AfricaLics

THE AFRICAN NETWORK FOR ECONOMICS OF LEARNING, INNOVATION, AND COMPETENCE BUILDING SYSTEMS

Mapping Africa's research and teaching capacity in the field of innovation and development – 2nd Survey Report 2016

CONTENTS

LIST OF FIGURES

LIST OF TABLES

This report has been developed by members of the Globelics and AfricaLics secretariats. Surveys on which the report is based were made possible thanks to financial support from Sida.

Suggested referencing of this document:

AfricaLics (2016): Mapping Africa's research and teaching capacity in the field of innovation and development – 2nd Survey Report 2016. AfricaLics Secretariat. Copenhagen, Denmark

1. INTRODUCTION AND METHODOLOGY

1.1 BACKGROUND AND PURPOSE

This report is a follow up to the first AfricaLics baseline report prepared in 2013/2014 (Kraemer-Mbula, 2014). The report focusses primarily on researchers and practitioners in African countries that identify themselves with the field of innovation and development studies, with backgrounds in social sciences, humanities and natural sciences – and affiliated not only with universities, but also with research organizations, NGOs, government agencies and private sector.

The first AfricaLics baseline report conducted in 2013/2014 consisted of a study mapping research and teaching capacities in Africa in the field of innovation and development. It aimed at establishing a baseline for monitoring activities conducted by AfricaLics - with support from the Globelics network - to improve research and teaching capacity in Africa in the field of innovation and development.

The purpose of the 2016 survey and report is mainly to contribute to the establishment of an up-dated/new baseline for AfricaLics activities to enhance research and teaching capacity in Africa in the field of innovation and development over the next five to ten years. The report will also be used to help measure (short-term) effects of the activities conducted by AfricaLics and Globelics to enhance Africa´s research and teaching capacity. Finally, where possible, the report should help uncover changes in Africa´s research and teaching capacity in the field of innovation and development during the past three years (2014-2016).

It should be noted that the range of AfricaLics activities is quite broad and diverse with some activities targeting a larger audience (notably conferences, academies and web-site/social media activities), while others are more in-depth in nature and only target smaller groups of scholars (e.g. the AfricaLics PhD visiting fellowship programme). The differences in types of activities must be taken into account when interpreting data and in particular when comparing percentages relating to the perceived usefulness of the various activities.

1.2 METHODOLOGY

The present report is based mainly on the 2nd survey on baseline data for AfricaLics activities conducted between June and August 2016. Both quantitative and qualitative data were gathered on research and teaching activities and outputs conducted and produced by scholars and practitioners responding to a questionnaire survey. The report also uses complementary data from the first AfricaLics survey conducted by Erika Kraemer-Mbula for the Globelics and AfricaLics secretariats in 2013/2014 as well as information from a range of secondary sources (cf. below).

Baseline indicators on which the 2016 survey focused were by and large identical to those of the questionnaire survey used for the first AfricaLics Baseline survey conducted in 2013/2014. Similarly, like the 2013/2014 survey, the questionnaire for the 2016 survey included two parts: Part I asked questions to the individual respondent on his/her background and engagement in various types of activities (research, training, AfricaLics and Globelics activities) while Part II collected detailed information on training programmes and training capacities at African research institutions, linkages and institutional collaborations (inside and outside Africa), and sources of funding for research collaborations. In addition to topics covered in both surveys, the 2016 survey also included questions designed to track whether ongoing research and training activities had been influenced by AfricaLics activities such as the AfricaLics PhD academies and conferences, the AfricaLics web-site, seed-funding projects, the AfricaLics Visiting PhD fellowships programme and/or the MSc Master module on Innovation and Development. Finally, the 2016 survey also asked questions about the extent to which respondents had participated in and benefitted from Globelics academies and conferences.

Primary recipients of the 2016 survey questionnaire were scholars connected to AfricaLics and Globelics networks. Efforts were also made, however, to reach out to communities beyond primary contacts where research and training activities in innovation and development were known to take place but where AfricaLics had not had direct interaction. In this way, the survey builds to some extent on snowballing methods and is necessarily neither a comprehensive nor a representative survey. One implication of the efforts to increase outreach is that the populations for the surveys conducted in 2013/2014 and in 2016 are not identical. In some cases it is thus difficult to know if differences between

findings from the two surveys are related to differences in the survey populations or differences in the actual situation in Africa at the time of each survey.

In the 2013/2014 survey, a total of 129 respondents (of which 7% were from outside Africa) answered Part I of the questionnaire survey, while a total of 86 respondents also answered Part II of the questionnaire survey. As for the 2016 survey, a total of 264 respondents answered the Part I questionnaire and a total of 156 respondents answered the Part II questionnaire. In the 2016 survey 222 of those responding to Part I came from African countries and 42 (16%) were from outside Africa but doing research on innovation and development in Africa. A total of 55 African respondents and 5 respondents from outside of Africa responding to the 2013/2014 survey (app. 50% of all respondents to the first survey) also responded to the 2016 survey. Hence there were 204 uniquely new respondents for the survey conducted in 2016.

Both surveys were based on voluntary submissions and took as point of departure the AfricaLics contact list which means they are not necessarily neither comprehensive nor representative for the research and teaching community on innovation and development in Africa. On the other hand, the 2016 survey had more than twice the number of respondents compared to the 2013/2014 survey. The increased coverage is to a large extent the result of substantial efforts made by the AfricaLics secretariat to increase outreach and follow up with potential respondents. The increased coverage of the 2016 survey implies that we have a better and more solid foundation for measuring impact of future AfricaLics interventions.

The questionnaire survey for the 2016 report was prepared and conducted as follows:

1) Members of the AfricaLics and Globelics secretariat jointly agreed on the questions to be included in the survey drawing to a large extent on the survey questionnaires used in 2013/2014. Subsequently, the survey questionnaire for the 2nd survey was tested and refined based on comments from other members of the Globelics and AfricaLics secretariats.
2) Aalborg University/Globelics secretariat took lead in the administration of the survey tool using survey Xact and the survey was distributed by direct email invitations to a list of contacts developed in close collaboration with the AfricaLics secretariat.
3) The initial list of contacts was prepared using the list of contacts for the 2013/2014 baseline survey and the AfricaLics database of contact persons. The two lists were consolidated before the survey was initiated. Information about possibilities to participate in the survey was also made available on the AfricaLics web-site and social media. Further outreach activities included sending the questionnaire to researchers named by early respondents to the survey as collaborating partners (snowballing)[1].
4) The updated survey was implemented in two rounds: In the first round a survey questionnaire was sent out collecting background information about the researcher, his/her engagement in teaching and supervision, as well as detailed information about research activities and outputs. In the second round, respondents to the Part I questionnaire who answered 'yes' to conducting research or teaching activities and who had agreed to participate in Part II of the questionnaire survey were forwarded a follow-up questionnaire about training programs and training capacities at African research institutions; linkages and institutional collaborations (inside and outside Africa) and sources of funding for research collaborations.

Use of secondary data in the 2016 report

In this report, secondary data have been used to complement survey findings. Secondary sources mainly included publicly available reports and websites (from universities, ST&I agencies, government departments etc.). For instance, UNESCO Institute of Statistics (2015) consulted for this report, provides an overview of percentage of women researchers in Sub-Saharan Africa which puts the percentage of female respondents to the survey conducted for this report into perspective. Reports and other sources used for this study can be found in the reference list.

[1] This may have resulted in inclusion of some respondents in the survey that are marginal to the field of innovation and development studies research and teaching.

Structure of the report

The report provides a summary of the findings from the survey accompanied by a range of appendices containing additional data from various sources. It is a reference document which should be up-dated regularly as the innovation and development research and teaching landscape in Africa continues to develop.

The report summarizes the information related to:

1) **The profile of the survey respondents** (African scholars and practitioners plus scholars from outside Africa working on innovation and development issues in an African context)

2) **Baseline indicators** also included in the 2013/2014 survey:

- Respondents engagement in the field of innovation and development
- Training and teaching programmes on innovation and development in Africa
- PhD programmes and number of PhDs students
- Masters programmes and number of Masters students
- Publications – information on relevant publications from respondents
- Institutional capacity for ST&I policy, including:
    - Organizations at the national level supporting the promoting innovation and S&T (agencies, councils, etc.)
    - National innovation policy programmes/strategies
    - Interaction between Universities and industry/society – initial account of formal structures for interaction such as incubators, science parks, etc.

3) **Mapping the research landscape in Africa in the field of innovation and development**:

- Further information about individuals and organizations in the African continent contributing to research or research training in the field of innovation and development
- Information about research capacities in different parts of Africa in terms of content of ongoing research and number of staff doing research and training programs at the masters and PhD level
- Information about institutional collaborations within and outside of Africa.

4) **Participation in Globelics, AfricaLics or other regional Lics conferences or Academies since the 2013/2014 survey was conducted.**

2. PROFILE OF SURVEY RESPONDENTS

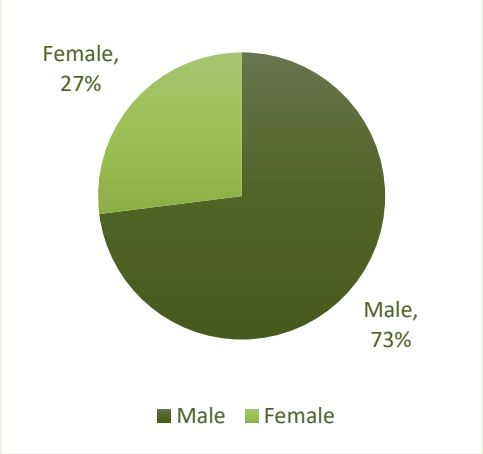
2.1 GENDER, AGE AND COUNTRIES OF ORIGIN/RESIDENCE

The 2016 survey captures responses from a total of 222 African scholars and 42 scholars from outside of Africa to questions relating to e.g. involvement in teaching and research; research grants, gender distribution of scholars self-identifying as active in the field of innovation and development etc. In what follows, main emphasis is on the respondents from Africa, but reference is also made to the percentages of total number of respondents because respondents to the survey from outside Africa are engaged in conducting research and teaching activities related to innovation and development issues in Africa and hence are seen as contributing to the development of research and teaching capacity in Africa in the field.

Gender

The population of African researchers that responded to the survey (see Figure 1) represents 73% males and 27% females (if all respondents are taken into account, male respondents constituted 70% and female respondents constituted 30% of the respondents). The gender distribution of African scholars responding to the survey has not changed much compared to the 2013/2014 survey, as at that time 31% respondents of the survey were females.

Figure 1: Gender and age profile of African respondents



Source: 2016 survey data. Part I. F

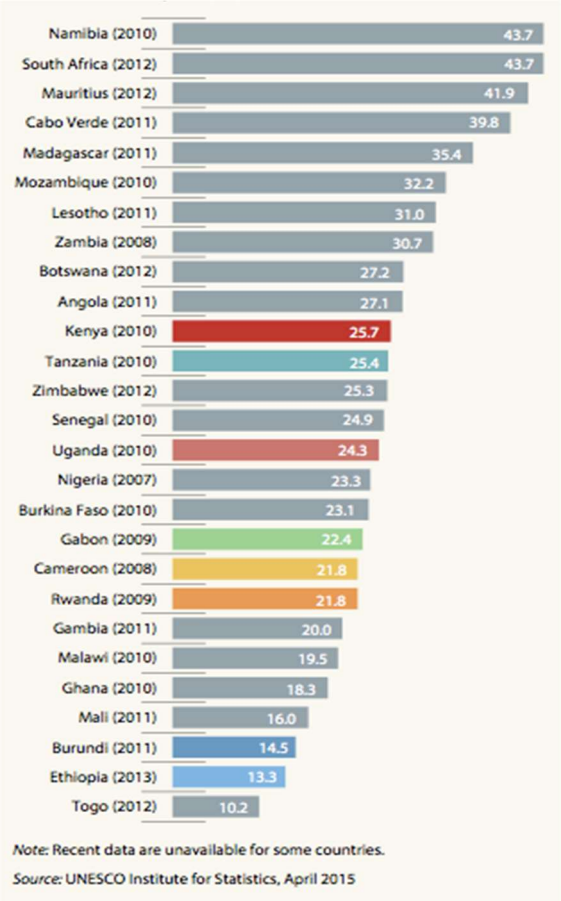
In comparison, Figure 2 below provides an overview of the number of female and male researchers in African countries. As can be seen only few countries have a higher percentage of female researchers than the percentage of female respondents to the two surveys conducted.

Different African countries have been trying to tackle the problem of gender inequality in various ways. This topic was not a key subject of the 2016 AfricaLics baseline survey, but from secondary sources, it is clear that there are a number of programs initiated in e.g East and Central Africa aimed at dealing with the challenges. Some examples:

- "Burundi's Vision 2025 promises and energetic policy to promote gender equality and greater participation by women in education, politics and economic development.
- Chad adopted a National Policy on Gender in 2011 which is being implemented by the Ministry of Social Action, Family and National Solidarity.
- In the Republic of Congo, a Ministry for the Promotion of Women and Integration of Women in National Development was established in September 2012.
- Ethiopia's Growth and Transformation Plan 2011–2015 planned to raise the proportion of women university students to 40%. In 2013, 13.3% of researchers were women.
- The Government of Kenya produced a policy brief in 2014 on *Mainstreaming Gender in the National STI Policy*

of Kenya, in partnership with UNESCO and the African Technology Policy Studies network; the policy brief served as an addendum to the draft National Science, Technology and Innovation Policy of 2012". UNESCO Science Report: towards 2030, p 507-508

Figure 2: Women researchers in Sub-Saharan Africa, 2013 or closest year (%)



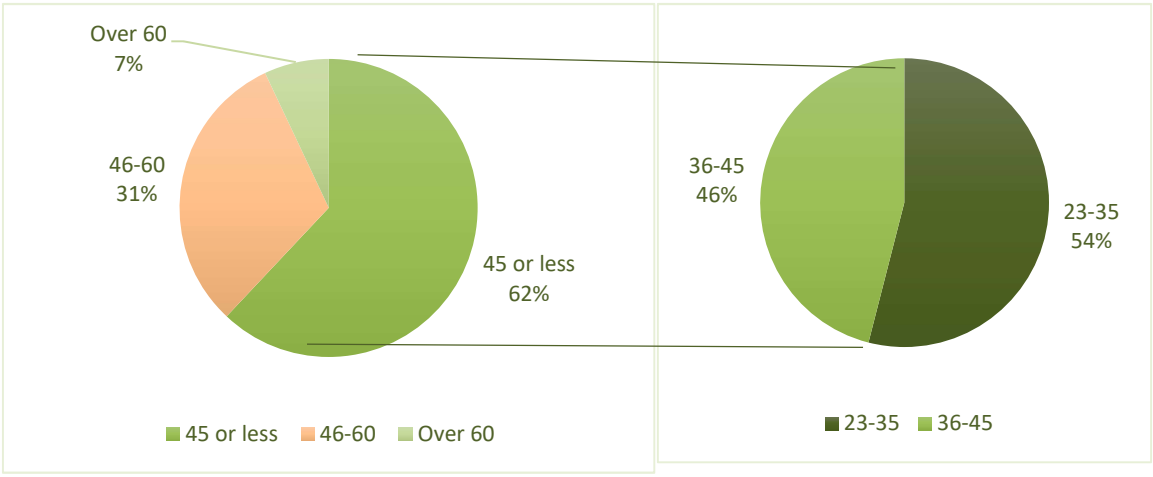
Increasing the number of women researchers in African countries in general and within the field of innovation and development in particular is a long term process. Future AfricaLics activities will include special efforts aimed at contributing to this process.

