought they knew what was at stake, many reported to have been surprised by what the self-assessment exercise and interim report brought to the fore. Many reported that they sought that their doctoral programmes were doing well and realise that there is considerable space for improvement.
The findings of this report indicate that although major changes are underway, there is a need for trans-continental cooperation on most emerging issues. Universities in general have much to gain from enhanced exchange on issues relating to doctoral programmes.

The Unilorin November 2010 study and research seminar (see Annex 6) provided the universities with an opportunity to exchange, to share experiences, to discuss reform areas and opportunities for their doctoral study programmes and to network. The following conclusions and suggested implementation strategies are a result both of the running up phase to the seminar and of the seminar discussions.

### *Conclusions*

In light of the main findings of the report and the concluding seminar, the following conclusive observations have been made on:

- The place of doctoral programmes in institutional research strategy,
- Institutional support for doctoral studies and research,

- Doctoral students supervision,
- Career development and monitoring,
- Data collection and information gathering,
- Internationalisation of doctoral programmes.

### *Place of doctoral programmes in research strategy*

All six participating institutions stressed the need to redefine doctoral study programmes and their co-ordination. Current administration of doctoral programmes needs to be reviewed and improved. The programmes themselves are not harmonised and what they contain is often too obscure. Centrally administered structures are needed.

**A) Institutional level**

1. At institutional level there is a general lack of real time systematic disaggregated data and information on doctoral studies and doctoral study programmes. Such data and information would enable informed institutional research strategy development;
2. Doctoral schools / graduate schools are to form part of the overall organisation of higher education institutions. The links between all the different institutional instances in charge in full or in part for different aspects of the doctoral programmes are not clearly mapped out at the institutional level;
3. The institutional reports stressed a lack of clear synergies between the different doctoral studies undertaken and the research projects carried out by the doctoral students and the academic staff and sometimes even underline a lack of clear link between the doctoral student research undertaken and the institutional research strategies set out;
4. A number of institutions report to not have clearly articulated institutional strategies in which both are linked. The research strategies submitted do not even explicitly integrate doctoral research.

**B) National level**

1. National governments are working on the development of national research architectures. Where it already exists it is not yet sufficiently coordinated and should be better articulated in order to better match local and national socio-economic development needs;
2. Poorly articulated national research will lead to the decline of HE research quality and relevance and will slow the pace of development of sub-Saharan Africa overall;
3. The self-assessment reports and seminar discussions underline that research at the pilot institution is driven to a great extent by source of funding and not by strategic priority setting and that ministries would benefit greatly from better data communication to also better strategize as far as government funding of doctoral education is concerned. Coherent research agendas based on well-defined priorities would help students develop strategic and locally/nationally/relevant research questions;
4. Overall doctoral research is not shaped by a clear policy with potential for national collaboration, lacks synergies across regional networks, and does not have benefit from dedicated support at ministerial level.

**C) Regional level**

1. Inter-regional research collaboration and exchange of expertise is still fragmented and needs to be coordinated strategically.

## *Institutional Support for Doctoral Studies and Research*

The study revealed a real need for increased financial support for institutional resources requested for successful doctoral programmes to be made available, and for both doctoral students and supervisory staff. The study revealed a continuous decline in funding for doctoral research in universities and in particular to maintain and expand research infrastructures. This problem impacts negatively on the participating universities ability to retain qualified staff. The lure of world-class facilities, combined with the generally under-equipped and dilapidated facilities in Africa contribute to Africa's intellectual diaspora[42].

1. There is hardly any access to research data or databases beyond what is available locally;
2. Institutions internet bandwidth connectivity is very slow and expensive: this is a barrier to efficient national and regional networking and integration. Investments are foreseen by different countries to upgrade the connectivity capacity but lack of sufficient dedicated funding is a real challenge throughout sub-Saharan Africa.
3. The pilot institutions reported a lack of up to date library holdings. Even those that prevail themselves from reasonable library collections stressed that these are mostly limited to a few subject disciplines;
4. The study reveals that laboratory equipment and related material is in sorry state and needs considerable upgrading;
5. Dedicated doctoral seminar rooms and common rooms are too often insufficient and inexistent. Such facilities are requested to foster doctoral students engagement with and support from another;
6. At some universities competitive research funding is accessible, however there is no clear information on how these funds are accessed by who and when. Better information mechanisms on availability of funding needs to be developed;
7. There is a real need for doctoral research networks to be developed and fostered to support research collaboration.

## *Doctoral Students Supervision*

The study as well strongly advocated for improved research supervisory capacity.

