

# **African Research Universities Alliance (ARUA)**

## **Towards developing a collaborative PhD programme across ARUA member universities**

**Experiences from the University of Nairobi, Kenya**

**A research report produced for ARUA by the  
Human Sciences Research Council (HSRC)**

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# 1. Introduction to study and country overview

## 1.1 Introduction

This report highlights the status of PhD education in Kenya, using the University of Nairobi as a case study. The report provides an overview of the country's socio-economic status, which has a bearing on how universities organise PhD programmes and which may influence the direction of the design of collaborative programmes as envisaged by ARUA. The report details the national and institutional policy and operational frameworks for PhD programmes in Kenya, the nature of student access and progression policies across the programmes, opportunities for designing collaborative arrangements, and challenges that need to be addressed.

The report is divided into five sections. The next section provides an overview of Kenya's socio-economic and political dynamics. Section two provides a brief description of the Kenyan higher education landscape. Section three delves into the case study of the university and the two selected programmes. Section four presents the findings from the data collected from the two case study programmes. Section five provides a best practice case study while section six presents some recommendations and conclusions.

## 1.2 Kenya: social-political overview

Based on the latest projections from the Kenya Bureau of Statistics (2020), the country's population is about 53.77 million people. According to the UNESCO Institute of Statistics (UIS) (2020), about 73% of Kenya's population live in rural communities. In 2018, the country's literacy rate was estimated at 87.8% within the relevant age category of comparison (15-24) (UIS, 2020). Classified by the World Bank as a lower middle-income country (LMIC), the gross national income (GNI) per capita is estimated at about USD1 290 (Sh127 215). Kenya has a predominantly service-based economy which contributes 42% of its total gross domestic product (GDP), with agriculture contributing a significant proportion to the country's national income (34% of the GDP). The industrial sector contributes 16% of the GDP, with manufacturing accounting for 11%. Despite the growing service and industrial sectors of the economy, 36.8% of the country's population live below the poverty line (calculated as USD1.90 a day), and Kenya is ranked number 142 in the world according to the composite Human Development Index (HDI).

**Table 1: Kenya's socio-economic indicators**

National population	53.77 Million (2020)
GDP per capita	USD1 710 (2019)
HDI	0.601 (2020)
Unemployment rate	6.6% (2021)
Main economic sectors	Agriculture, Services Tourism, Manufacturing, ICT, Construction
Gross primary enrolment ratio	104.4% (2028)
Gross secondary enrolment ratio	71.2% (2019)
Gross tertiary enrolment ratio	10% (2019)
Number of public universities	31
Number of private universities	32
Name of participating university	University of Nairobi
Total number of doctoral enrolments (latest data)	20,441 (2017)
Number of PhD graduates (latest statistics)	703 (2017)
Higher education expenditure as % of GDP	0.7% (UIS ,2018)
Doctoral production per million of population	225 full time equivalent (32% with PhD in universities)

In terms of development policy, the country's strategy is anchored in *Vision 2030* adopted in 2008. The vision aims to transform Kenya into a newly industrialising, globally competitive, and upper middle-income country with a high quality of life by 2030. *Vision 2030* is based on three pillars:

- **The economic pillar** focuses on increasing the country's global competitiveness in six key sectors to deliver the 10% economic growth by 2030. The sectors are tourism, agriculture, manufacturing, wholesale and retail trade, business process outsourcing (BPO), and financial services.
- **The social pillar** is focused on realising a just and cohesive society that enjoys equitable social development. Eight key sectors are tasked to achieve the targets of this pillar. These are education and training, health, water and sanitation, the environment, housing and urbanisation as well as gender, youth, sports and culture. The pillar also makes special provisions for Kenyans with various disabilities and previously marginalised communities.
- **The political pillar** is focused on the transformation of the country's political governance system across six strategic areas – the rule of law, electoral and political processes, democracy and public service delivery, transparency and accountability, security, peace building and conflict management.

*Vision 2030* has implications for postgraduate training at universities, especially at PhD level. The *Vision 2030* identifies the need for workforce development in science, technology engineering and mathematics (STEM) programmes as critical in attaining the targets specified

in the three development pillars. Universities have been tasked to align their training, especially at the post-graduate level, to contribute towards attaining the targets of the pillars. A large percentage of postgraduate grants awarded by the Kenya National Research Fund (NRF) and the National Commission for Science, Technology and Innovation (NACOSTI) goes to students enrolled in STEM disciplines (NACOSTI, 2019). Comparatively, fewer grants are awarded to social sciences and humanities if the projects are linked to any of the *Vision 2030* pillars.

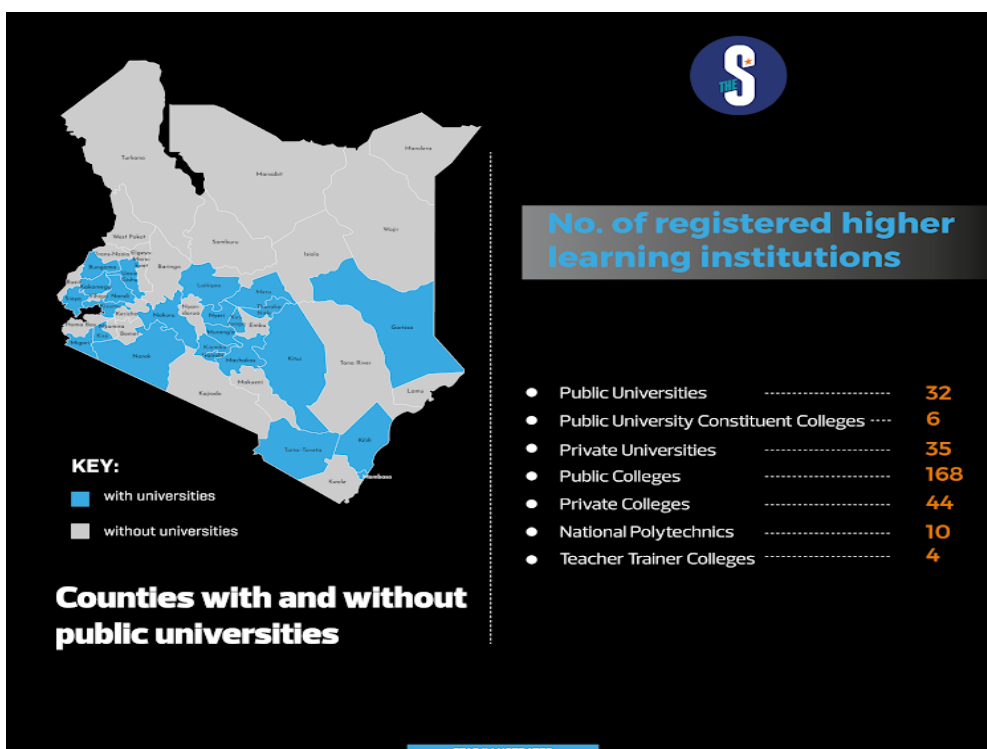
## 2. The higher education landscape

### 2.1 Higher education overview: size and shape

Kenya's higher education landscape is fairly differentiated and is the largest within the East African region. Gross higher education enrolment ratio stood at 10% in 2019 (UIS, 2020), the latest year for which data is available.