Age distribution of respondents

In the 2016 survey 62% of the African respondents (and 56% of all survey respondents) were aged 45 or less - with the majority of the African respondents in this age group (54%) being between 23 and 35 years old and 46% being between 36 and 45 years old. A total of 31% of the respondents to the 2016 survey were between 46 and 60 years old and 7% were above 60 years old (see Figure 3). In comparison, in the 2013/2014 survey 70% of the respondents were 45 years old or younger – with the majority of this group (61%) being aged between 36 and 45 years and the rest (39%) being between 25 and 35 years. Also, in the 2013/2014 survey 25% respondents were between 46 to 60 years old and 5% were over the age of 60.

Two conclusions can be made: First the percentage of respondents below 45 years has gone down (from 70% in 2013/14 to 62% in 2016), while the percentage of respondents between 46 and 60 has increased (from 25% in 2013/14 to 31%) in 2016 and the percentage of respondents above 60 years has increased slightly (from 5% in 2013/14 to 7%) in 2016. Secondly, from the 2013/2014 survey to the 2016 survey the distribution of respondents in the age group 45 years and below has changed so that there are now more respondents between 25 and 35 years as compared to respondents between 35 and 45 years.

Figure 3: Age profile of African respondents



Source: 2016 survey data, Part I. Figure based on answers from 222 African respondents. The pie chart on the right outlines the distribution of the group under 45 is shown.

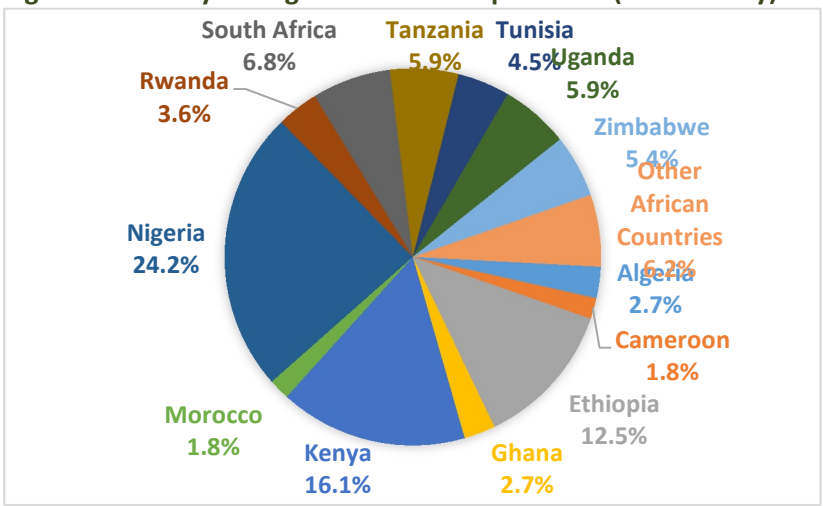
Country of origin

Regarding the country of origin, the vast majority of the African respondents in the 2016 survey come from Nigeria, South Africa, Kenya, and Uganda with substantial participation from Ethiopian researchers (11%) as well (see figure 4). The category 'Other African Countries' in figure 4 are countries with less than 1% representation of respondents individually. These are Benin, Burkina Faso, Equatorial Guinea, Eritrea, Ivory Coast, Mozambique, Senegal, Sudan, Togo and Zambia. In 2013/2014 only 4% of the respondents were from Ethiopia. These five countries constitute more than half (62%) of the total number of African respondents to the 2016 survey.

15% of all 264 respondents to the 2016 survey were originally from countries outside of Africa, including Belgium, Canada, Finland, France, Germany, India, Iran, Malta, Mexico, Netherlands, Portugal, South Korea, Spain, Sweden, Turkey, UK and USA. In comparison, only 7% of the 129 respondents to the 2013/2014 survey were from outside Africa.

On the other hand, both surveys (2013/2014 and 2016) have representation from all five regions in Africa, including: North Africa, West Africa, East Africa, Central Africa and Southern Africa. The respondents came from both Francophone, Anglophone, and Lusophone African countries. The 2013/2014 survey included respondents from 23 African and 8 countries outside Africa, while the 2016 survey included respondents from 25 African and 18 countries outside of Africa.

Figure 4: Country of origin of African respondents (2016 survey)



Source: 2016 survey data, Part I. Figure based on answers from 222 African respondents

Country of residence

In terms of country of residence (see Figure 5), respondents from South Africa and Nigeria were dominating in the first survey (2013/2014) with almost 40% of all respondents coming from these two countries. In 2016 besides Nigeria with 19% representation, residence of respondents in Kenya (14%) takes lead over respondents with residence in South Africa (11%). Ethiopia is also representing a considerable number of 9% respondents in 2016 in the total sample followed by Rwanda, Tanzania and Uganda. There is therefore a more balanced representation of various African countries in the 2016 survey. The 'Other African Countries' in figure 5 are Burkina Faso, Cameroon, Ivory Coast, Mozambique, Senegal, Sudan and Zambia. All these countries have less than 1% representation of respondents individually. A total of 17% of the respondents to the 2016 survey reside outside of Africa, predominantly in Denmark, UK, France and Sweden. In the 2013/2014 survey 5% of the respondents came from countries outside Africa.

Figure 5: Country of residence of African respondents (2016 survey)

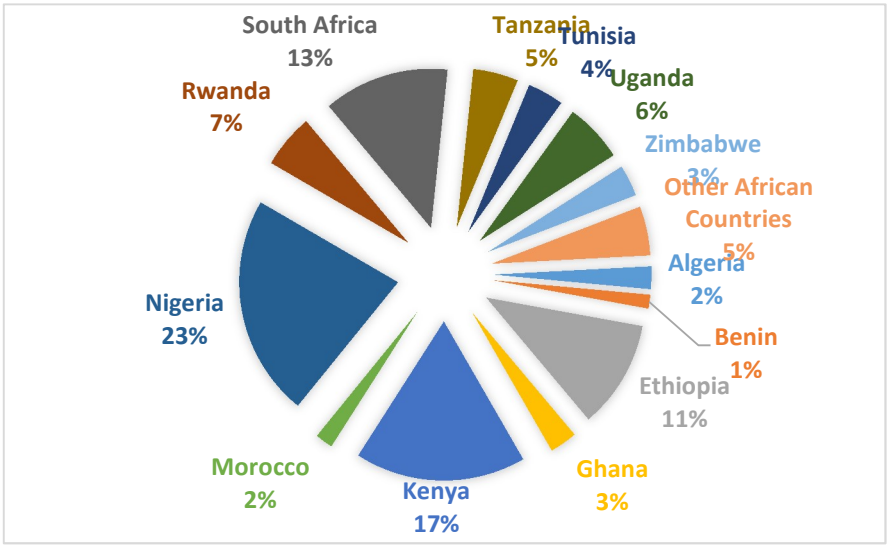


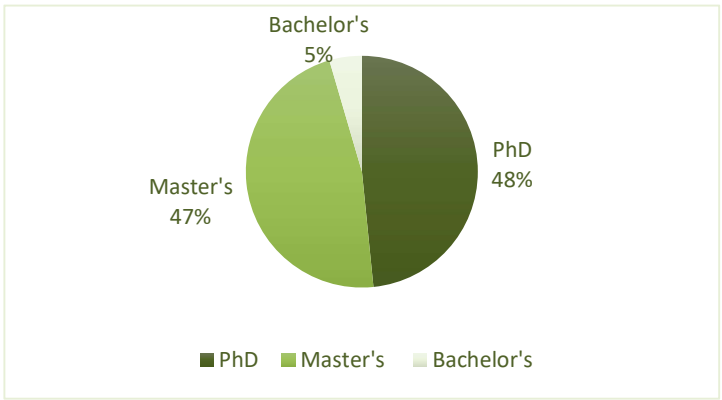
Figure is based on answers from 222 African respondents

2.2 EDUCATIONAL PROFILE OF RESPONDENTS

Highest degree obtained

In the 2016 survey, approximately half of the African respondents (48%) and almost the same percentage of all respondents (45%) reported to be PhD holders, whilst 47% of the African respondents (and 41% of all respondents) had a master's degree as their highest level of qualification (see Figure 6).

Figure 6: Highest degree obtained



Source: 2016 Survey, Part I, Figure based on answers from 222 African respondents

A small fraction of African respondents (5%) had stopped at a bachelor's degree. On the other hand, more than half of the respondents (52%) of the survey in 2013/2014 had obtained a PhD and 42% were actively working with a Master's qualification. Percentage of respondents with a bachelor's degree as their highest degree remains almost the same in both surveys conducted in 2013/2014 and 2016.

Educational background – study areas

Social sciences are the most prevalent educational background among the respondents, as 66% of the African respondents (and 65% of all respondents in the 2016 survey) reported to have a back ground in the same (see table 1). A total of 26% of the African respondents and 32.5% of all respondents reported to have an educational background in natural sciences and engineering while humanities are the least reported background with only 8% of African respondents and 2.5% of all respondents.

Table 1: Main academic discipline

Answer Choices	African respondents	All respondents
Social sciences	**66%**	**65%**
Humanities	**8%**	**2.5%**
Natural Sciences/Engineering	**26%**	**32.5%**

Source: 2016 Survey, Part I, Figure based on answers from 126 African respondents (not all responded to this question)

Under the category of social sciences, Economics is the most common line of background followed by Development Studies, Innovation Studies, Urban Planning, Administration, Management, and Political Science etc. Natural sciences and engineering include Industrial Engineering and Innovation, Technology Management, Electronics and Telecommunication Engineering, Agriculture and Technology, Chemical Engineering, Bio Chemistry, Computer Engineering, and Environmental Sciences etc. Humanities include Historical studies, Sociology and criminology, and Comparative Literature.

Country where degrees were obtained

Regarding the countries where degrees were obtained, two third of the respondents to the 2016 survey obtained their highest degree in Africa (see Figure 7).

In the 2016 survey, considering the African respondents who obtained their degrees from Africa 17.8% of the African respondents obtained their highest degree from Kenya and 11.5% from Ethiopia, while 27,4% of the respondents had obtained their highest degrees in Nigeria and 10,2% of the respondents had obtained their highest degree from South Africa. In the 2013/2014 survey a total of 16% of all respondents held degrees obtained in South Africa and 15% held degrees obtained in Nigeria. The differences noted reflect differences in geographical spread of respondents to the two surveys (which has increased from 2013/2014 to 2016). However, this difference may very well be a result of better outreach in the 2016 survey rather than reflecting actual changes in the factual distribution of degree holders in Africa by country where degrees were obtained.

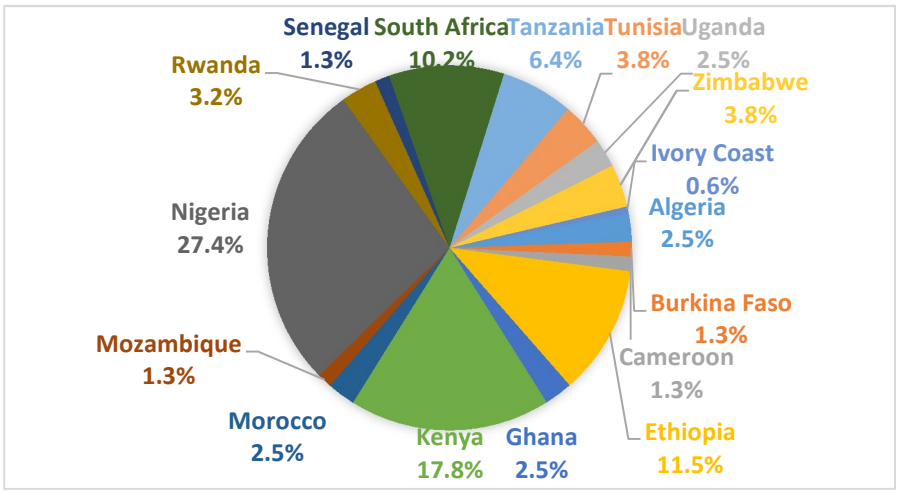
Moreover, 37% of the respondents to the 2016 survey obtained their highest degree outside of Africa with the UK having the highest contribution (10%) followed by Germany (4%), France (3%), USA (3%), Netherlands (3%), Sweden (3%), Denmark (2%).

A total of 33 African Scholars responding to the survey (mainly from Ethiopia, Kenya, Nigeria, South Africa, Tanzania and Uganda) have attained their PhD degrees from international universities (mainly from Belgium, France, Germany, Ireland, Netherlands, UK and USA). A vast majority of them had their degrees in Social Sciences (Economics, Technology Management, Agriculture, Development, Engineering, and Information Science, etc.) followed by Natural Sciences and Engineering (Industrial Engineering, Computer Engineering, Chemical Engineering and Technology Management, etc.) and Humanities (Languages, Rural Sociology and Communication and Sociology of Education).

In the 2016 survey, respondents outside of Africa obtained their highest degrees from 20 different countries, while in the 2013/2014 survey respondents outside Africa obtained their highest degrees from 11 countries outside of Africa. This is likely to be a result of the fact that the 2016 survey was able to include twice as many respondents and also to cover a bigger number of universities, institutes and countries (African and outside of Africa): In the survey conducted in 2016, respondents from 59 different African Universities were involved, whereas the respondents of the 2013/14 survey represented 46 African Universities. Annex I lists the universities that granted degrees to the respondents of the 2016 survey.

The majority of African scholars providing supervision still reside in Africa (83%) after obtaining their degree, which is obtained on an average of 9.8 years prior to the time the survey was conducted, signaling their long-term commitment to capacity building in African countries.

Figure 7: Country where the degree was obtained

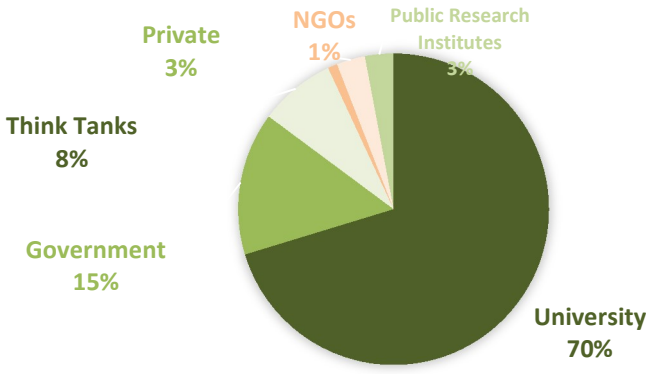


Source: 2016 Survey, Part I, Figure based on answers from 222 African respondents

2.3 INSTITUTIONAL AFFILIATION

Figure 8 below shows the institutional affiliation of African respondents to the 2016 survey. A total of 70% of the African respondents (and 66% of all respondents) reported to be affiliated with universities, while a total of 15% of the African respondents indicated that their main affiliation was with government institutions. The remaining 15% of the African respondents reported to be affiliated with multilateral organizations, NGOs, think tanks, private sector or public research organizations. If all respondents are taken into account, 68% of the respondents were affiliated with universities, 6% with private firms, 8% with think tanks and 2% with NGOs.