1. Doctoral student supervision lacks transparency: all universities report a lack of tracking mechanism on who is registered where and who supervises whom;
2. There are no clear records on study paths and length of study. Some students "go missing" only to reappear after several months or years;
3. The self-assessment reports showed a lack of true synergy between supervisors (and their academic work) and the students they supervise: supervisors could involve their doctoral students in their research projects and outputs better and as well introduce them in their research networks; most pilot institutions reported a lack of such efforts being supported by the academic staff. This again raises

[42] Cf. the paper prepared by Piyushi Kotecha, entitled: *Doctoral Programmes in the SADC region. A situation analysis*, SARUA, November 2011, to be published.

the issue of academic positioning and valuing of the doctoral students. Doctoral students are too seldom considered fully as researchers;

4. As well doctoral students benefit from international exposure: internationalisation of doctoral programmes and support by supervisors to access international networks in order to link up local, national regional and international expertise needs to be fostered. The role of the supervisors is key.
5. The reports as well reported a lack of development opportunities for supervisors and for doctoral students. As well supervision, one of the duties of the academic staff, is not valued to its full and workload entailed by doctoral student supervision is not estimated appropriately : time allocation, support mechanisms, development opportunities and specific incentives need to be revisited in order for quality supervision to be provided;
6. There exists no code of ethics for the supervision of doctoral students a t the pilot institutions; it appears that this however could help improve the quality of interaction between staff and students;

### *Career Development and Monitoring*

1. There are hardly any career resource centres / directorates at any of the participating universities. Such centres, when headed professionally, are to ensure information dissemination on career trajectories and development opportunities;
2. Although the selection procedures of doctoral students are elaborate, there is a need to interrogate the motives for the doctoral studies/research as part of the selection process;
3. The issue of brain drain is still a big challenge to all participating universities. It is anticipated that only 50% of doctoral students come back to their home institutions after having undertaken part of their doctoral studies abroad;
4. The pilot institutions reported that tracking mechanism exist to monitor graduate students but that nothing is yet in place to track and monitor career development of doctoral students once they obtain their PhD; Yet such a mechanism would allow institutions to potentially build on their acquired competences and expertise.

### *Data collection and information gathering*

The study reveals a detrimental lack of systematic data gathering on all operations relating to doctoral programme development (on student registration; on research topics; on finances and funding sources; on supervision; on infrastructural support; and more) and points to the fact that it prevents institutions to plan and develop such programmes strategically and adequately. Two major problems emerged: the lack of institutional autonomy due to political appointments into senior university positions; and lack of national research systems and strategic planning of doctoral studies often leading universities to produce inadequate knowledge with insufficient relevance locally, nationally and regionally.

1. The institutions reported the absence of a comprehensive centralised information and data collection and management systems on doctoral programmes that should be used for strategic planning and institutional management. Investment in such information management systems at the institutional level and at the national level are imperative for policy, governance, planning, implementation, monitoring and evaluation of doctoral program purposes and as well for improved financial management of and for these programme;

2. Existing institutional research strategies are not adequately linked to the national research and innovation strategies. Institutional research is carried out for the most part as ad hoc projects funded by an external donor; better data collection on research carried out and funding mechanisms in place would help inform institutional management of research;
3. All pilot institutions report that funding for research needs to be increased; to be strategized better and that information on such funding needs to be disseminated better at both the institutional and national levels.

### *Internationalisation of doctoral programmes*

The study revealed that no clear institution wide internationalisation strategy was put in place at the pilot institution and in particular that this did not include any consideration on the development of doctoral programmes. The study stressed the need for improved information management to improve the internationalisation strategies of the institutions and of their doctoral programmes.

1. Internationalisation is not yet included strategically in the development of doctoral programmes; it is not even a requirement: indeed doctoral students are not expected officially to take part in international for a and no structural (financial) incentives are put in place to facilitate such participation;
2. The missions of international offices of the different pilot HEIs are not linked to the development of doctoral studies; there are no official collaboration agreements yet between these international offices and the exiting or emerging graduate/doctoral schools.
3. The development of innovative internationalisation practices and strategies at doctoral programme level would impact positively on the development of the quality of the doctoral studies undertaken as it would allow for better integration of the doctoral researches carried out in the international and global research schemes;
4. African universities seem to systematically focus on their Northern partners; south-south collaboration needs to be strengthened as well as interregional collaboration. As well the networking between and across the linguistic (post-colonial) divides which persist in Africa also need to be fostered: the seminar revealed that the Anglophone and Francophone universities did not know enough about each other and that initial contacts established need to be consolidated ;
5. The project also stressed the need to encourage the use of e-platforms to publicise and share information on resources available for international collaboration;
6. There are no awareness raising campaigns at national level to highlight the role doctoral studies are to play in national and regional development, nor for the research results to be disseminated effectively; the project underlined the need for scholarship schemes to be elaborated and announced widely in order to foster the training of doctoral students within the continent in order to link their research up to continent wide priorities as well.