In terms of the institutional landscape and ecosystem for PhD training, the higher education landscape in Kenya is grouped into four categories. The first category is public and private universities. By 2020, the system comprised 74 university level institutions, 31 public chartered universities, seven public university constituent colleges, one specialised degree awarding university (public), 21 private chartered universities, 11 universities operating with Letters of Interim Authority (LIA) and three private university constituent colleges (Economic Survey, 2020). Enrolment in the public and private universities stood at 5 467 students in the 2020/2021 academic year (Economic Survey, 2020). However, the percentage of PhD students across the institutions and programmes remained low over the years. Data from the Commission for University Education (CUE) for 2018, the latest year for which comprehensive data is available, shows that there were 813 (15.90) PhD programmes in both public and private universities, with 3.6% of the total student enrolment in the universities (CUE, 2018).

**Figure 1: Map showing location of public and private universities in Kenya**



The second category of institutions are research, innovation and technology (RIT) public institutions linked to specific ministries and sectors. The institutions serve as an important pipeline for sectoral training of PhD students enrolled in universities, nationally and regionally.

The third category is international institutions linked to higher level training in science, technology and economic planning. The institutions have infrastructure that supports programmes in collaboration with universities. There are three such institutions in Kenya. These are the International Livestock Research Institute (ILRI), the International Centre for Insect Physiology and Ecology (ICIPE), and the African Economic Research Consortium (AERC).

The second and third level institutions are critical in bridging the gap between research and policy, although they are often limited by lack of dedicated funding. These constitute critical nodes in offering collaborative PhD training in the universities at national and regional levels supported by external funding. AERC, for example, supports doctoral training in economics in several universities across sub-Saharan Africa. ICIPE hosts the Regional Scholarship and Innovation Fund (RSIF), the flagship programme of the Partnership for Skills in Applied Sciences, Engineering and Technology (PASET), an Africa-led World Bank-affiliated initiative. RSIF runs collaborative PhD programmes in applied sciences, engineering, and technology, with selected African and international universities.

Regarding the regulation of the research environment, the 2010 constitution provides robust rights for research and knowledge production; the right to freedom of expression, including the freedom to seek, receive or impart information or ideas; freedom of artistic creativity; as well as academic freedom and freedom of scientific research (Republic of Kenya 2010). Article 11(2) (b) and (c) of the Constitution recognise the role of science and indigenous technologies in the development of the nation, and the promotion of the intellectual property rights of the people of Kenya. These two constitutional provisions have made Kenya attractive for national, regional and international doctoral and post-doctoral research, as will be outlined later in this report. The emphasis on science and technology, has however, skewed national and international level funding in ways that undermine the interdisciplinarity that is useful between pure science as well as social science and humanities disciplines.

## **2.2 Enrolment trends**

The recent expansion of the higher education system has not struck a balance between undergraduate and post-graduate enrolments. Enrolments are skewed towards undergraduate



programmes at the expense of postgraduate, especially PhD, programmes. Student enrolment in public and private universities increased by one percent from 542 005 in 2018/2019 to 547 133 in 2019/2020, and further by three percent to 566 042 in 2020/2021 (Republic of Kenya, 2021). The emerging trend though, is one of declining enrolment in universities in favour of enrolment in Technical Vocational Education and Training College (TVET) institutions. Student enrolment for the University of Nairobi, the case university in this report, for example, dropped by 7 795 students, from 55 488 in 2020/2021 to 47 693 in 2021/2022 (Republic of Kenya, 2022). The table below summarises the number of students enrolled at different levels of study in public and private universities in 2016 and 2017.

**Table 2: Enrolment in public and private universities and levels of study**

Programme Level	Public Universities		Private Universities		Total	
	2016	2017	2016	2017	2016	2017
Doctorates	8 372	17 619	1 205	2 822	9 577	20 441
Masters	48 767	50 960	9 454	10 727	58 221	61 687
Postgraduate Diploma	890	1 072	210	344	1 100	1 416
Bachelors	400 927	368 100	77 491	86 726	478 418	454 826
Diploma	-	19173	-	7 502	0	26 675
<b>TOTAL</b>	<b>458 956</b>	<b>456 924</b>	<b>88 360</b>	<b>108,121</b>	<b>547 316</b>	<b>565 045</b>

Source: CUE Data (2018)

As can be seen in the above table, a majority of the enrolments tend to be at the bachelors level (80.4%), followed by those at the master's level (10.9%), and diploma (4.7%). PhD level enrolments were 20 441 (3.6%) of total enrolment across these institutions. The public universities enrolled the highest percentage of PhD students, 17 599 (86%), with the University of Nairobi accounting for just over seven percent (7.3%) of the PhD students.

PhD enrolments were also skewed in terms of programmes of study. Though Kenya's development blueprint and government policy have emphasised more enrolments in STEM disciplines, humanities and social sciences, especially business studies and administration have tended to attract the highest proportion of students at all levels. Table three below provides a

summary of the number of PhD programmes and enrolments across public and private universities as at 2017.

**Table 3: Number of Doctoral Programs per Cluster**

Programme Cluster	No.	Enrolments		Totals
		M	F	
Agriculture, Forestry, Fisheries and Veterinary	<b>130</b>	1 030	519	1 549
Arts and Humanities	<b>99</b>	872	518	1 390
Business and Administration	<b>58</b>	4 760	2 843	7 603
Law	<b>1</b>	19	5	25
Education	<b>112</b>	1 359	1 151	2 510
Engineering, Manufacturing and Construction	<b>40</b>	279	65	344
Health and Welfare	<b>66</b>	738	532	1 270
Information and Communication Technology	<b>24</b>	185	76	261
Natural Sciences, Mathematics and Statistics	<b>195</b>	1 445	1 082	2 527
Services	<b>16</b>	140	135	275
Social Sciences, Journalism and Information	<b>72</b>	1 508	1 184	2 692
<b>Grand Total</b>	<b>813</b>	<b>12 331</b>	<b>8 110</b>	<b>20 441(3.6%)</b>

Source: CUE Data (2018).

PhD programmes in the business and administration cluster had the highest enrolment with 7 603 students representing 37% students enrolled in universities. This was followed by social sciences, journalism and information with 2 688 students, and natural sciences, mathematics and statistics at 2 527 students. The clusters with the least enrolments were law with 24 students, information and communication technologies with 261 students, and services with 275 students. The higher percentage of students enrolled in business and management studies follows a similar trend at the undergraduate and master's levels, where a combination of flexible access patterns, and introduction of courses targeting part-time students, has seen an increase in students in these programmes across the universities. Universities target such cohorts of students as a strategy to generate income.

### 2.3 PhD graduation trends

Trends in enrolment are replicated in graduation rates. Studies by CUE and other researchers show that PhD students' success rate in Kenya is low (CUE, 2018; Matheka, et al., 2020), and

that only 19% of PhD students are often on track with their programmes. Three trends characterise PhD education in Kenya which may have implications in designing collaborative programmes (CUE, 2019). The first trend is that enrolments are low, attracting an annual application pool of 400 students against a target of 900. A second trend highlights that due to low funding, PhD programmes attract largely two types of working students, those interested in pursuing an academic career at the universities, and those pursuing executive programmes for purposes of career advancement (CUE, 2019). It can be argued that while access is open to all those that meet the admission criteria, considerable entry barriers related to funding do exist, and determine the demographics of PhD students in Kenyan universities. Those interested in pursuing an academic career must first seek employment as members of academic staff before embarking on their PhD alongside teaching duties. Thirdly, because of these two modes that predominate PhD study, completion rates are low, and those that complete take longer. Studies by CUE suggest that 50% of the students who enrol for PhD in Kenyan universities drop out, and the 50% that remain, take much longer than the required three years to complete their studies (CUE, 2019; Matheka, et al., 2020).