Figure 8: African respondents and their institutional affiliation by type of organisation

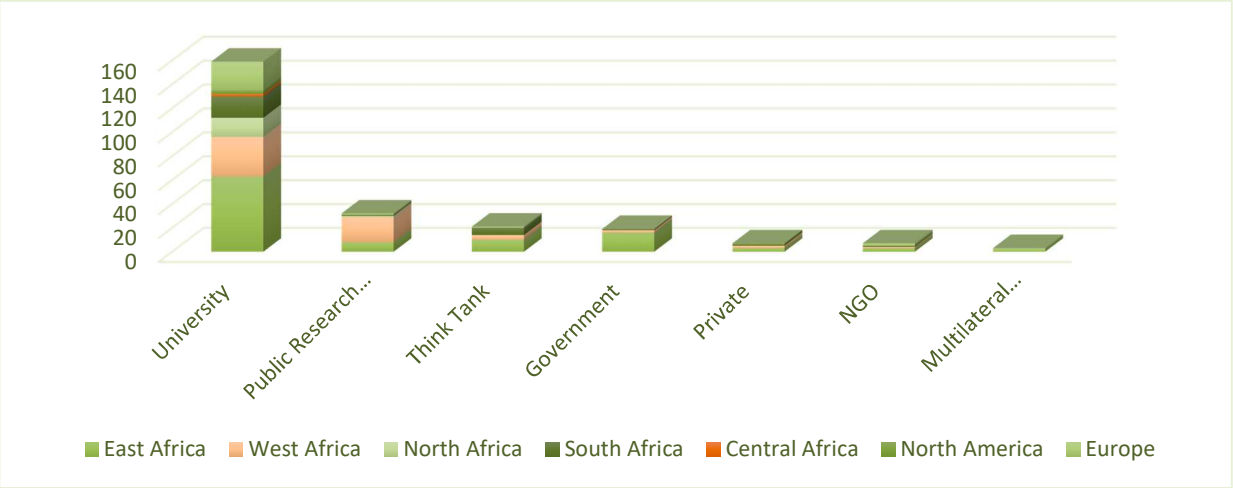


Source: 2016 Survey, Part I, Figure based on answers from 222 African respondents

Among respondents reporting to have affiliations to universities, all African regions were represented with prominent contribution from Nigeria, South Africa, Kenya, and Ethiopia. But there are also a substantial number of respondents with affiliations to universities in Tunisia, Uganda, Zimbabwe and Rwanda (see Figure 9). Respondents from government agencies are mostly from East Africa and vast majority of those with affiliation to public research organizations come from Nigeria. Finally, African respondents linked to think tanks are mainly concentrated in Kenya and South Africa.

Data from the 2016 survey is reflecting that the survey captured respondents from a broader list of countries as compared to the survey conducted in 2013/2014.

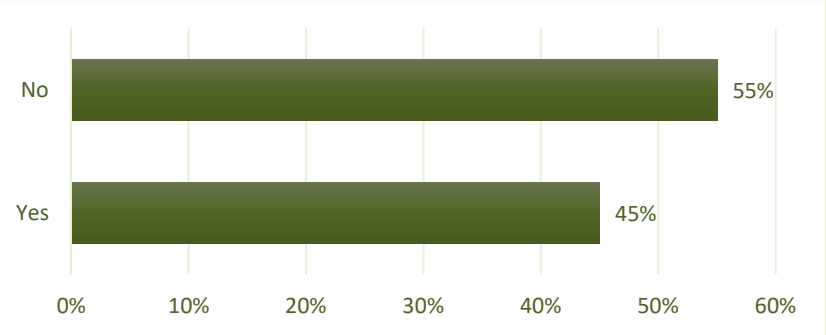
Figure 9: Distribution of respondents by institutional affiliation and location of their institution



Source: 2016 Survey, Part I, Figure based on answers from 222 African respondents.

Additional affiliations are higher in 2016 (55 %) (see Figure 10) than in 2013/2014 (40%). Multiple affiliations by African researchers are often a reflection of the multiple roles and multiple levels of responsibilities that scholars in Africa hold. Additional institutional affiliations of respondents can also imply sharing of resources and knowledge and coordination of researchers in different fields and institutes.

Figure 10: Do you have other current institutional affiliations?



Source: 2016 Survey, Part I, Figure based on answers from 222 African respondents

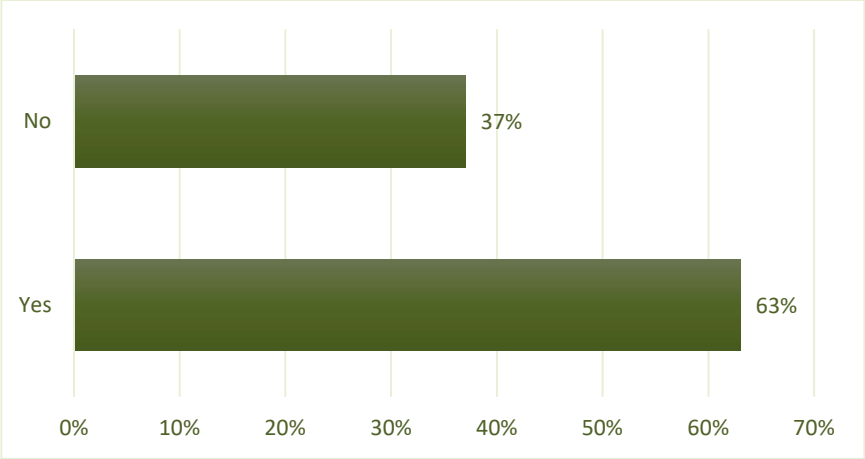
3. UP-DATE OF INFORMATION ON BASELINE INDICATORS

This section outlines the data obtained during the 2016 survey for indicators also included in the 2013/14 survey.

3.1 TRAINING AND TEACHING PROGRAMS ON INNOVATION AND DEVELOPMENT IN AFRICA

63% of the African respondents (and 64 % of all respondents) reported in the 2016 survey that they were directly involved in teaching or training activities in the field of innovation and development, mainly involved in teaching Master's Programs (see figure 11).

Figure 11: Do you teach or provide any training in the field of innovation and development?



Source: 2016 Survey, Part I, figure based on answers from 222 African respondents.

Table 2: Type of teaching/training provided by African respondents

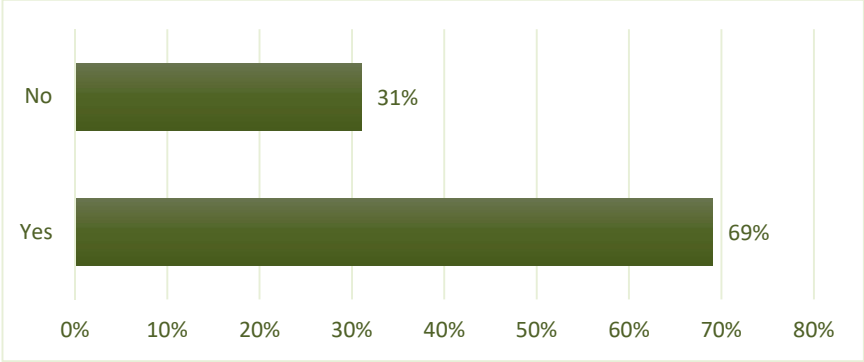
Answer Choices	Number of Responses
Undergraduate Program	31
Master's Program	35
PhD	18
Training for Policy Makers	11
Training for Enterprises	11
Training for Civil Society	6
Other	11

Source: 2016 Survey Part I, table is based on answers from 76 African respondents

The 2016 survey results suggest that 69% of the organisations to which the African respondents are affiliated (and 37% of the organisation of all respondents) offered some sort of training or teaching programmes in the field of innovation and development (see Figure 12). In the 2013/2014 survey 80% of the respondents indicated that their organizations offered some type of training and teaching programmes in the field of innovation and development.

The apparent reduction in the number of organisations offering training and teaching programmes related to innovation and development is difficult to explain. It may have to do with an actual decrease in the number of courses offered, but may also very well be related to differences in outreach in the two surveys or have to do with differences in the understanding of what constitutes training/teaching programmes in the field of innovation and development among respondents. Although the surveys tried to define how the term innovation and development should be understood, respondents may still have relied more on their own understanding. It is also possible that formulations used in the 2013/2014 survey questionnaire compared to those used in the 2016 survey questionnaire may have had an impact.

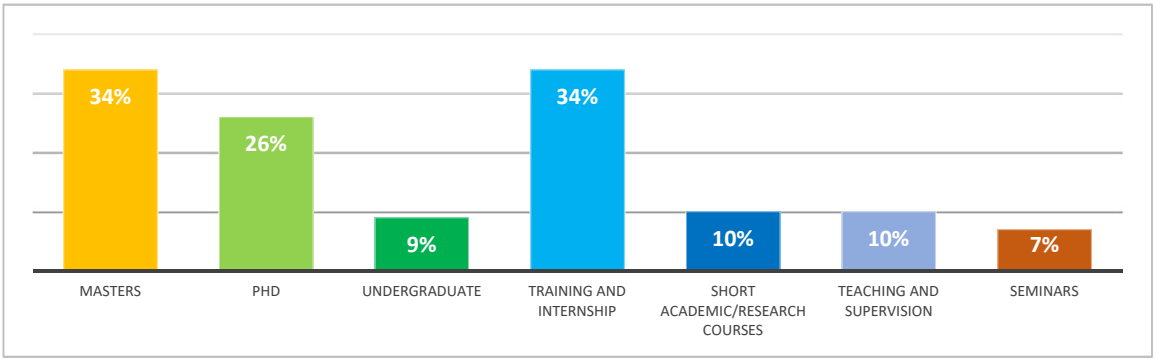
Figure 12: Does your organisation offer training and teaching in the field of innovation and development?



Source: 2016 Survey, Part II. Figure based on answers from 195 African respondents (not all responded to this question).

As can be seen from Figure 13, 'Master's programmes' and 'Training and Internship' are the most frequent type of training offered by institutions followed by 'PhDs', 'short academic/research course', 'teaching and supervision', 'undergraduate programmes', and 'seminars'. The trainings cover a broad range of subjects like intellectual property, innovative soil management practices, teaching and research guidance, designing of innovative technology, monitoring and evaluation of projects and research for development, entrepreneurship and innovation etc. 9% respondents have also reported that training in innovation and development is offered by their institutions at undergraduate level. In the 2013/2014 survey no respondents reported training at undergraduate level.

Figure 13: Type of training in innovation and development offered in African institutions, by content and length (2016 survey)



Source: Survey Part II, Figure based on answers from 156 respondents (not all responded to this question)

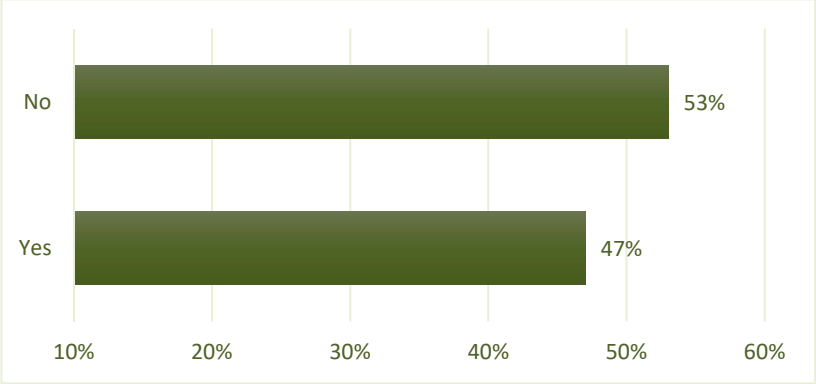
Supervision

Strong linkages between supervisors and their students are an important ingredient for the development of an academic community in any field. In the 2016 survey 47% of the African respondents reported that they supervise at Master's or PhD level (see Figure 14). Those involved in supervision had an average of 5.9 Master's students per supervisor and 2.16 doctoral students per supervisor. 22% of the African respondents reported that they work with Master's students only

with an average of 11.9 students per supervisor and only 5 African respondents reported that they work solely with Doctoral students with an average of 1.6 students per supervisor. In the 2013/2014 survey 39% of the respondents reported that they supervise at Master's or PhD level. Those involved in supervision had an average of 8.9 master's students and 1.4 doctoral students per supervisor.

In 2016, 78% of African respondents reported to be supervising were PhD holders (highest qualification). The remaining 22% African supervisors had Master's degree as the highest qualification.

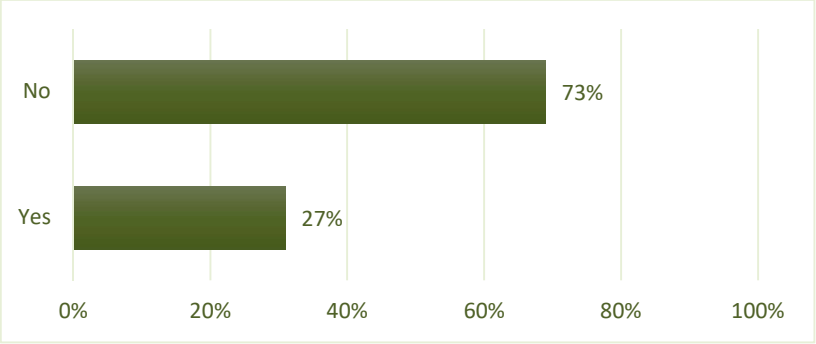
Figure 14: Do you conduct supervision at Masters or PhD level?



Source: 2016 Survey, Part I, Figure based on answers from 222 African respondents

It is worth noting that the majority of the African supervisors had received no formal training on how to conduct supervision. Figure 15 below indicates that only 27% had received some form of training for supervision. If all respondents taken into account, 31% of the respondents reported to have received training on how to conduct supervision at master's or PhD level. This situation is likely to affect the quality of teaching at both levels.

Figure 15: Have you received any training on how to conduct supervision at Masters or PhD level?