## Recommendations and Supporting Implementation Strategies

Based on the study, the following recommendations and their implications for individual doctoral candidates, for doctoral supervisor, their institutions, national governments and sub region and suggestions for implementation strategies were made:

### Doctoral research development and supervision

1. **A form of negotiated, structured and documented contact period between supervisor and student should be defined:**
   a. This should be monitored by a central body, such as the graduate schools;
   b. A working agreement should be developed between the student, its supervisor and the university: such an agreement should clearly state their respective obligations.

2. **Motivation and aim of doctoral studies:**
   a. Doctoral applicants should clearly state the aims and goals of the research they wish to undertake through a written concept paper before admission. This should be systematized and matched against other existing past or current institutional research in order for the research to be carried out to fit into the overall institutional strategy and priorities.

3. **Publications and peer support and supervision: supervisors should orient students towards at least one publication in an internationally recognized journal:**
   a. Supervisors should try and develop at least one joint publication with a student for a presentation at an international conference and international refereed journal;
   b. Doctoral schools should develop/offer courses aiming at assisting students in writing proposals, conference papers and other publications;
   c. Supervisors should introduce their doctoral students to their professional networks;
   d. Universities should allow supervisors to use part of their research grants to assist students in conferences / publishing.

4. **A code of ethics for the supervision and management of doctoral student should be established:**
   a. Supervisors and students should be advised at the outset of their contact to observe ethical conduct;
   b. Student progress should be monitored monthly to avoid lapses in unprofessional conduct in the course of the supervision.

5. **Incentives should be developed to ensure quality supervision**
   a. Systematized registration mechanism need to be put in pace to follow the supervision doctoral students should benefit from over the course of their doctoral studies;
   b. The workload supervision entails should be valued to its full
   c. Support mechanism should be put in place in order for supervisors to be able to provide quality supervision. Universities should provide regular professional skills training to supervisors.

## Institution reforms

1. **Regular institutional and national mapping exercises are required in order to better understand what challenges institutions face and what reforms are needed. This studies indicates clearly that institutions need to:**
   a. Identify what governance structures, mechanisms, and resources are needed to facilitate and sustain the strategy and how to mobilize them. In order to do so institutions need to invest in information management tools that would provide the data requested to support evidence based strategic planning and institutional doctoral programmes development;

b. Create an information analysis unit within the planning directorate to facilitate continuous data collection, collation, analysis and dissemination;
c. Provide a basis for a clearly defined institutional and national research architecture and related strategies that are coherently integrated and mutually reinforcing, and specifically outline the place of doctoral research within that strategy ;
d. Regularly revisit the national and institutional research priorities, their relevance, strengths, strengths, etc., and to make these known clearly to doctoral students (this should as well allow to evaluate the positive and negative impacts, value and constraints of externally funded / driven research initiatives);
e. Define clearly the roles of various actors in doctoral programmes, including of doctoral students.

2. **Universities should undertake their respective mapping exercise and formulation of research strategies in a phased process – institutionally and nationally;**

**Short-term**:

a. HEIs and other centres of research should regularly evaluate the relevance of their research and doctoral programs, as well as the synergies existing with other relevant actors;
b. Doctoral programmes should be integrated fully in the respective institutional research strategies.

**Medium-term:**

a. Universities should engage with partners in government, private and the not-for-profit sector and international partners to situate these within a larger national research and innovation system;
b. Developing networks of research collaboration at various levels – institutionally, nationally, and regionally;
c. Develop networks of research collaboration at various levels (including "Nodes" of research excellence) then harmonise and establish standards of broad based subject at institutional, national, regional and international levels;
d. Incorporate a mechanism for regular review of research priorities and strategies;
e. Integrate interdisciplinary synergies to optimise doctoral research outputs.

3. **Develop research and innovation endowment funds to boost university research**

a. Develop diversified fund-raising strategies through increased linkage and cooperation with industry;
b. Graduate/Doctoral schools should be involved in the process and allowed to monitor part of such fund for specific doctoral programmes development;
c. Alumni programmes could help foster the development of such a fund.

4. **Universities need to establish career resource centres for doctoral students in order to:**

a. Ensure information dissemination on the evolution of the job market;
b. review local research needs as identified by the government, by industry, by the civil society;
c. monitor career development of former doctoral students and keep them involved in the development of their alma maters.

## *National Governments reforms*

1. **Scholarships and funding mechanisms (both from African countries and others) are to be developed in order to train doctoral students within the continent:**
   a. Through bilateral agreements;
   b. Through south–south continental and intercontinental research exchange opportunities;
   c. A special funding at regional and continental level (for instance through HE associations, Rectors Conferences and other mechanisms like NEPAD, etc).