In terms of progression and graduation, the study by Matheka, et al. (2020) shows that PhD students in the applied sciences programmes had the largest proportion of students on track at 29.5%, closely followed by physical and life sciences, with 28.6% on track, and medical sciences, with 20.5% on track (Matheka, et al., 2020). As discussed, regarding national-level funding policies for postgraduate studies, these programmes attract support from the government and external partners more easily as they are perceived to contribute more critically to attaining the targets of Kenya 's development pillars. Humanities and social sciences had the lowest proportion of students on track at only 14.2%, and the business and economics programme clusters were 18.5% on track (Matheka et al., 2020). A study by CUE (2019), based on 2015 PhD enrolment and graduation rates from Kenyan universities, shows that the number of registered students to graduates yields a ratio of 13.3:1, translating to an average of 7.5 years between registration and graduation for programmes meant to last three years. The better progression and completion rates from STEM-oriented PhD programmes compared to those in the humanities and social sciences reflect resource availability between the different programmes, as STEM programmes receive more funding from government and donors.

PhD graduation trends at the University of Nairobi, the case study institution, generally mirror trends in the entire higher education system. Fewer students graduate at PhD level, and the institution has an average of around 1.5% of the total graduates over the last five years. Table

four below provides a summary of the number of PhD graduates from the university for the years 2018 to 2021.

**Table 4: Graduation trends at the University of Nairobi (2018 to 2021)**

	PhD Graduations								
	2018		2019		2020		2021		Totals
	M	F	M	F	M	F	M	F	
College of Architecture and Engineering	1	0	1	0	5	4	5	1	<b>17</b>
Faculty of Agriculture	8	4	6	2	9	7	7	5	<b>48</b>
Faculty of Veterinary Medicine	4	1	2	0	2	5	3	0	<b>17</b>
Wangari Mathai Institute	0	3	2	0	1	2	0	0	<b>8</b>
Faculty of Science and Technology	12	3	9	9	13	4	21	17	<b>88</b>
Centre for Biotechnology	0	0	0	1	1	0	0	1	<b>3</b>
Institute for Climate Change and adaptation	2	3	1	0	3	2	0	0	<b>11</b>
School of Education	0	6	1	2	2	2	1	7	<b>21</b>
School of Dental Sciences	0	0	0	1	0	1	0	0	<b>2</b>
School of Medicine	1	0	1	0	2	2	3	1	<b>10</b>
School of Public Health	0	0	0	0	0	1	0	0	<b>1</b>
School of Nursing Sciences	0	2	0	1	1	0	1	2	<b>7</b>
School of Pharmacy	0	0	1	0	1	1	0	0	<b>3</b>
Kenya Aids Vaccine Initiative (KAVI)	0	1	1	0	0	1	2	2	<b>7</b>
Institute of Tropical and infectious Diseases.	0	1	0	0	1	0	2	0	<b>4</b>
Faculty of Arts	7	1	0	3	6	1	5	3	<b>26</b>
Faculty of Business and Management Sciences	10	6	10	2	11	3	30	5	<b>77</b>
Department of Economics and Development Studies	2	1	2	2	1	1	6	0	<b>15</b>
School of Journalism and Mass Communication	0	0	0	0	0	0	1	0	<b>1</b>
School of Law	1	0	0	2	3	1	2	0	<b>9</b>
Centre for advanced Studies in Environmental Law and Policy	0	1	0	1	3	0	0	0	<b>5</b>
Institute of Anthropology, Gender and African Studies	0	2	0	0	1	1	0	0	<b>4</b>
Institute of Diplomacy and International Studies	0	0	0	0	0	0	2	0	<b>2</b>
Population Studies and Research Institute	2	1	0	0	1	0	0	1	<b>5</b>
Centre for open and Distance Learning	6	2	6	2	11	4	0	1	<b>32</b>
<b>Total</b>	<b>56</b>	<b>38</b>	<b>43</b>	<b>28</b>	<b>78</b>	<b>43</b>	<b>91</b>	<b>46</b>	<b>423</b>
<b>Grand Total</b>	<b>94</b>		<b>71</b>		<b>121</b>		<b>137</b>		

Source: Compiled from University of Nairobi Graduation Booklets, 2018-2021

The low enrolment and graduation rates at PhD level reveal emerging, but troubling issues, regarding the implications of offering PhD programmes for income generation as opposed to prioritising the quality of research and knowledge production. Enrolment in critical STEM

programmes that charge high tuition fees has barely grown, while programmes in business management and administration, whose students may be working and are therefore able to pay the high tuition, continue to attract high enrolments and graduation rates. Contrary to generalised observations about low capacity for PhD supervision, it is possible that there are programmes with established capacity, but staff have been deployed to focus on undergraduate teaching due to low enrolments in PhD programmes. It is, for example, not clear why programmes in humanities and social sciences have lower progression rates, while these are the programmes that have the highest staff complement for PhD supervision (see Appendix).

## **2.4 Overview of humanities and natural sciences PhD programmes nationally**

Of the 813 PhD programmes in public and private universities, 358 (44%) can be broadly classified as humanities and social sciences based, while 455 (55.9%) can be classified as natural sciences based. Of the 358 humanities and social sciences programmes, 58 (16.2%) are in business management and administration while 112 (31.2%) are in education. This shows how two programmes can skew enrolments, creating the perception of over-enrolment in humanities and social sciences generally.

At the University of Nairobi, out of 64 senate-approved PhD programmes, 15 (23.4%) can be broadly categorised under humanities and social sciences, while 49 (76.5%) can be categorised under the natural sciences. The limitation of the data is that we have not been able to access recent PhD enrolments for each of these programmes. But as alluded to, the trend is that science-based programmes attract fewer PhD students because of high tuition costs, and perhaps easy transitions to job markets, even with a bachelor's degree. However, those in humanities and social sciences and education, need further education for career mobility and to increase earnings.

## **2.5 Access and admission processes**

In terms of admission and progression requirements, the overall admission policy and level of quality required are set by CUE. Individual universities however programme-specificity requirements. Generally, PhD programmes in Kenyan universities are offered in two modes - Doctor of Philosophy by thesis and Doctor of Philosophy by coursework, examination and thesis.

Minimum admission requirements for post-graduate training in Kenya are similar across all universities. Doctor of Philosophy degree applicants is normally required to prepare a research concept indicating their area of interest, with registration to the programme based on approval of the research proposal. Key challenges are experienced when students are admitted after attaining the minimum admission requirements, with no further determination of the suitability to do PhD research work or a possible match with a supervisor who would provide the technical expertise.

## **2.6 Recent developments in the research policies**

Important recent developments for research have entailed the development of a policy framework to facilitate research and knowledge dissemination, as well as build national capacity among funding councils, policymakers and intermediaries. The CUE has since developed a detailed National Policy on University Post Graduate Research and Training in Kenya (CUE, 2016). Regarding programme collaboration to offer joint degrees, the Universities Act (2012) has made provision for foreign universities to enter into arrangements with accredited universities in Kenya for purposes of offering its programmes or joint degree programmes with the prior approval by the CUE. Individual university senates are also allowed to develop frameworks for joint degree programmes. For example, in July 2020, the Senate at the University of Nairobi approved a framework for the offering an award of dual/joint degrees for PhD and master's students.