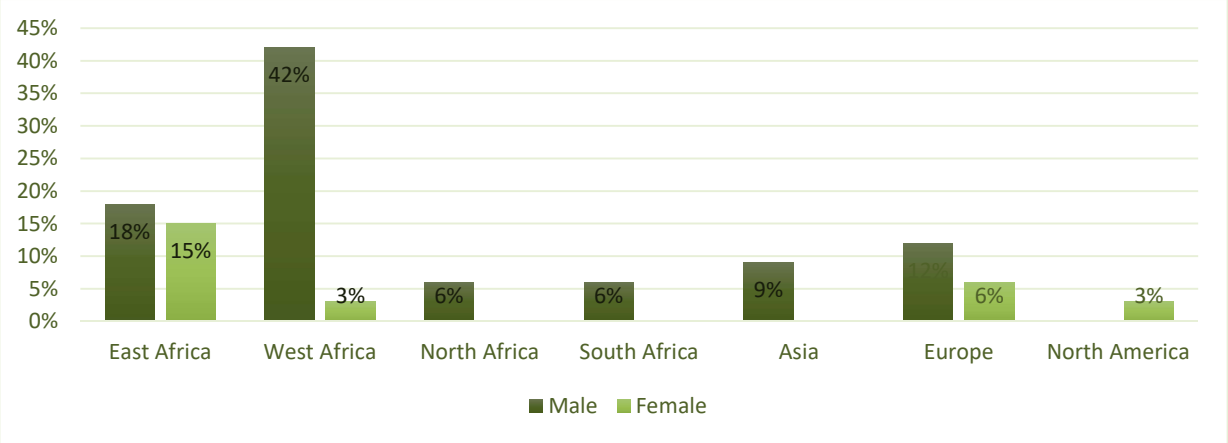
Survey: 2016 Survey Part I, Figure is based on answers from 220 African respondents (not all responded to this question)

3.1 PHD PROGRAMMES AND STUDENTS

12 % of all African PhD holders responding to the survey (33 out of 109) obtained their PhD degrees from 2014 to 2016. Three percent of the respondents expected to finish their PhDs after 2016 (seven persons in total). In 2013/14, 41 respondents (31% of the total number of respondents) were PhD students, completing their PhDs in various countries. In 2016, a total of 137 respondents reported to be PhD students (52% of all respondents). The average age of respondents obtaining their PhDs from 2014 to 2016 (and including the 7 scholars reporting to be obtaining their PhD after 2016) was 38 years.

Only 27% of the PhD respondents were female, a reflection of the gender biases in higher education in Africa (see Figure 16). In West Africa only one responding PhD student was female while there were 14 male PhD students responding. The majority of these were registered in PhD programmes in West Africa (mainly Nigeria), East Africa (mainly Kenya), Europe (including the UK, Germany, Belgium, Netherlands, Ireland and France), Asia (China and Japan). However, the survey also identified PhD students registered in other African countries.

Figure 16: Gender profile of PhD students responding to the survey, according to regional location of PhD programmes



Source: 2016 Survey, Part I, based on answers from 137 respondents doing a PhD

PhD programmes related to innovation and development in Africa

The 2016 survey gathered information about PhD programmes related to innovation and development in African countries. Information on PhD programmes was provided by the students and supervisors responding to the survey and the list obtained on the basis of information gathered through the survey might therefore not be comprehensive in terms of covering all existing PhD programmes on innovation and development in Africa, but rather identify those programmes that are mentioned by host scholars of the survey who identify themselves with the field of innovation and development.

The majority of respondents associated their PhD programmes with the category of Social Sciences and in particular with the fields of Economics, Development Studies, Technology Management, Knowledge Management, Agriculture, Marketing and Engineering. Innovation related programmes related to Humanities were also reported by respondents such as, Education, Comparative literature, Languages and Sociology. In the fields of Natural Sciences and Engineering diverse PhD programmes were mentioned as including an element of innovation and development studies issues (Industrial Engineering, Agriculture, Computer Engineering, Post-Harvest Technology, Technology Transfer & Sustainable Development, Chemical engineering, Industrial Engineering and Innovation).

All in all, 30 PhD programs from different disciplines and countries in Africa were identified through the 2016 survey as being directly or indirectly related to innovation and development. In 2013/2014 a total of 61 programmes were reported as having a direct or indirect link to innovation and development issues. It is difficult to judge whether the difference observed between the two surveys has to do with bias in responses due to differences in group of respondents; with an actual decline in number of programmes or with difference in the perceptions among respondents in the two surveys as to how to determine whether a programme should be reported as dealing with innovation and development. Likewise, some of the 30 programmes mentioned by respondents to the 2016 survey might be the same as some of the 61 programmes in the 2013/2014 survey and at the same time some programmes identified in the 2013/2014 survey might not exist anymore.

Attempts were made to verify the information obtained in 2013/14 and 2016 respectively. This work included comparing the lists of programmes identified in the two surveys and analyzing in more detail the contents and status of the various programmes drawing on information from the internet and from the two surveys. Against this basis, Table

3 below presents a consolidated overview of the few PhD programmes at African Universities that have been identified as including an element of innovation and development based on knowledge obtained through the two surveys and verified through search on the internet and hence serves as a new baseline as far as status on PhD programmes in Africa related to Innovation and Development is concerned. The table will be up-dated on the basis of new information in the coming years.

Table 3: PhD programmes that teach elements of 'innovation and development' based on 2016 survey and web search

Country	University	Programme name
Ethiopia	University of Gondor	
	Addis Ababa University	
Kenya	Jomo Kenyatta University of Agriculture and Technology	PhD in Entrepreneurship
Nigeria	University of Obafemi Awolowo University	PhD in R&D and Innovation Management PhD in Industrial Technology Management PhD in Environmental Technology Management PhD in Energy Engineering and Management PhD in Information and Communication Technology Management
	University of Port Harcourt	PhD in Engineering Management PhD in Technology Management
	University of Ibadan	
Rwanda	University of Rwanda	
South Africa	The Da Vinci Institute	PhD in Management of Technology and Innovation
	University of the Western Cape	PhD in Development Studies PhD in Public Policy and Administration
	Tshwane University of Technology	PhD in Management Sciences PhD in Civil Engineering PhD in Industrial Engineering
	Witwatersrand University	PhD in Economic or Business Services
	UNISA	PhD in Economics
Uganda	Makerere University	
	Mbarara University	PhD in Economics, Business Management, Development Studies

Note: Where there is no programme listed this is because we have been unable to verify the exact names of the PhD programmes. This cannot be a definitive list as it has not reviewed the programme listing for every university in Africa. The AfricaLics Secretariat will be contacting a more thorough search in 2017.

3.2 MASTER'S PROGRAMMES AND STUDENTS

A total of 97 African respondents reported that their highest qualification obtained was a Master's degree (37% of the total number of African respondents). In most cases, the master's degree had been awarded by an African University (86%). East Africa has the biggest contribution in terms of respondents with a master's as their highest degree with 49% respondents, followed by West Africa (25% respondents). East Africa and West Africa have been dominating at the time of both the surveys (conducted in 2013/2014 and 2016) in terms of regions with the highest number of master's students represented in the surveys.

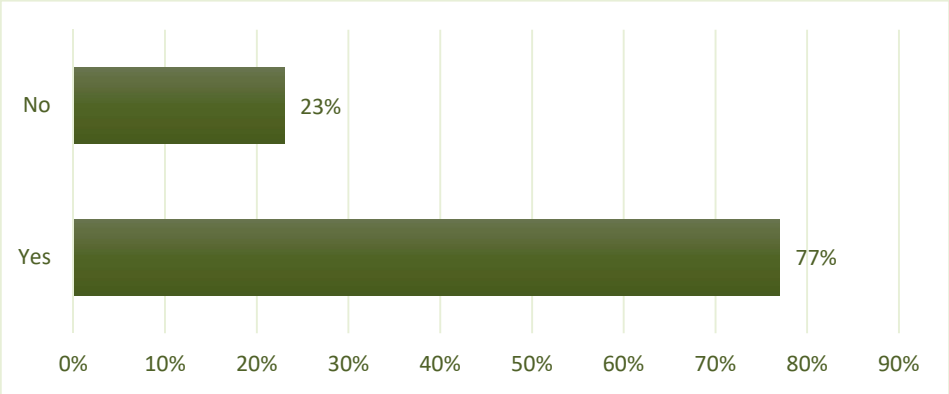
The survey gathered information about Master's programs with a component of Innovation and Development in 16 African countries. Most master's programs identified were related to Social Sciences, in particular; Economics, Development Studies, and Management. A few respondents also reported to have master's programs in Agricultural Economics with an element of innovation and development issues. Out of the 47 identified master's programs that have trained scholars who identify themselves with the field of innovation studies, only 5 of those programs appeared to be explicitly dedicated to innovation, and technology management. The 2013/2014 survey identified 8 master's programs dedicated explicitly to Innovation and Development (most of which offered in South Africa). In the 2016 survey 5 programs were identified as being offered in Nigeria, South Africa, Tanzania, Uganda, Zimbabwe, and Ethiopia. Moreover, some respondents also reported to have their bachelor's degrees related to innovation and development.

In the 2016 survey Master's programmes across Africa identified as having a component of innovation are mainly weaved within offerings in Economics, Management and Business Administration and not exclusively focused on I&D. A list of master's programs identified by the survey can be seen in Annex II.

3.3 PUBLICATIONS

The community of African scholars and researchers in the 2016 survey that identify themselves with the field of innovation and development appears to be active authors, since 77% of the African respondents (and 75% of all respondents) reported to have published in the last 5 years (see Figure 17). 58% of the African respondents with publications were PhD students, while 42% of the African respondents with publications were holders of master's degrees associated with either universities or government agencies. Publishing seems to be heavily linked to universities, as besides PhD students, a vast majority of respondents reporting to have published in the field of innovation and development were associated with universities.

Figure 17: Have you published in the field of innovation and development in the last 5 years?



Source: 2016 Survey Part 1, Figure based on answers from 220African respondents (not all responded to this question)

Through the questionnaire survey, this study identified the following categories and numbers of publications by African scholars and researchers in the field of innovation and development for the period 2008/2009 to 2015/2016.

- 21 books (23 books according to 2013/2014 survey)
- 114 book chapters (44)
- 436 journal articles (147)
- 53 working papers (40)
- 111 conference papers (87)
- 5 opinion articles (13)
- 37 research reports

Only 5 out of 21 books were published by African publishers. A vast majority of the books reported to have been published, were published in USA followed by Europe (UK, Switzerland, and Germany: Cambridge University Press, Edward Elgar publishing, Stanford University Press, Palgrave Macmillan press, Lap Lambert Academic publishing, and

Springer International Publishing etc.). Most of the book chapters are also published in books published in Europe and USA. Majority of the book chapters and books listed by respondents in the 2016 survey addressed areas of particular interest for Africa in the field of innovation and development such as (1) The use of the patent system by inventors (2) science, technology and innovation (3) natural resources (4) health innovation systems (5) innovation and inequality, (6) urban land development in Africa, agriculture (7) knowledge- based economy (8) sustainable development (8) ICT (9) engineering and technology. The themes of books and books chapters are recurring in 2013/2014 and 2016 where African researches wrote about gender imbalance and ICT. Responses from 2016, contains more themes regarding innovation and development, as mentioned above.

Journal articles represent themes like irrigation water management, technology adoption, ICT, higher education, innovation capacity building, global innovation, knowledge based development, networks and knowledge and absorptive capacity etc. Themes of journal articles identified in survey 2013/2014 were more focused on technologies like solar technologies and their assessment, and application and diffusion in specific sectors or regions. The table in Annex III lists the journals in which the respondents to the 2016 survey reported to have published in the last 5 years. A considerable number of publications are associated to innovation and development studies. The most frequently quoted journals are the following:

- African Journal of History and Culture
- African Journal of Science, Technology, Innovation and Development
- Journal of Higher Education in Africa
- Journal of Development Studies
- Journal of Sustainable Development
- European Journal of Development Research
- International Journal of Technology, Policy and Management

In 2013/2014 only few journal publications reported by the respondents were directly related to innovation & development. Many of the journal publications were instead in the field of management, medicine, engineering, environmental sciences, etc.

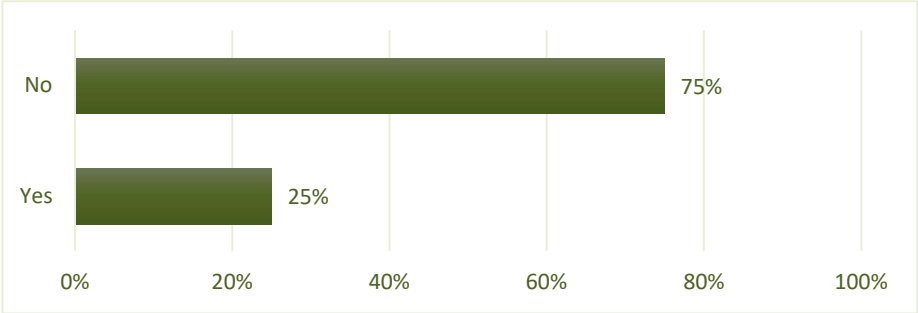
According to the 2016 survey results out of 86 reported conference papers 66% were presented in conferences and events taking place in Africa, mostly in Ethiopia, Kenya, South Africa, Nigeria and Rwanda. 10% of the conference papers presented by African innovation scholars related to conferences that took place in Asia (China, India, Indonesia, Japan, Sri Lanka and Turkey), 17% in Europe and 7% in North and South America. In contrast the respondents from Africa to the 2013/2014 survey, mainly presented their work in Nigeria, China, Malaysia, and 14% in Europe. It thus seems that African scholars responding to the survey 2016 survey have a broader exposure to international conferences both in various African countries and outside Africa.

4. THE RESEARCH LANDSCAPE IN AFRICA

4.1 RESEARCH ACTIVITIES

This section summarizes the results related to research activities, as reported by the African scholars through the two surveys. As can be seen from Figure 18 below, only 25% of respondents held research grants at the time of the survey.

Figure 18: Do you currently hold any research grants?



Source: 2016 Survey Part I. Figure is based on answers from 219 African respondents (not all responded to this question)

10 African respondents reported to have more than 1 research grant and working on more than 1 project, with maximum 3 projects. See list of research projects in table 5. The scholars who have availed the grants reported to be making effective use of them by engaging in teams of other scholars, addressing issues related to innovation and development and performing main duties in the research project. In the first research project, 68% of the respondents were working as investigators and researchers, followed by 16% working as principal investigators and researchers, and 16% as coordinators. The average size of the teams, respondents were working with was 12 members per team for the first research project, followed by 7 members per team for the second research project, and 11 members per team for third research project.

Table 4: Most frequently reported research themes under which survey respondents work

Answer Choices	Responses, 2016 survey	Percentage	Percentage from 2013/2014 Survey
Agro-industrial innovation systems and food security	33	15%	31%
Work organization and competence building in formal and informal sector	43	20%	27%
The role of financial institutions in relation to innovation and development in Africa	8	4%	20%
The role of women in Africa's innovation systems	40	18%	18%
National strategies to stimulate spill-overs from BRIC-presence in Africa	2	1%	15%
Engineering & design capacity building and economic development in Africa	20	9%	15%
Building Low-carbon Energy Innovation Systems	8	4%	14%
Overcoming raw material curse through new manufacturing and service activities	16	7%	10%
Other research areas related to innovation and development	49	22%	53%

Source: 2016 Survey, Part 1. Figure is based on answers from 222 African respondents in 2016 and 109 in 2013/4

Most of the African researchers in the survey conduct research related to (1) work organization and competence building in formal and informal sector, (2) the role of women in Africa's innovation systems, (3) agro-industrial innovation systems and food security, amongst others – see table 4. In fact, we found significant interest expressed in a range of thematic areas. The survey also collected details on specific active research projects in each of the thematic areas, including name of the project, aim of the project and web-link.