2. **Data should be collected to track career development of doctoral students:**
   a. A web based computer system can be used to both collect data on doctoral students and at the same time track their career development after completion of their doctorates;
   b. Identification of relevant data for collection at the level of national Government;

3. **Doctoral research collaboration networks should be fostered by the respective institutions with support from their (HE) ministries, research councils, etc:**
   a. Institutional
   b. National
   c. Regional
   d. International

## *Regional implication*

1. **Internationalization strategies should be developed:**
   a. Encourage the dissemination publicizing of information on resources available collaboration;
   b. Need to encourage use of e-resources.

2. **Dissemination of information on doctoral research outputs should be facilitated through:**
   a. National initiatives;
   b. National and regional conferences and workshops on doctoral studies;
   c. Doctoral student networks

## *In fine*

These conclusions and suggestions concentrate in particular on the link between doctoral education and the institutional research strategy; on doctoral supervision and career development; and on the internationalisation of doctoral education, strategic planning and the role of data collection. Better integration of doctoral research in the overall institutional research strategy is requested in order for doctoral programmes to improve and become more relevant locally and internationally; inadequate supervision of doctoral students was a complaint heard at all universities and was reported in the institutional surveys as well. Students also complained about lack of career development strategies and opportunities. Better career development strategies and opportunities need to be secured to make doctoral education more attractive and relevant. Furthermore, new internationalisation strategies need to be put in place in order to ensure better integration of sub-Saharan African doctoral education, and for it to be better recognised and better connected globally.

Recommendations made overlap to some extent with some of the observations captured already fourteen years ago in the 'Declaration and Action Plan on Higher Education for Africa' publication issued as a result of the African Regional Consultation Preparatory to the 2000 UNESCO World Conference on Higher Education as well as other research conclusion presented since. Yet the uniqueness of this project is that it allowed the pilot institutions to proceed to conduct an in-depth analysis of their own operations and to develop a better understanding of the processes at stake within their own institution and at the same time to compare these processes with other institutions.~~s~~. It allowed them to make conclusions and recommendations for change that some have already started to implement.

This report underlines the urgency to act on some or all of the recommendations that are made in order to advance doctoral programmes in sub-Saharan Africa.

## V - NEXT STEPS

As an immediate first step, the IAU and the University of Douala jointly organised a study and research seminar which focused on data collection and management of doctoral programmes at Cameroonian universities.

The Seminar took place in Douala from 27 to 31 March 2011 and was aimed at reviewing data gathering mechanisms used by Cameroonian universities and to compare it with systems and mechanisms developed at the University of Ottawa. Fifty representatives from five universities in Cameroon participated in this seminar and presented an overview of institution specific practices. Three colleagues from the University of Ottawa, presented the mechanisms and related improvement strategies developed within their university.[43]

The Rector of the University of Douala presented the outcomes of the seminar at the COREVIP conference, held in Stellenbosch, South Africa[44] and made recommendations on how to improve doctoral education in Cameroon by developing better performing data gathering mechanisms allowing institutions to better strategize for the future and even improve the way doctoral programmes are managed.

The outcomes of this project were presented there as well by Johan Mouton, African Doctoral Academy, Stellenbosch University[45]. In September IAU will present the outcomes at a joint Seminar with EUA at the Copenhagen EAIE Conference. More attention will be drawn to this study in the future.

The project also laid the grounds for further research on this topic.

Thanks to financial support received from the Swedish International Development Agency (Sida) for the next four years (2011-2015) initiatives IAU will develop include: the creation of a web-based information hub on doctoral education and the organisation of capacity building workshops on data collection and management in universities. The self-assessment will be disseminated widely in order for other higher education institutions to use it. A reporting and sharing mechanism of the self-assessment results will be developed.

More information on these will be made available online in the fall of 2011.

[43] For the programme of the Douala Seminar, see Annex 8
[44] http://events.aau.org/introduction.php?id=15&/lang=en
[45] See : http://events.aau.org/userfiles/file/corevip11/presentations/state_of_dotoral_training.pdf

*The International Association of Universities (IAU), a non-governmental organization founded in 1950, is the UNESCO-based* ***worldwide association of higher education institutions****. It brings together institutions and organisations from some* ***150 countries*** *for reflection and action on common concerns and collaborates with various international, regional and national bodies active in higher education. Its services are available on the priority basis to Members but also to organisations, institutions and authorities concerned with higher education, as well as to individual policy and decision-makers, specialists, administrators, teachers, researchers and students.*

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**International Association of Universities (IAU)**
**UNESCO-NGO House**
**1, Rue Miollis**
**75732 Paris Cedex 15 – France**

**Phone:** **+ 33 1 45 68 48 00**
**Fax:** **+ 33 1 47 34 76 05**
**Website:** **www.iau-aiu.net**
**E-mail:** **iau@iau-aiu.net**

**Contact :** **Dr H. van't Land,** *IAU Director Membership and Programme Development (h.vantland@iau-aiu.net)*