Regarding streamlining policymaking in research and dissemination, the following has occurred:

- The National Science, Technology and Innovation Act was enacted in 2013. The Act establishes the national research institutions tasked with implementing *Vision 2030* and the science, technology and innovation (STI) plan.
- The NACOSTI was established. The mandate of the Council entails providing advisory services to national and county governments on all matters of STI including, promoting STI in Kenya; registering and accrediting research institutions in Kenya, including universities; licensing all research conducted in Kenya; and monitoring and evaluating the impact of research conducted in Kenya.

- The NRF was established to mobilise resources for research, capacity development, dissemination of findings and maintenance of inventory for the advancement of STI for sustainable national development.
- The Kenya National Innovation Agency (KeNIA) was established under the STI Act No.28 of 2013, under the Ministry of Education. The mandate of the agency is to develop and manage the National Innovation System in order to promote innovation and enterprise development out of research and ideas.

The above policy environment has contributed to making Kenya an attractive research destination for regional and international researchers. Table five below summarises the number of research licenses of different categories that were approved by NACOSTI from 2016 to 2020.

**Table 5: Research licenses approved by NACOSTI (2016 to 2020)**

Nationalist and category	2016/2017		2017/2018		2018/2019		2019/2020	
	M	F	M	F	M	F	M	F
<b>Kenya – East Africa</b>								
Doctorate	389	345	407	350	583	428	57	357
Post-Doc	28	19	42	36	67	51	89	29
<b>African – outside East Africa</b>								
Doctorate	2	2	22	18	14	2	6	3
Post-Doc	1	0	1	0	5	4	0	0
<b>International</b>								
Doctorate	49	40	46	67	50	49	33	58
Post-Doc	40	37	62	59	102	89	71	67

**Source:** NACOSTI Data. Note the number of international students undertaking doctoral and post-doctoral research in Kenya far exceeds those from other African countries

## 2.7 Policies on regionalisation and harmonisation

In terms of facilitating regionalisation and harmonisation, Kenya has conformed to the following policies that have been undertaken under the auspices of the Inter-University Council for East Africa. These are listed below:

- Conferring of national status for students from the East African community in terms of admission regulations and charging of tuition fees. The recent expansion of the community to include the Democratic Republic of the Congo (DRC) means an increment in the number of students who can benefit from the policy. Given that

Kenya has the most developed and diversified higher education system in the region, this strengthens its status as a regional higher education hub.

- Being a signatory to the East African Qualifications Framework for Higher Education (EAQFHE). The harmonisation of higher education systems transformed the region of the East African Community (EAC) into a common higher education area in 2017.
- The development of the Kenya National Qualifications Framework (KNQF) and the Kenya National Qualifications Authority which has developed the detailed Credit Accumulation and Transfer (CAT). This is to encourage open and flexible credit accumulation, and multiple entries and exit points for students, in order to permit greater mobility of students nationally, regionally and internationally. CAT will facilitate the kind of collaborative programmes envisaged by ARUA.
- The KNQF Act No.22 of 2014 provides for the coordination and harmonisation of the education and training sector. Through the development of a KNQF, articulation, classification, registration, quality assurance, maintaining a national database of national qualifications, recognition of attainment or competencies including skills, attitudes and values, as well as the monitoring and evaluation of national qualifications is ensured.
- The harmonisation of higher education qualifications, including PhD qualifications, to international standards, based on the International Standard Classification of Education (ISCED) (UNESCO Institute for Statistics, 2014).

## **2.8 Challenges facing PhD training in Kenya**

Several challenges continue to face PhD level education in Kenyan universities. Some of the challenges are systemic (national) and relate to how PhD level training has evolved in Kenya over the years. Others are at the level of institutions and relate to the capacity of some institutions to offer quality PhD training, given challenges of capacity and resources. The subsections that follow outline the challenges.

### **2.8.1 Lack of coherent national-level policy on doctoral training**

Over the years, PhD level education evolved at universities as an externally funded intervention, to produce teaching staff for the university sector. External partners largely provided PhD grants for internal and overseas training. The institutions admitted PhD students under staff development schemes based on available and forecasted teaching posts in each university. However, over the last two decades, as the number of universities grew, and new



universities did not have the capacity to offer doctoral studies, the available staff with PhD qualifications had to be spread thin to serve the entire system which was expanding. This was also largely to service undergraduate teaching (CUE, 2016). The lack of national-level coherent policy on whom to fund, and how to regulate quality level PhD training, meant that institutions have had to launch poorly developed programmes which are not grounded in a strong culture of academic research and relevant knowledge production.

### **2.8.2 Insufficient funding and resultant financialisation of university activities for income generation**

Funding flows from the public budget to the university sector have been on the decline, thereby increasingly affecting PhD level education. This is because available resources have been earmarked to meet the needs of undergraduate students, and less for supporting quality postgraduate training. On their part, institutions lacking adequate funding from the public purse, have financialised most of their academic activities, including postgraduate programmes which have now been turned into income generation activities for the institutions.

The focus on income generation as core to establishing PhD programmes at the institutions presents multi-fold challenges. First, most candidates currently attracted to register for PhD programmes, are either members of the academic staff or those working elsewhere and looking for executive PhD programmes for career mobility (Hassanali and Hashim, 2016; Harle, 2013). This has led to two developments. The first is that institutions have had to revise their programmes into executive modules targeting largely part-time students. This has attenuated the research and academic component of most programmes. For PhD students who must undertake teaching duties alongside their PhD studies, the pressure of teaching undergraduate students takes more time, leaving little commitment for PhD work. For the PhD supervisors who have to contend with institutional workload and part-time teaching elsewhere to supplement low salaries, close supervision of PhD candidates is not a priority (Harle, 2013). This affects both throughput rates and quality to the extent that the capacity for academic reproduction is compromised. Facing this challenge will require that even before considering how to increase PhD enrolments in the institutions, support be provided to the institutions to strengthen the capacity of existing staff, some of whose research and publication track record is dismal. A second development considers that PhD support is required to upgrade the qualifications of existing university staff, many of whom hold master's degrees, and are thus unable to teach at postgraduate level.

### **2.8.3 Poor management of postgraduate programmes at the institutional level**

Though supervisory capacity is often cited in the literature as a core challenge to PhD programmes, the lack of a professional approach to establishing and managing these programmes is rampant across institutions. There is improper planning at the institutional level for the workforce available for graduate supervision and how this must be distributed. Studies by the CUE show that institutional-level challenges contributing to prolonged PhD completion include the poor process of matching supervisors and candidates. Some academic units select supervisors with little input from the candidate, and there is no standard criteria adopted for allocating supervisors, other than the willingness of the supervisors to work with students (CUE, 2016). Often, there is a mismatch between the students' research areas and the supervisors' areas of expertise, which results in some students not benefitting from proper supervision (Matheka et al., 2020; Harle, 2013).

### **2.8.4 Under-enrolment/over-enrolment in PhD programmes**

As detailed from the data on enrolment and graduation trends, a few programmes that attract part-time students are over-enrolled. These are mostly programmes in the humanities and social sciences. Several programmes in the STEM areas, as well as the humanities and social sciences, are under-enrolled. This creates a possibility that there is underutilised supervision capacity in some of the programmes. This is important when thinking about designing collaborative programmes.