Researchers responding to the 2013/2014 survey focused more or less on the same topics as in 2016, but also a significant share of the 109 respondents in the 2013/14 survey focused on the role of financial institutions in relation to innovation and development in Africa.

Other areas of research related to innovation and development captured in the 2016 survey are listed in table 5.

Table 5: Other research themes identified by respondents

Regional and Spatial Development	Open innovation and absorptive capacity
Innovation policy	Innovation system development at firm level
IPR and innovation, innovation in pharmaceuticals, innovation in developing countries	Technology parks and economic development
Social shaping of nuclear and renewable energy technologies in developing countries	Innovation in higher education
Innovation measurement	Intra-Industry Technological Spill overs
Role of indigenous knowledge for the development of Africa, ICT for development of African rural	Determinant of innovation
communities, rural community innovation for development	STI indicators
Knowledge transfer	Innovation in services
The role of education for sustainable development	The role of HR practices in the development of competences in innovative SME's in Lebanon
Innovation economics	Health system-industrial innovation linkages
Technology development and transfer from public R&D to private sector	Entrepreneurship development in Ethiopia: policies, challenges and endeavours
Effects of absorption capacity on the development of innovation in the developing countries	Informal network innovation
Enhancing people's welfare through integration	Export performance of SME's in Rwandan Mining Sector: Challenges and Prospects
Innovation Barriers	Globalization of higher education
Sustainable policy and programs for sustainable development	Export Processing Zones and Value Chains
The Role of ICT innovation in development and poverty reduction	Technology innovation leaders
Management of innovation	Innovation and social-ecological sustainability
Innovation process	

Source: 2016 Survey, Part 1. Figure is based on answers from 222 African respondents

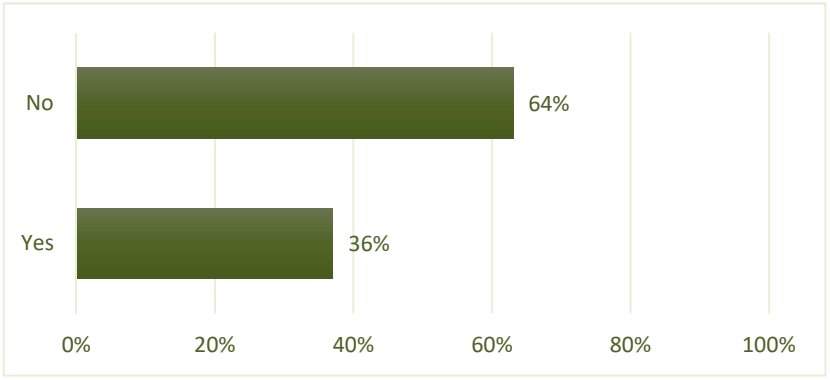
4.2 INSTITUTIONAL PROFILE

This section contains the summary of institutional profiles of the African Research landscape as captured by the 2016 survey. A total of 68% (and 70% of all respondents) of the African respondents mentioned that their organizations offer training (including teaching and/or supervision of research) in the field of innovation and development and 32% of the African respondents (and 30% of all respondents) answered negatively in that regard.

71% of the African respondents (and 74% of all respondents) that said their organizations provided training in the field of innovation and development, were affiliated with universities. Government institutions are also trying to play their

role by as 15% respondents with affirmative answers were affiliated with government agencies. Finally, 11% respondents were affiliated with research institutes and think tanks and only 2 African respondents were affiliated with NGOs. Approximately one third of the respondents were working in higher positions in the training programs at their institutions. 36% of African respondents (and 37% of all respondents) answered affirmatively when asked if they were in charge of any training activity in the field of innovation and development at their organization (see Figure 19).

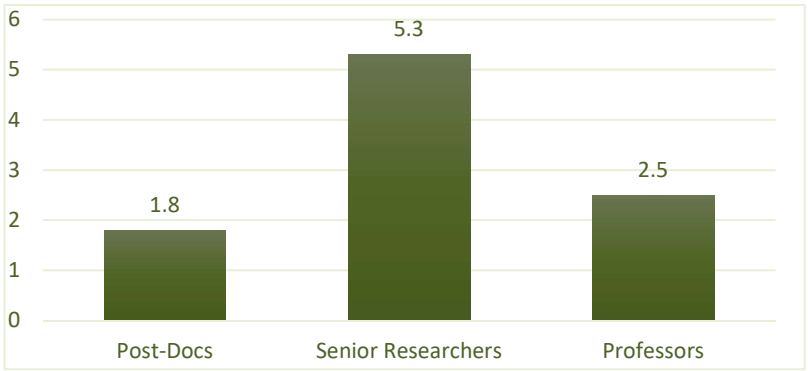
Figure 19: Respondents in charge of training activities in the field of innovation and development



Source: 2016 Survey Part I. Figure based on answers from 195 African respondents

According to the African respondents, the category of senior researchers is the group most actively engaged in training at the Masters and PhD level (including teaching and/or supervision of research) within the field of innovation and development. On average 5.3 senior researchers (average based upon answers provided by 43 respondents) per institution, followed by 2.5 professors (average based upon answers provided by 43 respondents) and 1.8 post-docs (average based upon answers provided by 51 respondents) were engaged in training at Masters and PhD level. See Figure 20.

Figure 20: Average number of staff engaged in training at MSc and PhD level in the field of innovation and development at a research organisation

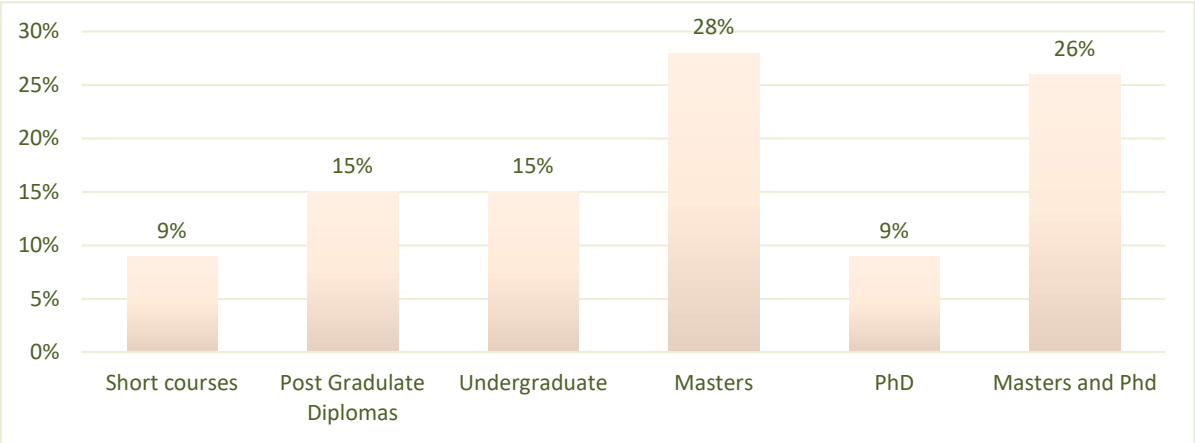


Source: 2016 Survey Part II, respondents n=156. Based on each respondent's reporting against their own organisation

Institutional profiles were further elaborated by respondents. Most of the respondents were involved in training related to innovation management, technology management, Information Sciences, project planning and management, and mechanical engineering etc. A detailed list of programs offered by the organizations is available in Annex IV.

Most of the respondents affiliated with organizations provided training to master's and PhD level students. It is important to note that a substantial number of respondents are providing training to master's and PhD students at the same time. See Figure 21.

Figure 21: Innovation and development related programmes that respondents are teaching or providing training in



Source: 2016 Survey Part II. Figure complied on the basis of response from 47 respondents that provided answers to this question

On average every respondent affiliated with organizations have taught or provided training related to innovation and development to 241 students from 2013 to 2015. That makes approximately 80 students per respondent in a year. It is interesting to note that one respondent reported to have taught or trained approximately1600 students in a year.

Regarding the duration of the courses and modules, African institutions are following international standards. Duration of different courses and programs is mentioned in table 6 below as reported by respondents.

Table 6: Average duration of different courses at African universities

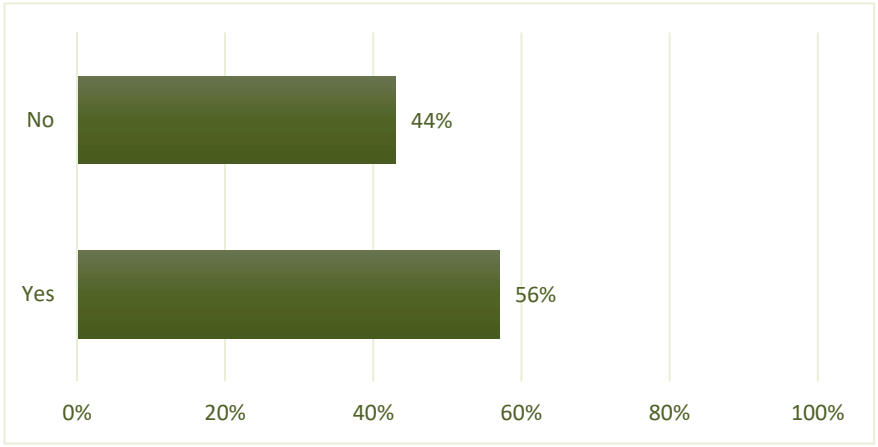
Courses and Programs	Duration
Courses at Undergraduate level	3-4 months
Master's Program	2 years
Courses at Masters level	3-4 months
Post Graduate Diplomas	1 year
Short Courses	5 days-12 weeks
PhD	3-4 years

Source: 2016 Survey Part II, respondents n=156

4.3 INTERACTIONS AND COLLABORATIONS

According to the surveys many African organizations are already promoting collaboration with other institutions and organizations. The survey results indicate that 56% of the African respondents are affiliated with organizations that promote collaborative training courses (see Figure 22). The percentage remains the same when all participants were taken into account for calculation.

Figure 22: Institutions offering collaborative training courses in the field of innovation and development



Source: 2016 Survey Part I, Figure based on answers from 192 African respondents. Collaboration = in collaboration with other organisations

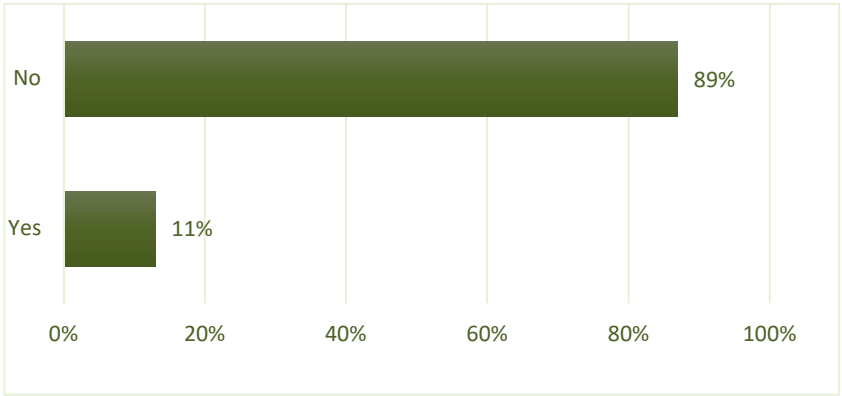
Many respondents mentioned the AfricaLics Visiting PhD Fellowship programme at Aalborg University as an example of a collaborative effort. The PhD sandwich program at Addis Ababa Institute of Technology in Collaboration with George Simon Ohm University, Nuremberg, Germany was also mentioned as a prominent example.

But respondents also referred to other institutional collaborations however, including the following.

- Makerere University Kampala offering industrial trainings at internships (not clear with whom Makerere is collaborating on this)
- Obafemi Awolowo University, Nigeria offering M Tech in collaboration with Federal University of Technology, Minna, Niger state
- Abou bekr Belkaid university, Algeria collaborating with École des Hautes Etudes Commerciales (HEC), Algiers
- University of Cape town collaborating with Workforce Development Authority (WDA)

Only 11% of African respondents were affiliated with organizations that offer online training courses in the field of development, whereas 13% organizations were involved in online training when response from all the respondents was taken into account (see Figure 23). Corresponding to the improved internet facilities in Africa, there is a dearth of online courses provided. These courses can further serve as an avenue for researchers to network with each other for knowledge sharing.

Figure 23: Respondents' organisations offering of online training courses in innovation and development



Source: 2016 Survey Part I, Figure based on answers from 195 African respondents

That said, only a few respondents mentioned and described online courses offered by their institutions, as outlined in Table 7.

Table 7: Details of online courses offered provided by respondents

Description of Online Courses	Institutes
Bachelor of Hotel and Hospitality Management, Bachelor of Tourism Management	Moi University, Coast campus, Kenya
"Masters students can take their courses online"	University of Nairobi
Innovation process - how to develop a new product - the relationship between university and industry to develop the Nis	ESMS Tlemcen, Algeria
"The Institute offers these programs online: M.Tech, M.Sc., and Ph.D. in conjunction with Center for Distance Learning, Obafemi Awolowo University, Ile-Ife, Nigeria	AfricaRice Centre, Benin Republic
They offer a course on Development, Innovation and Technology. The following link provides more information. http://www.gsb.uct.ac.za/s.asp?p=134	Makerere University, Uganda

Source: 2016 Survey Part II, respondents n=156

Similarly, only a few respondents mentioned and described training courses hosted by their institutions. See table 8 below.

Table 8: Description of additional information on online courses provided in 2016 survey

Description of Training Course	Hosting Institute
Biotechnology skills for Mulago school of Health Sciences for two weeks every year	Uganda Industrial Research Institute
PhD training on innovation and development offered by AfricaLics	Moi university, Kenya
Research supervision, material/content development	University of Nairobi, Kenya
Training on use of new technologies for increased adoption purposes. Stakeholders may provide funding and the institution runs the training. The participants are hosted for a stipulated period of time. Here lectures and field demonstrations are made. The coloration may involve different task forces under rice development and innovation. This is same for impact and evaluation.	Africa Rice Centre, Benin Republic
They can host imminent researchers to give us their experience in the field of innovation they can also host innovators or firms that make innovation the principal mean to survive in a concurrent market	ESMS Tlemcen, Algeria
PhD programs invite professors from various universities to give courses in various fields. This is initiated by inviting the processor (at his/her convenience) to provide courses approved by the Industrial Engineering chair. Only costs of transportation and accommodation is paid to the professor along with a very minor honorarium payment (considered only as token of appreciation)	Addis Ababa Institute of Technology, Ethiopia
Partner NGOs	Tshwane University of Technology, South Africa

Source: 2016 Survey Part II, respondents n=156

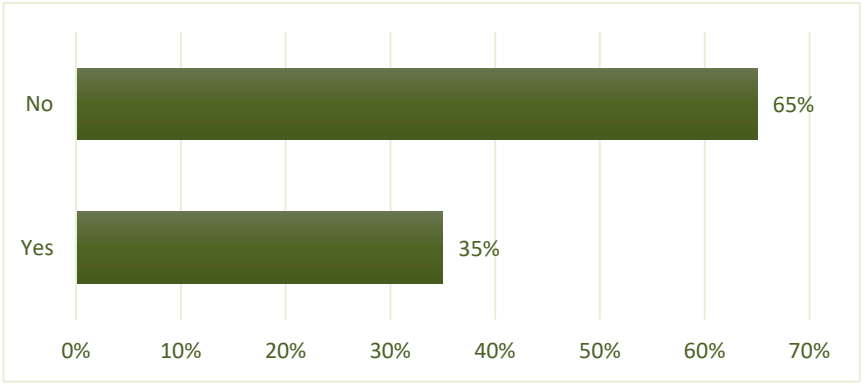
5. PARTICIPATION IN GLOBELICS AND AFRICALICS ACTIVITIES

5.1 PARTICIPATION IN GLOBELICS ACTIVITIES

In the 2013/2014 survey 70% of all respondents reported to have participated in Globelics activities. In the 2016 survey an average of 39% reported to have participated in Globelics activities. Only 35% of the 222 African respondents reported to have participated in Globelics activities in the past (see Figure 24), whereas a total of 63% of the 42 respondents from outside of Africa reported to have participated in Globelics activities in the past. The exact percentage of African respondents having participated in Globelics activities in 2013/14 is not known, but since only app. 5% of the 129 respondents to this survey were from outside Africa, it seems safe to assume that the percentage of African respondents having participated in Globelics activities has gone down from 2013/14 survey to the 2016 survey.

The apparent decrease in percentage of African respondents reporting to have participated in Globelics activities is likely to be related to the increased outreach of the 2016 survey and generally to differences in the composition of the population of each survey: the number of survey respondents has increased considerably from 2013/14 to 2016 and many of the new respondents from the 2016 survey have not (yet) participated in Globelics activities.

Figure 24: Have you ever participated in Globelics events in the past?



Source: 2016 Survey Part I, Figure based on answers from 198 African respondents (not all responded to this question)

The African respondents in the 2016 survey reported to have attended Globelics activities were mainly from Ethiopia, Kenya, South Africa and Nigeria. Uganda also had a prominent representation followed by Tanzania and Zimbabwe. Most of the respondents with positive answers started following Globelics activities from 2012 with only 20% of the respondents reported to be following the activities before 2011.

Approximately 22% respondents have been involved in Globelics Academies and 78% reported their participation in Globelics conferences. These figures are quite identical to the results from 2013/2014 where 22% of the respondents reported to have participated in the Globelics Academy and 71% Globelics conferences.

38% of the total African respondents were of the view that their activities in the field of innovation and development were influenced by Globelics or other regional LICS activities. Of the activities in the field of innovation and development influenced by Globelics or other regional LICS events, collaboration with fellow researchers and senior scholars was rated as the most influenced activity. Others were enhancing research knowledge through feedback, writing PhD thesis and developing ideas for research. Some respondents also utilized Globelics conference papers series to enrich their teaching material and to conduct the researches. Only one respondent considered it helpful to be the part of regional LICS activities for obtaining funding.

In the 2016 survey, about 49% of the African respondents (70% in 2013/2014) reported to have participated in international events related to innovation and development in the past 5 years (excluding Globelics related events).

According to survey results from 2016, almost half of the events taking place in Africa and attended by respondents are regular conferences excluding Globelics and AfricaLics conferences. It is an indication that African scholars interact and exchange views through participation in conferences quite frequently within the continent. Moreover, through the

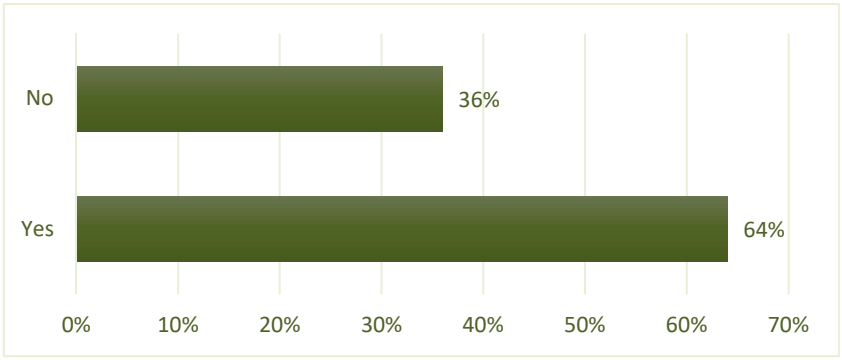
survey conducted in 2016, a larger number of events taking place in Africa and outside of Africa were identified as opposed to only a few events reported by respondents in 2013/2014. Again this might be due to the higher outreach of the 2016 survey, but could also relate to other factors such as increase in number of conferences taking place or better access to funding. The attendance of African scholars in international events can be identified as a cause for enhancing depth and breadth (through interaction, networking and knowledge sharing with world class scholars) of African scholars in the field of innovation and development. Some of the regular conferences and events mentioned by the respondents in and out of Africa are captured in the table in Annex V.

5.2 PARTICIPATION IN AFRICALICS ACTIVITIES

The 2016 survey asked a series of questions in order to find out the impact of AfricaLics activities that have been specifically designed in order to enhance the research capacity building of Africa in the field of innovation and development.

A total of 64% of the African respondents (and 63% of all respondents) reported to have participated in one or more AfricaLics activities (see Figure 25). Among respondents from outside of Africa, 60% reported to have participated in AfricaLics activities[2].

Figure 25: Have you ever participated in AfricaLics events in the past?



Source: Survey 2016 Figure based on answers from 198 African respondents (not all responded to this question)

46% of the African respondents with affirmative answers reported their participation in AfricaLics PhD academy (Building new bridges between innovation system and development studies) in Kenya and in AfricaLics conference (Unpacking Systems Innovations) in Rwanda, both held in 2015. Second most widely attended activity is the 4th AfricaLics Ph.D Academy – innovation systems and innovation Management held at École Supérieure de Commerce de Tunis (ESCT), 2016. It is interesting to note that participants to the AfricaLics activities were mostly new members to network, since 88% of the respondents involved in AfricaLics activities in the years 2015/2016 had not attended any other event before. Overall, 55% of the respondents have attended AfricaLics conferences and 45% have attended PhD academies.

It can be observed that AfricaLics Conferences and Academies are playing the most influential role on activities in the field of Innovation and Development in Africa, among respondents (see Figure 26). This is logical because these activities also have the highest number of attendees, apart from website and social media. According to Figure 26, 64% of the respondents are of the view that their work is influenced by AfricaLics conferences. 54% of the respondents find that their work is influenced by AfricaLics academies.

A total of 51% of the respondents have shown positive response regarding AfricaLics website. This is a good sign that the AfricaLics web-site is being consulted and found useful by app. half of the respondents. Usefulness of the web-site depends partly on quality of internet facilities in Africa (which is better in some countries than others), partly on the

[2] Most of these have been participating as facilitators.

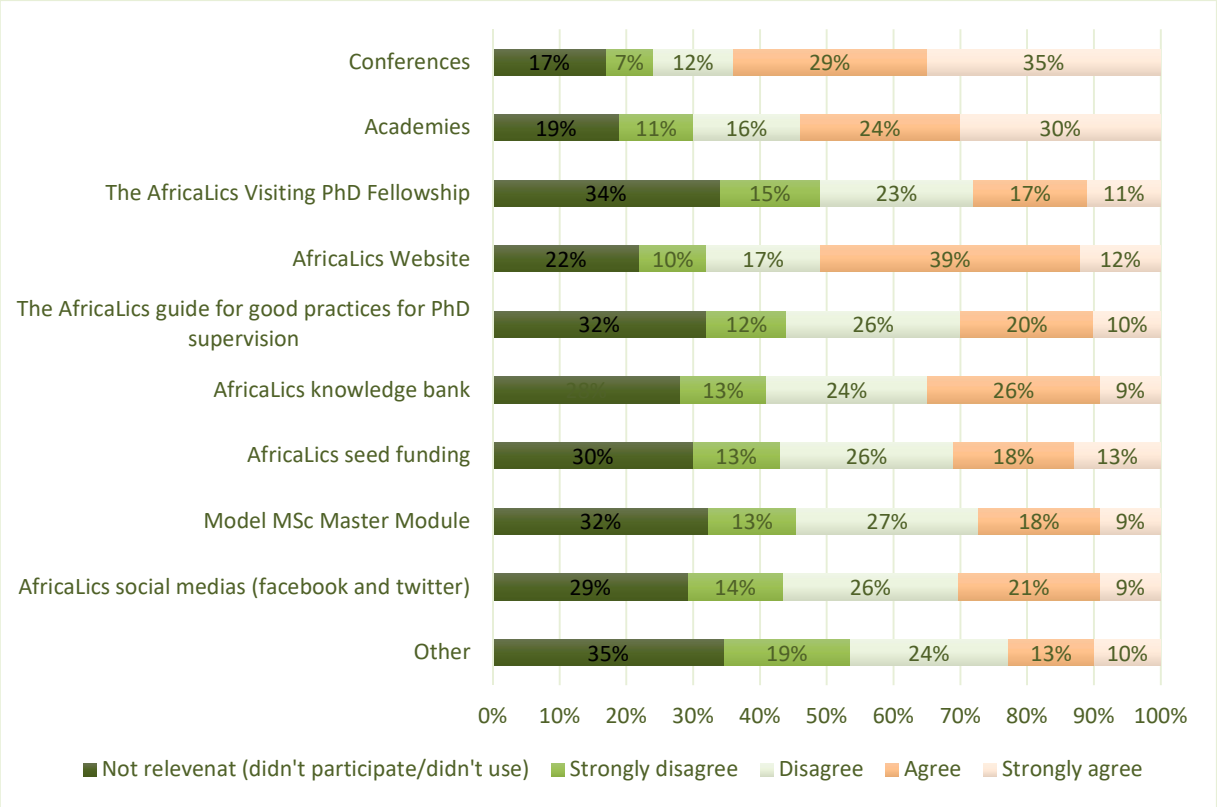
contents of the web-site and finally also on the interest of African scholars in AfricaLics activities beyond the conferences. Better internet facilities in Africa and an increase in internet subscriptions will help increase the usefulness and outreach of the web-site. In this context it is interesting to note that the number of internet subscriptions in sub-Saharan Africa grew from 14 million in 2010 to 117 million in 2013 (OECD 2015).

According to Table 27 a total of 34% of all respondents also considered AfricaLics knowledge bank as influential for their activities. Among other highlighted activities, AfricaLics social media activities such as Facebook and Twitter have also gained positive response from 30% of the total respondents. At the same time a substantial number of respondents have not been using AfricaLics website, knowledge bank and social media. There is yet a need to enhance the exposure of AfricaLics social media, website and knowledge bank, to increase use of these.

The Model MSc Master Module on Innovation and Development; the AfricaLics guide for good practices for PhD supervision; AfricaLics seed funding and the AfricaLics visiting PhD fellowship programme have all received almost identical response: around 29% respondents on average consider these activities influential for their work and around 30% respondents on average have not participated in any of these activities. An identical percentage (39%) of the respondents disagreed when they were asked if any of these activities had influenced their work.

The numbers possibly reflect that the activities mentioned are currently targeting only smaller groups of scholars. However, the Model MSc Master Module on Innovation and Development and the AfricaLics guide for good practices in PhD supervision in particular have a potential to engage more African scholars and provide inspiration for teaching at Master level in Innovation and Development and improving their supervision of PhD students. For the AfricaLics Visiting PhD Fellowship programme, the outreach depends mainly on funding possibilities, as the number of PhD students that can be offered this possibility depends on funding.

Figure 26: Are any of your activities in the field of innovation and development influenced by any AfricaLics activities?



Source: 2016 Survey Part I, respondents n=264

Finally, a limited number of respondents (21%) agreed or strongly agreed that the seed-funding had influenced their work. Again, the lower number of respondents stating that the seed-funding projects have influenced their work is not surprising as only a limited number of scholars were granted the possibility to benefit from these projects given limitations of funding[3].

The survey reveals that most African scholars responding to the 2016 survey engage themselves either with AfricaLics activities or Globelics activities. According to the survey (2016) result, only 25% of all African respondents had engaged with both AfricaLics and Globelics in their career. This indicates that the regional LICS such as AfricaLics are adding value by increasing the outreach to scholars in the region, including more people in innovation and development activities

.

[3] Mixed experience with seed-funding has led to a decision that AfricaLics will not at the moment pursue this type of activity. This is mainly due to challenges and obstacles related to the capacity at African universities and other relevant institutions to administrate small scale funding in a way that meet demands from donor organisations and less so due to the results obtained from the seed-funding projects.

6. CONCLUDING REMARKS

The purpose of this report was to update the existing mapping of research and teaching capacities in Africa in the field of innovation and development to be used as a baseline for monitoring activities conducted by AfricaLics. Another purpose of the report is also to measure (short-term) effects of the activities conducted by AfricaLics and Globelics.

The survey on which the report is based on gives a feeling of what the research landscape in the field of innovation and development looks like. However, as the total numbers of researchers and practitioners in the field is unknown; as the questionnaire will certainly not have reached all researchers and practitioners in the field of development and innovation in Africa and due to biases in the composition of respondents to the survey, one have to be careful not to generalise the conclusions from the survey too much. We can only draw conclusions related to the survey population, which for many reasons has higher representation from some countries in Africa than others.

Furthermore, a number of changes in the research landscape from the 2013/2014 survey to the 2016 survey (positive and negative) are likely to have happened due to factors that do not necessarily have to do with AfricaLics or Globelics.

Bearing these comments in mind, this report found the following results:

The AfricaLics network is reaching more people in more countries. The community is young and the gender distribution reflects the gender inequalities still present in most countries in Africa.

The 2016 survey reached more respondents than the 2013/2014. While there were 129 respondents to the 2013/2014 survey there were 264 respondents to the 2016 survey. Of these 204 were uniquely new respondents. 222 of the respondents were from a country in Africa and 42 from countries outside of Africa. Compared to the 2013/2014 survey the 2016 survey have reached more people from different countries who are being aware of and are involved in AfricaLics as a network. However, there percentage of respondents from certain countries is still higher than from others. Most of the respondents come from Nigeria (24.2 %), Ethiopia (12.5 %) and Kenya (16.1 %). The numbers are almost equal for country of residence, but also a large portion resides in South Africa (13 %). Most respondents have also obtained their highest degree in these four countries with a similar distribution. The numbers might reflect that Ethiopia and especially Nigeria are populous countries, but certainly also reflect that countries like South Africa, Nigeria and Kenya have a known population of researchers active in the field of innovation and development.