### **2.8.5 Collapse of the pipeline for the recruitment of PhD students**

Admission for PhD study is premised on the assumption that students being admitted have adequate preparation from undergraduate and master's level courses to undertake PhD work. This is the premise, especially for programmes that offer PhD by research and thesis only. The 2015 study by the CUE on the quality of postgraduate training indicates that the quality of students recruited into PhD programmes, especially their capacity and motivation for independent study, accounts for much of the delays in completing PhD programmes. The introduction of a PhD by course work and thesis in some programmes is aimed at addressing this challenge (CUE, 2016).

## 3. Overview of the case study and research focus

### 3.1 The University of Nairobi

The University of Nairobi is the oldest public university in Kenya. Established in April 1952 as the Royal Technical College of East Africa, the university became the College of the University of East Africa in 1963. In 1964, the Royal College of Nairobi has renamed the University College of the University of East Africa. With the dissolution of the University of East Africa, the Royal College was chartered as the first public university in Kenya in December 1970. The university has since grown in terms of academic programmes and infrastructure. In terms of the basic foundations for designing collaborative programmes, the university, as the oldest in the country, has the requisite human capital and infrastructure. The *Times Higher Education 2022 Report* on World University Rankings ranks the University of Nairobi at number one in Kenya and eleventh in Africa. According to information provided on the university website<sup>1</sup>, 2 220 academics have PhD degrees, with 450 being professors.

The university has a Centre for International Programmes and Links, charged with the responsibility of initiating, promoting, facilitating and coordinating international programmes and links, staff and student exchanges and mobility, as well as collaborative research projects and worldwide networking. The university also has the largest number of PhD programmes in Kenya. By 2018, of the 813 PhD programmes offered in public and private universities in Kenya, the University of Nairobi offered about 64 (7.8%) of the programmes. A list of Senate-approved programmes accessed from the university (see appendix) shows that the Senate had approved 74 PhD programmes. However, an analysis of graduation trends for 2019 to 2021 reveals a list of 146 PhD programmes, of which 110 have presented students for graduation within the last five years (see table two in the appendix).

Until June 2021, the academic programmes of the University of Nairobi were organised around six colleges, several institutes and schools. From June 2021, the university restructured and abolished colleges. As a result, all academic programmes were reorganised and reduced to 11 to avoid duplication and functional overreach. Fourteen research institutes have been retained to focus on research and the generation of knowledge in specialised areas.

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<sup>1</sup> Information obtained from the University of Nairobi website: <https://www.uonbi.ac.ke/staff>

### **3.2 Recap of research focus and objectives**

The purpose of this report was to examine in detail three components of the PhD programme at the University of Nairobi – access, programme structure and experience, as well as identify conditions that may facilitate the design of collaborative PhD programmes between the university and other member universities. Two programmes have been selected for this purpose. While a set of criteria were proposed, the university had the discretion to suggest a preferred programme from the humanities and another from the natural sciences. The first approach was to select a programme in the STEM field under the World Bank Centres of Excellence (CoE), however, the University of Nairobi does not host any of the centres. The next consideration was to select a programme on non-communicable diseases which the university hosts as part of the ARUA centres of excellence. However, an analysis of university documents, including records of approved academic programmes and hosting centres, indicates that the university does not include the programme. There is a reference to the university hosting the centre under the College of Medicine and the Institute for Development Studies (IDS), but no further information is provided to form a basis of how central the programme could be in the design of collaborative arrangements.

The two programmes selected are the (1) Doctor of Philosophy in Biotechnology and the (2) Doctor of Philosophy in Economics. Offered within the Centre for Biotechnology and Bioinformatics (CEBIB), the doctoral programme in biotechnology provides an example of an inter-institutional collaborative programme. The programme is serviced by academics from different disciplines such as the School of Biological Sciences (SBS), School of Computing and Informatics (SCI), School of Mathematics (SOM), the Department of Biochemistry, the Department of Physics, the College of Biological Sciences (CBPS), the College of Agriculture and Veterinary Sciences (CAVS) and the School of Pharmacy. The CEBIB operates under an academic board that provides oversight on academic and management matters. To strengthen the Centre's teaching and research, the CEBIB elicits the participation of visiting academics from international linkages. The programme is critical to national and regional development imperatives as it focuses on research and skills that address human, animal, and plant health as well as environmental disease burdens.

The doctoral programme in economics was selected as it already engages in a collaborative doctoral programme under the Pan-African, African Economic Research Consortium (AERC). The economics programme is among the oldest within the Faculty of Social Sciences. It is also

multi-disciplinary, and services most of the programmes that have an economics component, such as agricultural economics and medical economics. The programme enrolls an average of 15 doctoral students annually.

### 3.3 Brief overview of the methodology

Data for preparing the report has been drawn from an analysis of published national and institutional documents, secondary data, and data gleaned from an examination of information contained on the University of Nairobi website. Methodologically, the data used here is limited in two ways. Firstly, the data is limited to 2018, the latest year that comprehensive data is available from the CUE. Secondly, the data has not benefited from additional information from face-to-face interviews. Efforts were made to access the most current data from the institution and to interview senior staff who are managing PhD programmes, but neither the data nor the officers were available during the time of the study. Information on the regulation of PhD programmes and staff levels has been compiled from the latest editions of the university almanac and is therefore up to date. Below is a table reflecting a summary of access, structure and student experience and conditions of the two selected programmes from the University of Nairobi.

**Table 6: Basic features on access, structure and student experience of the selected PhD programmes.**

	<b>STEM</b>	<b>HUMANITIES</b>
<b>Name of programme</b>	<b>Doctor of Philosophy in Biotechnology</b>	<b>Doctor of Economics</b>
<b>Academic home</b>	<b>Faculty of Science and Technology</b>	<b>Faculty of Social Sciences</b>
	<b>Access</b>	
<b>Entry requirement</b>	<p>Overall regulations are governed by the CUE regulations on doctoral education. Specific requirements include:</p> <ul style="list-style-type: none"> <li>• Common regulations for the Doctor of Philosophy (PhD) degree at the University of Nairobi shall apply.</li> <li>• Holders of Master of Science degree in biological and physical sciences, bioinformatics, medicine, veterinary medicine, pharmacy, and dentistry of the University of Nairobi.</li> <li>• Holders of Master of Science degree in biological and physical sciences, bioinformatics, medicine, veterinary medicine,</li> </ul>	<p>Overall regulations governed by the CUE regulations on doctoral education. Specific requirements include:</p> <ul style="list-style-type: none"> <li>• Holders of a master’s degree in economics from the University of Nairobi.</li> <li>• Holders of a master’s degree in economics from an institution recognised by the University of Nairobi Senate as of comparable academic status.</li> <li>• Holders of qualifications deemed by the Senate of the University of Nairobi to be equivalent to (a) and (b) above.</li> </ul>