Furthermore AfricaLics has a special connection to Ethiopia, who has hosted a Globelics conference, to South Africa who has hosted various Globelics activities including one conference and the 2016 Globelics PhD Academy as well as to Kenya where the AfricaLics secretariat is placed.

The number of respondents from various countries might to some extent have been influenced by the dissemination method of the questionnaire survey (based on lists of contact persons combined with “snowballing”), which on the other hand help spreading information on events and activities of AfricaLics. In the years to come, the AfricaLics network will continue its efforts to reach out to more scholars and practitioners in low and lower middle income countries in Africa, but also maintain contact with countries where research and teaching communities related to innovation and development are developing.

Gender imbalances continue to be present in the profile of the research community in the field of innovation and development, suggesting the need to ensure that women are adequately represented and engaged in training activities, especially at the PhD level. Of the African respondents 73 % are males and only 27 % are females. However, the distribution reflects the general gender distribution of researchers in Africa. So this is rather a structural challenge in Africa than exclusively an AfricaLics challenge.

The average age in the AfricaLics community judging from the 2016 survey is relatively young. Two thirds of the African respondents are 45 years old or less of which half of them is between 23 and 35. This also influences the educational profile of the respondents: 47 % of the African respondents hold a master as highest degree and 43 % of all respondents were doing a PhD at the time of collection of data. The African respondents are mainly affiliated to Universities (70 %), but also a considerable amount is affiliated to governments (15%).

Increasing amount of institutions and individuals involved in training in the field of innovation and development, but clear indications of need to develop the quality and content.

The field of innovation and development has good possibilities of mushrooming further as more than two thirds of the organisations/institutions of which the African respondent are affiliated to offer training in the field and almost the

same share of the African respondents teach or provide training themselves in the field. The teaching and training is offered at all academic educational levels, but also for policy-makers, business and civil society. 47% of the respondents offer supervision in the field of Innovation and Development at master or PhD level. In the 2013/2014 survey the number where 39 %. This might indicate an increase in supervision in the field. However, 73 % have not been offered training in how to conduct supervision at masters or PhD level. These numbers confirms the need for AfricaLics are focusing on and offering training in supervision in the field of innovation and development with the online guide for good practices for PhD supervision. Furthermore, there are very few programmes at master and PhD level that focus exclusively on Innovation and Development. In most cases the training in the field is part of other programmes with a relation to the field. This also confirms the need for the Master model and the visiting PhD fellowship in the field of Innovation and development developed by AfricaLics.

Considering that the online guide for good practices for PhD supervision, the visiting PhD fellowship target a smaller group of scholars and that the possibilities for training in the Model Master Module on Innovation and Development have been very limited, a relatively high percentage of the respondent (a little bit less than one third) find that these AfricaLics tools and programmes have influenced their activities in the field of Innovation and Development (about 29%). This indicates that AfricaLics should continue promoting these tools and programmes.

Of the AfricaLics events and tools influencing the respondents' activities in the field of innovation and development the AfricaLics Conferences (64 %) and Academies (52 %) and the AfricaLics website (51%) have the highest numbers of respondents finding them influential. The high percentages finding these activities influential is partly a reflection of the fact that we have been able (thanks to funding from Swedish Sida) to engage a relatively large number of scholars and PhD students in these activities, but also reflects interest in the topics covered as not all participants have their costs covered through the funding from Sida and – hopefully – a genuine feeling that the conferences and academies are useful.

REFERENCES

Adwera, A., Hanlin, R., & Johnson, H (2013). Developmental education for innovation: lessons from an experience in Kenya. *International Journal of Technological Learning, Innovation and Development*, *6*(3), 224-261.

ECOWAS (2011a) ECOWAS Policy for Science and Technology: ECOPOST. Economic Community for West African States

Fagerberg, J., & Verspagen, B (2009). Innovation studies—The emerging structure of a new scientific field. *Research policy*, *38*(2), 218-233

Khodabocus, F (2016). Challenges to Doctoral Education in Africa. *International Higher Education*, (85), 25-27

McGann, J. G. (2015). 2014 Global Go To Think Tank Index Report

Nair–Bedouelle, S; Schaaper, M. and J. Shabani (2012) Challenges, Constraints and the State of Science, Technology and Innovation Policy in African Countries. UNESCO: Paris

OECD (2015), *The Innovation Imperative: Contributing to Productivity, Growth and Well-Being*, OECD Publishing, Paris

UNESCO institute for Statistics, April 2015

UNESCO Science Report: towards 2030

Zeleza, P.T. (2005) 'Transnational education and African universities', Journal of Higher Education in Africa, 3(1): 1-28

Web references

http://www.idea-phd.net/images/ACU_Doctoral_Education_in_Africa.pdf

http://www.mastersportal.eu/search/#q=kw-innovation|lv-master,preparation|!dg-prebachelor|rg-10&order=relevance

https://www.oecd.org/sti/Governance%20of%20higher%20education%20research%20and%20innovation%20in%20Ghana%20Kenya%20and%20Uganda.pdf

http://blogs.worldbank.org/ic4d/tech-hubs-across-africa-which-will-be-legacy-makers

ANNEX I: UNIVERSITIES WHERE DEGREE WAS OBTAINED (BY COUNTRY)

Algeria	**Nigeria**
University of Abou Bekr Belkaïd	Ladoke Akintola University of Technology
National School of Statistics and Applied Economics, Algiers	National Centre of Technology Management
Oran University	Obafemi Awolowo University
University of Tlemcen	University of Calabar
Australia	University of Ibadan
University of New South Wales	University of Ilorin
Belgium	University of Port Harcourt
Katholieke Universiteit Leuven	Usmanu Danfodiyo University Sokoto
University of Antwerp	Obafemi Awolowo University
Burkina Faso	Federal University of Agriculture, Abeokuta
University Ouaga Ii	Federal University of Technology,Akure
Cameroon	**Norway**
University of Yaoundé II	Norwegian University of Science and Technology
Denmark	**Portugal**
Aalborg University	Instituto Superior de Economia e Gestão
Copenhagen Business School	**Rwanda**
Roskilde University	UR College of Business and Economics
Ethiopia	University of Rwanda
Addis Ababa University	**Scotland**
Bahir Dar University	University of Edinburgh
Mizan Tepi University	University of Strathclyde
France	**Senegal**
University of Strasbourg	Gaston Berger University
University of the Mediterranean Aix Marseille ii	**South Africa**
Lille University of Science and Technology	Tshwane University of Technology
University of Nice Sophia Antipolis	University of Cape Town
University of Versailles	University of Pretoria
Germany	University of Stellenbosch
Evangelische Hochschule Ludwigburg	University of the Free State
Freie Universitaet Berlin	Da Vinci Institute of Technology Management
Friedrich Schiller University	University of Pretoria
Kassel University	University of KwaZulu-Natal
Leipzig University	University of The Western Cape
Martin Luther University	University of the Witwatersrand
Rheinische Friedrich-Wilhelms-Universität Bonn	**Sweden**
Technical University of Berlin	Blekinge Institute of Technology

Technical University of Dortmund	Gothenbúrg University
Ghana	University of Gothenburg
Kwame Nkrumah University of Science and Technology , Kumasi	**Tanzania**
University of Ghana	University of Dar es Salaam
India	Sokoine University of Agriculture
Jawaharlal Nehru University	**Tunisia**
University of Patna	Faculté de Sciences Economiques et de Gestion de Tunis
Uttar Pradesh Technical University	University of Sfax
VIT University	Institut des hautes études commerciales de Carthage
Ireland	University of Monastir
Trinity College, Dublin	University of Tunis
University College Cork	**Uganda**
University of Ulster	Makerere University
Israel	Georgia Institute of Technology
Tel-Aviv University	Makerere University
Italy	Uganda Martyrs University
Politecnico di Torino	**UK**
Ivory Coast	King's College London (University of London)
Université Félix Houphouët-Boigny	Open University
Japan	University of Sussex
Ritsumeikan University	Teesside University, Middlesbrough
Kenya	The Open University
Egerton University	The University of Reading
Jomo Kenyatta University of Agriculture and Technology	University of Bath
Kenyatta University	University of Cambridge
Maseno University	University of Glasgow
Moi University	University of London
Pan African University	University of Manchester
University of Nairobi	University of Oxford
Lebanon	University of Portsmouth
American university of science and technology	Imperial College
Malaysia	**USA**
International Islamic University	Fordham University
Morocco	Howard University, Washington DC
Cadi ayad University	Massachusetts Institute of Technology
University of Ibn Tofail	Pardee RAND Graduate School, California
Cadi Ayyad University	Saint Joseph's University
Mozambique	The Johns Hopkins University
Eduardo Mondlane University	University of Wisconsin
Universidade Eduardo Mondlane	University of California

Netherlands	University of Minnesota
International Institute of Social Studies	**Zimbabwe**
Maastricht University	University of Zimbabwe
Radboud Universiteit	Women's University in Africa
University of Groningen	
University of Twente	
United Nations University - Merit	
Vrije Universiteit, Amsterdam	
Wageningen University	

ANNEX II: MASTER PROGRAMS RELATED TO INNOVATION AND DEVELOPMENT (BY COUNTRY AND DISCIPLINE)

	Social Sciences	Humanities	Natural Sciences/Engineering
Algeria			
University of Tlemcen	Master		
Burkina Faso			
Université Ouaga II	Economics		
Cameroon			
University of Yaounde II	Master		
Ethiopia			
Addis Ababa University	Msc in Economics	Gender	Industrial Engineering
	MSc in Mechanical Engineering (Industrial Engineering Stream)		Health science (Pharmacy)
	Entrepreneurship Development		Computer Science
	Public Administration		Climate Change
	Social Capital		
Addis Ababa Institute of Technology			MSc in Mechanical Engineering
Bahir Dar University			Mechanical and Industrial Engineering
			Reverse Engineering
Ghana			
Kwame Nkrumah University of Science and Technology (KNUST)	Development Policy and Planning		
	Agriculture Economics and Agri-Business		
Ivory Coast			
Univerité Felix Houphouet Boiny Cocody-Abidjan			
Kenya			
Jomo Kenyatta University of Agriculture Science and Technology	Master of Science Degree in Mathematics (Statistics)		
Maseno University	Masters		
Moi University		Peace and Governance	Master of Philosophy in Zoology (Ecology Option)
			Environmental Science
Jomo Kenyatta University of Science and Technology	Msc procurement and Logistics		
University of Nairobi	Master of Science in Nuclear Science	Sociology	MSc Nuclear Science
	MSc. Nuclear Science		Agriculture and Technology
	Social Statistics		Water Desalination
	M.A Development Studies		
Kenyatta University	Business Administration		

	Masters in Gender and Development		
Egerton University	MSc	Sociology and Criminology	Fisheries & Aquatic Sciences
	Master of Arts (Community Development and project management)		
Morocco			
Faculté des Sciences Juridiques Economiques et Sociales - Salé	Master degree		
Ibn Tofail University	Master's Degree		
Cadi ayad university	Strategic Management		
Mozambique			
Eduardo Mondlane University			Agronomy
Nigeria			
Obafemi Awolowo University	Masters		
Masters of Arts in Educational Management,Masters of Public Administration	Education	Technology management	
University of Ibadan	Science, technology and innovation management		
Economics	Masters in Personnel Psychology		
Federal University of Agriculture, Abeokuta-Nigeria	MSC		
University of Ilorin, Ilorin	Agricultural Economics		
Ladoke Akintola University of Technology	Masters		
University of Port Harcourt			Information and Communication Technologies
Olabisi Onabanjo University	Industrial Sociology	Industrial Sociology	
Pan African University	Economics	sociology	Bioinformatics/ Environmental Sciences
Rwanda			
University of Rwanda	Regional integration, Global Business		
South Africa			
University of Cape Town	Masters of Business Administration	Philosophy/Historical Studies	
	Economics		
University of Natal			Agriculture
University of Pretoria	Master of Science (MSc)		
	Innovation & Entrepreneurship		
Tanzania			
University of Dar es Salaam	Management		Electrical
	Development studies		
	MSc Natural Resources Assessment and Management		
Sokoine University of Agriculture	Master's of Science in Agricultural Economics		

Tunisia			
University of Tunis EL Manar	Economics		
Faculty of Economics and Management in Sfax	Master of Research in science economics		
Uganda			
Makerere University			Forestry
			Master's of Food Science and Technology
			Biochemistry
Uganda Martyrs University	Endogenous development		
Zimbabwe			
University of Zimbabwe	MSc		
	Economics		
	Agricultural Economics		
Women's University in Africa	Development Studies		Agriculture and Natural Resources

ANNEX III: LIST OF JOURNALS WHERE AFRICAN RESEARCHERS PUBLISH THEIR RESEARCH

Journal Name
Africa Focused Journal
African Journal of Biotechnology
African Journal of Business Management
African Journal of Environmental Science and Technology
African Journal of History and Culture
African Journal of Range and Forage Science
African Journal of Science, Technology, Innovation and Development
Albanian Journal Agricultural Science
Canadian Journal of African Studies/La Revue canadienne des études africaines
East Africa Journal of Humanities and Science
East African Journal of Public Health
International Journal of African Renaissance Studies
International Journal of Innovation and Knowledge Management in Middle East and North Africa (IJIKMMENA)
Journal of African Review of Economics and Finance
Journal of African Studies and Development
Journal of Higher Education in Africa
Journal Of Open and Distance Education, African Virtual Education-AVU)
Journal of Public Policy in Africa
Journal of Social Development in Africa
Journal of Southern African Institute of Management Services
Journal of Sustainable Development in Africa
Research and Design Journal of South Africa
South African Journal of Industrial Engineering
South African Journal of Science
South African Journal on Science
Ethiopian Journal of Environmental. Studies and Management
The African Journal of Information and Communication
Ethiopian e-Journal for Research and Innovation Foresight
Tanzania Journal of science
The Information Manager
African Education Review

Development Southern Africa
International journals directly related to innovation and development studies
Brazilian Journal of Innovation
International Journal of Application or Innovation in Engineering & Management
International Journal of Business Innovation and Research
International Journal of Research, Innovation and Commercialisation
International Journal of Technological Learning, Innovation and Development
Journal of Entrepreneurship and Innovation Management
Journal of Innovation
Journal of Innovation and Development
Journal of Innovation Economics
International Journal of Development Strategies in Humanities, Management and Social Sciences
International Journal of Education Development
International Journal of Sustainable Development
International Journal of Technology Management and Sustainable Development
International Journal of Techno science and Development
Journal for Development & Leadership
Journal of Agricultural Biotechnology and Sustainable Development
Journal of Development Economics
Journal of Development Studies
Journal of Developmental Entrepreneurship
Journal of Educational Development
Journal of Governance & Development
Journal of International Development
Journal of Sustainable Development
Journal of Sustainable Development Studies
Knowledge Management for Development Journal
Local Governance Development Journal
Middle East Development Journal
The World Journal of Science, Technology and Sustainable Development
European Journal of Development Research
European Journal of Development Studies
European Journal of Industrial Economics and Policy

Global Journal for Information Technology and Computer Science
International Journal of Emerging Technologies and Society
International Journal of Energy Technology and Policy
International Journal of Science and Advanced Technology
International Journal of Science and Research
International Journal of Scientific and Engineering Research
International Journal of Scientific Research in Environmental Sciences
International journals in other disciplines
Journal of Food Science & Nutrition
American Journal of Agricultural Economics
American Journal of Industrial and Business Management
Asian Journal of business and Economics
Bayero Journal of Library and Information Science
British Journal of Economics, Management and Trade
Chinese Journal of Population Resources and Environment
Ciência & Trópico Journal
Environmental Journalism and Communication
European Journal of Education
European Journal of Law and Technology
Global Advanced Research Journal of Peace
Global Advanced Research Journal of Social Science
Global Journal of Applied Sciences, Management and Social Sciences
Greener Journal of Science, Engineering and Technology Research
International Journal for quality Research
International Journal of Academic Research in Business and Social Sciences
International Journal of Advances in Computer Science and Technology
International Journal of AgriScience
International Journal of Analytic Hierarchy Process
International Journal of Business Environment
International Journal of Business Performance Management
International Journal of business, management and social sciences
International Journal of Computer Information System and Industrial Application
International Journal of Control and Automation
International Journal of Ecology and Environmental Studies

International Journal of Entrepreneurship and Small Business Management
International Journal of Environmental Monitoring and Analysis
International Journal of Learning and Intellectual Capital
international journal of management review
International Journal of Mineral Processing
International Journal of Mixed Methods for Applied Business and Policy Research
International Journal of Physical Sciences
International Journal of Politics and Good Governance
International Journal of Production Research
International Journal of Quality & Reliability Management
International Journal of Quality Research
International Journal of Research in Social Sciences
International Journal of Technical and Vocational Education
International Journal of Technology Management
International Journal of Technology Transfer and Commercialisation
International Journal of Technology, Policy and Management
International Journal of Technoscience Studies
International Journal of the Spanda Foundation
International journal of Value Chain Management
International Journal of Vocational and Technical Education
International Journal on Food System Dynamics
Journal Food Security
Journal for Studies in Humanities and Social Sciences
Journal of Agricultural Economics and Extension
Journal of Advanced Research in Management
Journal of agrarian change
Journal of Agricultural Informatics
Journal of Agricultural Research
Journal of Agriculture and Social Research
Journal of AIDS and HIV Research
Journal of Applied Chemistry
Journal of Applied Microbiology and Biotechnology
Journal of Business and Management Sciences
Journal of Business Management
Journal of Comparative Policy Analysis: Research and Practice

Journal of Developing Country Studies
Journal of Economic Dynamics and Control
Journal of Economic Surveys
Journal of Emerging Trends in Economics and Management Sciences
Journal of Enterprising Cultures
Journal of Environment and Agricultural Sciences
Journal of Environmental Science and Water Resources
Journal of Ethnopharmacology
Journal of European Industrial training
Journal of Evolutionary Economics
Journal of Experimental Biology and Agricultural Research
Journal of Food and Agriculture
Journal of Food Processing Technology
Journal of Geography and Regional Planning
Journal of Global Knowledge Exchange Network
Journal of Global Resources
Journal of Humanities and Social Science
Journal of Industrial Engineering
Journal of Industrial Engineering & Management
Journal of Industrial Engineering International
Journal of Industrial Research and Technology
Journal of IP Law & Practice
Journal of Land Use, Mobility and Environment
Journal of Life Sciences
Journal of Management
Journal of Management Studies
Journal of Manufacturing Systems
Journal of Network and Innovative Computing
Journal of Optimization in Industrial Engineering
Journal of Political Economy
Journal of Population Resources and Environment
Journal of Public Administration and Policy Research
Journal of Public and Municipal Finance
Journal of Science
Journal of Science Engineering Investigations

Journal of Science Policy & Governance
Journal of Science, Technology and Society
Journal of Sciences
Journal of Sensors
Journal of Settlements and Spatial Planning
Journal of Social and Economic Statistics
Journal of Society and Space
Journal of Spectroscopy
Journal of Technology
Journal of the College of Humanities and Social Sciences
Journal of the Earth and Space Physics
Journal of the Ethiopian Engineers and Architects
Journal of the Global South
Journal of Total Quality Management and Business Excellence
Journal of US-China Public Administration
Journal of Visualized experiments
Journal of Women's Entrepreneurship and Education
Journal of Women’s Entrepreneurship and Education
Malaria journal
Management Journal
Momona Ethiopian Journal of Science
Nigeria Journal of Solar Energy
Nigerian Journal of Rural Sociology
Obeche Journa
Prime Journals
Research Journal of Agriculture and Environmental Management
Rwandan Journal of Education
Scholarly Journal of Mathematics and Computer Science
Science, Technology and Arts Research Journal
Southern Peace Review Journal
Special Issue of Irrigation and Drainage Journal
Technological Forecasting and Social Change
The Indian Textile Journal
The International Journal of Advanced Manufacturing Technology

The International Journal of Engineering and Science
the International Journal of Sudan Research
The Journal of Agricultural Education and Extension
The Journal of International Business Research and Practice
The Journal of the Knowledge Economy, Springer, New York, USA
Zede Journal
Zimbabwe Journal of Geographical Research
Science Technology Society
Law Review
Science and Public Policy
Asian Research Policy
Regional Development Studies
Development Southern Africa
International Journal of Business Environment
Applied Economic Perspectives and Policy
Development and Change
Resources Policy
World Development
Innovative Marketing
International Development Planning Review

ANNEX IV: I&D PROGRAMMES AND COURSES TAUGHT BY AFRICAN SCHOLARS

This table shows information provided by 2016 survey respondents on training courses provided.

Question: If you teach or provide any Training in the field of innovation and development, please provide a brief description of the course(s)/ programme(s) you teach: Name of program
Mainstreaming streaming IP in institutional operations
Creative and critical thinking
Soil Health and Environment
Technology Management
Masters in Engineering Management; Masters in Project Management; Senior Management Programme; Executive Course
Economics of innovation
Technology Management
Master of Art in Project Planning and Management
MTech: Comparative Local Development
Monitoring and evaluation
NACETEM (Enugu) Postgraduate Diploma in Technology Management
M.Tech, M.Sc and Ph.D programmes in: Environmental Technology Management Energy Planning and Management Information and Communication Technology Management
Management of innovation
MTech: Comparative Local Development
MCom Development Theory and Policy
Intra-preneurship and Innovation ETP (Engineering and Technology Policy)
Msc in Innovation, Knowledge and Economic Dynamics (MIKE-E)
Entrepreneurship for Engineers
The Management of Innovation
Mechanical engineering
Computer Science
Globalisation, industrialisation and development
Innovation for Renewable Electrification of Kenya (IREK)

Technology Management
PhD Programme on Innovation, Economics and Governance for Development (IEGD)
Postgraduate diploma in Technology Management
Post Graduate Diploma in Technology Management
Information Communication Technology for eHealth service delivery (Telemedicine)
Pharm-BioTechnology and Traditional Medicine
Global Development Management; and PhD
Tailored training program to research and development institutions and universities
Information Science
Master in Business Administration (MBA), Master in Entrepreneurship (MESBM) and Masters in International Business (MIB)
PGD in Technology Management

ANNEX V: REGULAR EVENTS RELATED TO INNOVATION AND DEVELOPMENT

Events in Africa	International Events Out of Africa
Science with Africa Conference II, Addis Ababa	Seminar on Quality and Productivity Program in Construction - Belém, Brazil
World Intellectual Property Organization (WIPO),Regional Consultation Meeting on Technology Transfer, Algiers, Algeria	The Berlin Bioeconomy Summit
African Regional Meeting- Towards Sustainable Development at United Nations Economic Commission for Africa (UNECA), Addis Ababa, Ethiopia	Portland International Center for Management of Engineering and Technology (PICMET) Conference, USA
Global Growth Workshop	Euroliks Conference, Vienne, Austria
Agricultural Innovation Systems in Africa (AISA) workshop, Nairobi, Kenya	European Forum for Studies of Policies for Research and Innovation (EU-SPRI) Conference, Germany
World Social Science Forum	Atlanta Conference on Science and Innovation Policy, Atlanta, Georgia, USA
International Association for Management of Technology (IAMOT) Conference, South Africa	Forum of Innovation VI, Paris, France
Southern African Research & Innovation Management Association (SARIMA) Conference, South Africa	Australia Awards (Africa) intake short course on Local Economics and Social Development in Extractives, University of Queensland, Brisbane, Australia
West African Research and Innovation Management Association (WARIMA) international Conference	Production and Operations Management Society (POMS) International Conference, Atlanta, Georgia, USA
Centre de recherches pour le developpment International (CRDI) : Study on the governance of university research in Africa	Conference on Micro Evidence on Innovation and Development (MEIDE) Conference
African network for the internationalization of Higher Education	United Nations University – Micro Evidence on Innovation and Development (UNU-MERIT), Conference, Maastricht, The Netherlands
African Unity for Renaissance Conference, Pretoria, South Africa	Academy of Innovation and Entrepreneurship, Technology Management Department, Oxford University
East African Business and Economic Watch	International Society for Professional Innovation Management (ISPIM) Conference

International doctoral meeting of CEDIMES, University of Mascara, Algeria	International Conference of Agricultural Economists Conference, Universita Degli Studi di Milano, Milan, Italy
Association of International Business	Agricultural and Applied Economics Association (AAEA), Annual Meeting, Mineapolis, USA
African Academy of Management (AFAM) Conference	PhD meeting of the Royal Economic Society, City University London, United Kingdom
Africa Innovation Summit	Annual Conference of innovations in Business and Management Practice, Centre for Innovations in Business, London, United Kingdom
World Social Sciences Forum	Annual Conference of the Agriculture Economics Society, Warwick, United Kingdom
Association of Commonwealth Universities/ Southern African Research & Innovation Management Association, ACU/SARIMA Conference	Annual Conference of the Eastern Economics Association, New York, United States
The Global Congress on Intellectual Property and the Public Interest, New Delhi, India.	Russian Summer School on Institutional Analysis, High School of Economics, Moscow
Open Air Conference, South Africa	international Summit of Istanbul Economists, Istanbul, Turkey
STI conference and exhibition, Tanzania	Summer school Knowledge Dynamics, Industry Evolution, Economic Development, Maison du séminaire, Nice, France
United Nations Industrial Development Organization in Collaboration with National Productivity Centre, Nigeria	European Congress of Internal Medicine (EBIM), Doctoral Workshop on Economic Theory, Bielefeld, Germany
Africa Rice Congress, Cameroon.	European Doctoral Summer School on Technology Management, University of Leuven, Belgium
International Conference on Management of Technology (IAMOT) Conference, South Africa	international Academic Conference on Economic and Social Development, Moscow, Russia
CAAST-Net Plus Conferences	Summer school on Intangible Driven Economy, Perm, Russia
African Technology Policy Studies (ATPS) Annual Conference, Cairo, Egypt	Medalics Doctoral Academy, Reggio di Calabria, Italy

Tunisia –Japan Symposium. R&D Energy and Materials Science for Sustainable Society, (TJASSST), Tunisia	National Archaeology Society (NAS), Conferences in the Harvard Business school, US
International Conference on Renewable Energy Development and Application for a Sustainable Agriculture. Tunisia	Dhaka expert meeting on Southern voice on Post-MDGs (Millennium Development Goals), Centre for Policy Dialogue (CPD), Bangladesh
Coordinated Regional Climate Downscaling Experiment (CORDEX) meeting, South Africa	Euro Science Open Forum (ESOF) Conference, Manchester, UK
Open Air, African Innovation Research	Conference on energy and climate change, Athens, Greece
International Conference on Advances in Engineering and Technology, Entebbe, Uganda,	Summer School by the ESRC STEPS Centre (Social, Technological and Environmental Pathways, The Institute of Development Studies, University of Sussex, United Kingdom
African Ministerial Conferences on Science, Technology and Innovation, Nairobi, Kenya	International Horticultural Conference, Brisbane, Australia
Nairobi International Conference	Knowledge and Innovation, Second Summer School, Nice, France
The Academy of Management Conference, University of Pretoria, The Gordon institute of business Science-Johannesburg, South Africa	International Conference on Food Safety and Regulatory Measures, Birmingham, UK
Intergovernmental Authority on Development (IGAD) Conference, Addis Ababa, Ethiopia	The American Society of Mechanical Engineers (ASME) Congress & Exposition, Houston, Texas, USA
International conference of the Global Knowledge Exchange Network, Addis Ababa and Jimma, Ethiopia	Asia-pacific innovation conferences
National Stakeholders' Validation Meeting on the Second National Communication (SNC), Abuja, Nigeria	International Disaster and Risk Conference (IDRC), Paris
Regional Validation of Synthesis on Research and Policy related to climate change adaptation in regions of Sub-Saharan Africa, Senegal	European Forum for Studies of Policies for Research and Innovation EU-SPRI
Annual Meeting of the Inter-University Council for East Africa (IUCEA)	Schumpeter conferences
Science Policy Research Unit (SPRU)-Sussex University Conference, South Africa	International Sustainability Transitions Conference

Afro European Conference, Addis Ababa	Atlanta Conference
Institutional Matchmaking and Partnership Formation, General Meeting of the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), Namibia	The International Sustainable Development Research Society (ISDRS) Conference
International Conference in Indigenous Knowledge Systems and Environmental Ethics: Implications for Peace-Building and Sustainable Development, University of Kwazulu-Natal, Durban, South Africa	International Conference on Leadership, Technology and Innovation Management, Turkey
Proposal Development Workshops "Youth integration in Climate Smart Agriculture, Forum for Agricultural Research in Africa (FARA), Uganda & South Africa	University Industry Innovation Networking Conference, Amsterdam
Medicine Conference, Kampala, Uganda	International Academic Conference on Foresight and STI Policy, Moscow
International Conference on the Biodiversity of the Congo Basin' at the Centre de Surveillance de la Biodiversité, Congo	European Regional Science Association (ERSA) Congress, Lisbon, Portugal
International Conference - Kigali, Rwanda	International Networks for SMEs (INSME) Annual Meeting
The International Conference on Advancement of Business Management Practices in Africa (ICABUMPA) and the Intelligence for innovation (iN4iN) Conference	The Eighth Knowledge Globalization Conference, İstanbul
Eastern Africa Business and Economic Watch (EABEW) Conference, Rwanda	European Conference on Innovation and Entrepreneurship (ECIE)
Methodology Workshop for the Review of Research and Policy Related to Climate Change Adaptation in Africa, Nairobi, Kenya	Annual Meeting Society for Social Studies of Science, Denver, Colorado, USA.
	Energy, Water and Climate Change in the Mediterranean (EWACC) Building Bridges Conference, Nicosia, Cyprus.
	Congress of The International Economic Association, Dead Sea, Jordan