	<p>pharmacy, dentistry or equivalent qualification from a University recognised by the Senate.</p> <ul style="list-style-type: none"> <li>• Candidates will be required to draw and submit a detailed doctoral research proposal in the prescribed manner at the time of applying for admission.</li> </ul>	
<b>Past five-year enrolment figures</b>	No data available	An average of 15 students indicated
<b>Past five-year graduation figures</b>	Three students	11 students
<b>Application dates</b>	Physical and online applications are open throughout the year.	Open through the year.
<b>Application process</b>	Detailed application guidelines are provided online including the requirement for those applying to submit a detailed doctoral research proposal in the prescribed manner at the time of applying for admission.	Detailed application guidelines are provided online including the requirement for those applying to submit a detailed doctoral research proposal in the prescribed manner at the time of applying for admission.
<b>Programme cost</b>	USD11 374 for three years for Kenyan and regional students.	About USD 5 885 for three years for Kenyan and regional students.  International students pay different rates.
<b><i>Structure of the programme</i></b>		
<b>Credit system</b>	Yes. As approved by the CUE and the NQF.	Yes. As approved by the CUE and the NQF.
<b>Duration of programme</b>	<p>Three years. The Doctor of Philosophy in Bioinformatics programme is by research only.</p> <ul style="list-style-type: none"> <li>• The student shall complete a research project and present the research findings in a thesis.</li> <li>• Every semester, the student shall submit a progress report to the Graduate School through their supervisors and the Centre Director in a prescribed format by the Graduate School.</li> <li>• The student will be required to publish at least two research articles in a peer-reviewed journal(s).</li> <li>• The course shall be covered in a minimum of six semesters of 15</li> </ul>	<p>Three to four years. In the first year of study, students will take a total of six compulsory course units in the core areas of microeconomics, macro-economics and quantitative methods, two from each area.</p> <ul style="list-style-type: none"> <li>• In the first half of the second year, students will continue with further coursework by taking four elective course units selected from the list of electives on offer.</li> <li>• Students shall take the course units from two elective fields only. For Example, the agricultural economics and monetary economics. In the second half of the second year, students would then prepare for</li> </ul>

	weeks each, and a maximum of 14 semesters of 15 weeks each.	<p>and take comprehensive examinations.</p> <ul style="list-style-type: none"> <li>• Students who successfully finish the coursework proceed, in the second half of the second year. They select their dissertation topics and prepare their thesis proposals, which must be presented in a proposal seminar in the school.</li> <li>• On approval, the proposal will be forwarded to the Board of Postgraduate Studies for thesis registration.</li> <li>• During the third year, students will be involved with thesis research, fieldwork, and data gathering and analysis under the guidance of their supervisors.</li> <li>• This process will conclude with a post-fieldwork seminar, where students will present preliminary analyses of their research.</li> <li>• The fourth and final year will be devoted to final thesis write-up and defence. There will be two distinct parts to this period. The draft thesis will be prepared during the first half of the year and presented at a thesis seminar in the School. The draft thesis will be finalised during the second half of the year and defended in accordance with established procedures.</li> </ul>
<b>Course design (thesis only or hybrid/paper)</b>	The Doctor of Philosophy in Biotechnology programme is by research only.	By both, thesis only or by coursework and thesis.
<b>Supervisory model</b>	A collaborative supervisory model from the university and collaborating institutions allowed.	A collaborative supervisory model from the university and collaborating institutions allowed.
<b>Graduation requirement (paper, etc)</b>	Detailed procedures developed by the Graduate School and approved by Senate, guide the conduct and supervision of graduate programmes. The effective and regular management and conduct of graduate programmes are stipulated in the relevant regulations and guidelines	Detailed procedures developed by the Graduate School and approved by Senate, guide the conduct and supervision of graduate programmes. The effective and regular management and conduct of graduate programmes are stipulated in the relevant regulations and

	for supervision, thesis defence and degree award. The PhD candidates will be required to carry out their thesis research under supervision and subsequently compile a thesis that would be presented for examination in the prescribed manner for a doctoral thesis in all faculties.	guidelines for supervision, thesis defence and degree award. The PhD candidates will be required to carry out their thesis research under supervision and subsequently compile a thesis that would be presented for examination in the prescribed manner for a doctoral thesis in all faculties.
<b><i>Student experience</i></b>		
Quality of staff: PhD / Professors	The programme draws staff from other programmes within the Schools of Medicine, the School of Agriculture and Veterinary Medicine as well as from external partners, especially researchers working in institutions identified earlier in this report.	<ul style="list-style-type: none"> <li>• Three professors.</li> <li>• Four associate professors</li> <li>• Nine senior lecturers.</li> </ul>
<b>Quality of infrastructure (library, labs, ICT etc.)</b>	Adequate facilities provided by different institutions/programmes that are core for the PhD pipeline in this area.	Not established
<b>Program highlight.</b>	Key to Kenya 's Vision 2020	<ul style="list-style-type: none"> <li>• Key to achieving the economic pillar of Kenya's Vision 2020.</li> <li>• Part of the AERC collaborative programme.</li> </ul>
<b>Any compulsory components</b>	No	No
<b>Aspirations towards collaboration</b>	Yes. collaborative structures exist.	Yes, collaboration exists.



## 4. Highlights of findings from institutional data

### 4.1 Access and admission

The conditions for admission and access to all academic programmes at the PhD level have been designed to, target broadening access, provide for the admission of regional and international students, and modes of study, as well as meet the academic needs of different students.

Even when academic and programme level qualifications have been met, as detailed in the table above, registration for a PhD programme will require applicants to develop a research concept indicating their area of interest, with registration to the programme based on approval of the research proposal. Hence, admission is usually separated from registration, with admission limited to meeting basic academic criteria and paying tuition fees/scholarships.

Registration to the programme is dependent on the approval of one's proposal for research which takes time. Institutional regulations usually require six months for a student to develop and register a proposal. However, due to a combination of poor enforcement of guidelines, poor supervisory practices, and taking into account programmes that offer PhD through coursework and thesis, registration for PhD is dependent on passing written examinations. This is done before a candidate can proceed to fieldwork to embark on the project/thesis. The key challenge here is that unprepared students who do not have the academic requirements would be admitted to the institutions but would take longer to register due to the inability to develop an acceptable proposal or access a supervisor matching the student's area of interest to support the student at this phase. Hence, when thinking about collaborative arrangements, identifying a pool of senior academics who would be deployed to assist student progression is important.

Regarding the duration for PhD applications, admission for programmes are processed throughout the year. This is mostly for programmes that are undertaken by research and thesis only. Even with coursework PhD, admission is open throughout the year, and once admitted, one has to register when course work for the programme commences.

As PhD programmes are largely unfunded by the institution, except for a few that benefit from external collaborative linkages, students usually seek admission and use the admission letter to source funding. This means that once a student is admitted, there would be a time lag to registration, depending on how one secures funding support, and develop the proposal as a requisite to registration. In the case of the envisaged collaborative programmes, dedicated funding and available supervisors will be critical to the smooth and timely function of the

collaboration. Students from the East African region are treated as national students for purposes of admission and payment of tuition fees.

## **4.2 Structure and design**

All programmes are tenured initially for three years although, as indicated earlier, students both in the STEM and humanities disciplines take longer due to several individual and institutional limitations. Regarding programme structure, there are two predominant modes. The first is PhD by thesis only, and the second is PhD by coursework and thesis. The programmes by thesis and research presuppose that research skills had been obtained at a master's level. However, this is not always the case. Studies have documented that most students enrolling on doctoral programmes have poor research skills (CUE 2016; Harle, 2013; Matheka et al., 2020). With the option of PhD by coursework and thesis, again, the assumption is that there are adequate staff levels and skills to offer coursework. The research stage is less structured than the coursework stage and requires better personal time management and greater one-on-one support from faculty supervisors.

## **4.3 Student experience**

The overall student experience through a PhD programme is largely determined by the funding available. On the one hand, universities are conflicted between the need to maintain quality in research training by admitting the appropriate number of students in relation to the postgraduate staff, and on the other hand, the need to raise revenue for the daily operations of the university. Students in programmes with high enrolments have reported quality issues as there is no adequate number of supervisors to give students personal attention. Even for programmes with low enrolments, quality issues have emerged. Of concern is the additional labour undertaken by academics to earn extra income, thereby paying less attention to supervision duties as this is considered a normal workload without any extra pay. Where extra payment has been introduced, it has resulted in unethical practices, where some academics allocate themselves a high number of students, even if they do not have an academic background in the student's area of study. Therefore, this is a problematic area. The systemic, institutional and individual student issues that characterise the PhD student experience are summarised in table seven below. The summary has been compiled following a study on barriers to quality postgraduate education undertaken by the CUE (2015).

**Table 7: Factors characterising student experience in PhD programmes in Kenya**

Level of Barrier	Nature	Examples
<b>Systemic</b>		
<ul style="list-style-type: none"> <li>• Inadequate research funds</li> <li>• Cost of programme</li> <li>• Inadequate research facilities</li> <li>• Taxation on equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Researcher lacks funds to carry out intended research activities.</li> <li>• Money that students need to pay for the programme serve as a barrier to enrolments.</li> <li>• Existing research infrastructure is unable to support desired research activities.</li> <li>• Taxes imposed on donated research equipment and consumables.</li> </ul>	<ul style="list-style-type: none"> <li>• Government high education policies have led to decline of research funds in certain programmes.</li> <li>• Government policy result in institutions increasing cost of programmes over merit.</li> <li>• Research labs are inadequate – research facilities in the lab require improvement to compete with world class universities.</li> <li>• Challenges brought on by taxes imposed on donated research items including equipment and consumables.</li> </ul>
<b>Institutional</b>		
<ul style="list-style-type: none"> <li>• Nature of research and supervision policies</li> <li>• Poor coordination between departments and graduate school</li> <li>• Poor and insufficient infrastructure</li> <li>• Mismatch between funded research objectives and student academic interests</li> <li>• Mismatch between student and supervisor</li> <li>• Lack of training on supervision</li> <li>• Diverse research directions from supervisors</li> <li>• Over-burdened faculty</li> </ul>	<ul style="list-style-type: none"> <li>• Approved policies are not implemented or there is the lack of necessary policies.</li> <li>• Lack coherence on processes of smooth information flow to support student learning.</li> <li>• Not enough, and up-to-date, libraries, laboratories and resource centres to support PhD studies.</li> <li>• Objectives of the funded project do not align with the students’ interests.</li> <li>• Supervisors are not competent in the area for which they are supervising a student.</li> <li>• Training not available for new faculty.</li> <li>• Supervisors administering contradictory research directions.</li> <li>• Staff workload limits – inadequate time for supervision.</li> <li>• Faculty award marks/ grades to non-deserving students.</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of a procedural process for supervision.</li> <li>• Poor coordination and information between Board of Postgraduate Studies, Graduate Studies and departments.</li> <li>• Libraries not stocked with latest acquisitions; no up-to-date subscription to relevant journals, laboratories not equipped with the most up-to-date equipment or equipment not of adequate quantity.</li> <li>• Research funds do not share in the objectives of the project.</li> <li>• Having a co-supervisor(s) who are not experts in study.</li> <li>• Supervisors’ lack of knowledge and skills on proper procedures for supervision.</li> <li>• Co-supervisors having different opinions or agendas.</li> <li>• Supervision load is not timetabled nor counted when teaching load is distributed.</li> <li>• Staff who are close with some students and want them to pass during examination.</li> </ul>

<ul style="list-style-type: none"> <li>• Favouritism</li> </ul>		
<b>Student/ Individual</b>		
<ul style="list-style-type: none"> <li>• Students not well prepared</li> <li>• Unmotivated students</li> <li>• Lack of attention to guidelines by students</li> </ul>	<ul style="list-style-type: none"> <li>• Students not adequately prepared for PhD level work.</li> <li>• Students lack personal drive.</li> <li>• Students do not follow the institutional guidelines and procedures.</li> </ul>	<ul style="list-style-type: none"> <li>• Poor preparation at master's level.</li> <li>• Students do not consult supervisors regularly.</li> <li>• Failure by students to meet guidelines on research/course.</li> </ul>

## 5. Example of existing collaborative doctoral programme in Africa

### 5.1 The Consortium for advanced Research Training in Africa (CARTA)

The CARTA has been selected for illustration as it offers examples of best practices for addressing key barriers to PhD training across Africa. Table 8 summarises the key features of the CARTA that ARUA can benefit from in designing collaborative programmes.

**Table 8: Summary of key features of the CARTA partnership for PhD training in Africa**

Programme Model Consortium (Three Tier Institutions)	Funding Modalities	Academic Activities	Governance and Management
<p><b><u>8 African Host Universities</u></b></p> <ul style="list-style-type: none"> <li>• University of Ibadan, Nigeria</li> <li>• Moi University, Kenya</li> <li>• University of Nairobi, Kenya</li> <li>• University of Rwanda, Rwanda</li> <li>• Obafemi Awolowo University, Nigeria</li> <li>• Makerere University, Uganda</li> <li>• University of the Witwatersrand, South Africa,</li> <li>• University of Malawi, Malawi</li> </ul> <p><b><u>African based Research Institutions</u></b></p> <ul style="list-style-type: none"> <li>• The KEMRI/Wellcome Trust in Kenya</li> <li>• Agincourt MRC, South Africa</li> <li>• Ifakara Health Institute in Tanzania</li> <li>• African Population and Health Research Centre (APHRC), Kenya</li> </ul> <p><b><u>External Partner Institutions</u></b></p> <ul style="list-style-type: none"> <li>• University of Bergen, Norway</li> </ul>	<p>Provided by a consortium with African stewardship, under the New Partnership for Africa's Development (NEPAD) Agency.</p> <p>Other funders are the Wellcome Trust (UK), the UK government, the Carnegie Corporation of New York (CCNY), the Swedish International Development Cooperation Agency (SIDA), and the German Academic Exchange Service (DAAD).</p>	<ul style="list-style-type: none"> <li>• Multi-disciplinary PhD support.</li> <li>• Partnership is core of programme - covers “sandwich” training for PhD, collaborative faculty research, and collaboration on innovation grants.</li> <li>• Provides postdoctoral research grants for doctoral graduates.</li> <li>• Capacity building in doctoral supervision.</li> <li>• Academic writing and publishing skills for doctoral and postdoctoral students.</li> <li>• Joint advanced seminars.</li> <li>• Online mentorship.</li> </ul>	<ul style="list-style-type: none"> <li>• An overall board drawn from all the three tier institutions.</li> <li>• Programme management based in African institutions led by APHRC and the University of the Witwatersrand.</li> </ul>

<ul style="list-style-type: none"><li>• UMEA University, Sweden</li><li>• The University of Warwick, England</li><li>• University of Gothenburg, Sweden</li><li>• Brown University, USA</li><li>• Canadian Coalition for Global Health Research (CCGHR)</li><li>• Swiss Tropical and Public Health Institute</li></ul>			
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## **6. Recommendations and conclusion**

This section provides recommendations for developing collaborative PhD programmes across ARUA member institutions, drawing from the insights gleaned from the University of Nairobi. The recommendations have been made with the following considerations. One, that whatever collaborative programmes will be considered, a premium should be placed on programme design that responds more directly to challenges facing PhD education at the University of Nairobi. The considerations should be that the collaborative programmes to be designed, should create sustainable funding for PhD students, increase enrolments, and enhance the quality and completion time of the programmes.

Secondly, the design of the collaborative programmes should benefit from the design and structure of existing collaborative programmes in the institutions. The University of Nairobi is already participating in several collaborative PhD initiatives, such as the AERC, RISE, CARTA and RUFORUM. This means the institution already has basic institutional frameworks to initiate or design other collaborative programmes. Thirdly, the design of the collaborative programmes will need to be benchmarked against international best practices. This ensures that the design and structure of collaborative programmes include frameworks that include the research environment, outcomes, admission policy and criteria, PhD training programmes, supervision, the content of PhD theses, theses assessments, and graduate school structure (Palomar et al., 2018).

### **6.1 Recommendations from the study**

Based on the observations above, this report makes the following recommendations to ARUA to consider in designing collaborative programmes.

#### **6.1.1 Funding**

Funding of PhD programmes remains a major challenge to the nature and quality of PhD programmes as highlighted in different sections of this report. ARUA will have to consider how the collaborative programmes will be resourced given that member universities are unable to meet this challenge. The best consideration should be to organise a consortium of partners along the lines of the CARTA case discussed in this report. The consortium will need to have a strong representation, and perhaps, stewardship from a pan-African political organisation like the African Union Commission (AUC) to enhance the legitimacy of the intervention. This approach has the advantage of persuading some African governments to commit resources to the intervention, as well as appealing to external partners. ARUA will, however, remain an

anchor of the project with the possibilities that it can be designated by the AUC, under its Higher Education, Science and Technology programme as an implementor of an AUC intervention. This recommendation is made broadly because sovereign funding for research and knowledge production in Africa persists as a challenge. Even where existing collaborative arrangements are working, the dependency on external funding could compromise the success of the programmes. Hence, exploring other possibilities of African governments funding the programmes through a tax mechanism remitted to the African Union (AU), and shared among the collaborating institutions is recommended. Regional organisations supported by governments and hosted in universities show more resilience, and capacity to attract external support, and influence national policies in relevant areas. This is a potential role ARUA could play in coordinating collaboration and funding opportunities for member universities. To manage such a consortium, it is recommended that a three-tier arrangement, including ARUA funding partners and member universities, provide an overall operational board. Studies, even within Africa, suggest that such an arrangement provides an acceptable governance structure to all parties in the collaboration (Mouton, 2010).

### **6.1.2 Access**

The issue regarding access is that it is limited in some institutions and programmes partly due to funding challenges, but also due to lack of capacity. On the positive side, the policy environment, to allow different modes of access and credit transfer nationally, regionally and internationally, do exist. The first consideration, and therefore recommendation we make to ARUA, is to consider joining existing collaborative arrangements in the institutions, and upscale where appropriate, instead of starting from scratch to design new structures. New collaborative arrangements could only be designed where there are no existing programmes.

### **6.1.3 Degree/ programme structures**

With regards to programme and degree structure and management of the PhD process, we recommend that ARUA and the specific departments/schools housing the collaborative programmes in the individual institutions, be charged with the overall design of the framework for the approval and award of collaborative PhD degrees. Examples from Europe and elsewhere show that developing such a framework is critical to the success of the collaboration. A standard nomenclature for such degrees will have to be agreed upon among the institutions, and it will be possible to offer both joint, dual, or degrees offered by the primary institution where the student is registered or the institution awarding the degree. Collaboration could also focus on sandwich/joint PhD programmes instead of channelling foreign scholarships to send



local talents abroad, thereby contributing to the brain drain. Students may be sent to collaborative institutions/programmes overseas for brief periods abroad to attend courses or be attached to a laboratory/research centre in a foreign university, and candidates may also be jointly supervised by local and foreign supervisors. The PhD award could then be granted as a joint PhD.

#### **6.1.4 Student experience**

In terms of enriching the student experience, beyond the resources to be provided, we recommend that the following supervisory modalities and regulations be developed and agreed as part of the collaboration.

- Students enrolled under a collaborative PhD programme could be supervised by staff from both institutions, under joint supervision arrangements. This is to avoid perceptions of supervisors from one institution being viewed as inferior or superior.
- With regards to supervision structure, supervisors at both universities should be required to establish a timetable for supervision with the student, with ARUA only providing broad guidelines for supervision. Supervisors will establish a timeframe for when the student will be at each university, to enable stronger collaboration and supervision, and for student participation in the various requirements of both universities. Since supervisory processes contribute to a lengthier time to completion, as part of the candidature lifecycle, PhD students will be required to submit to ARUA and the graduate schools of collaborating universities a PhD study plan. As a collaborative programme student, it will be expected that the student and their supervisors will establish a process of undertaking the required assessments and comply with the requirements of both institutions.
- In terms of the management of the student and the supervisory process, we recommend that guidelines for the programme, such as policies, rules and regulations governing the PhD collaborative programme be developed and approved by all the institutions in the collaboration.

#### **6.1.5 Programme sustainability**

In the long-term, and to discourage overseas training, which is expensive, we recommend that ARUA award more resources to well-established universities nationally and regionally to train for the entire system, nationally, regionally and at a pan-African level. Graduate schools with better capacity, and those housing the selected collaborative programmes, would be designated as model schools at a pan-African level for such training.

## **6.2 Conclusion**

The policies and operational frameworks required to facilitate ARUA's quest to design collaborative PhD programmes with the University of Nairobi do exist. This convergence of institutional, national and regional legal frameworks, that regulate higher education institutions and PhD Studies, is essential for facilitating the operationalisation of such programmes. Since the two programmes that have been selected from the University of Nairobi already have existing collaborative arrangements, it will be more efficient for ARUA to attach its arrangements to the existing frameworks with the advantage that this will bring in more students and institutions, and the operational efficiency of the programmes, to ensure quality.

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## Appendix

### African Research Universities Alliance (ARUA)

### Data Collection Instrument: Doctoral Degree Programme

Towards a Collaborative PhD Program across ARUA member universities

in the Natural Sciences and the Humanities and Social Science Disciplines

**Compiled by [Name of researcher(s)]**

- (1) Name of the university where the degree is offered

#### Programme-specific information:

- (2) Name of the faculty/school and department/centre/institute where the degree is offered
- (3) Exact name of the degree programme and qualification
- (4) Number of credits (total; elements)
- (5) Number of students/candidates enrolled in the degree programme over the last 5 years (number of enrolled PhDs)
- (6) Academic staff available for supervision / staff to student ratio
- (7) Qualification of staff (% PhD, % professors)
- (8) Graduation number in the degree programme over the last 5 years
- (9) Availability of supporting infrastructure, including institution-wide infrastructure (library; ICT support; statistics support; research hub; writing centres etc.); faculty-wide infrastructure / department / centre (e.g. laboratories, studios, postgraduate academies); and programme specific infrastructure (if any).
- (10) Is this a collaborative programme (with another institute/university)? If yes, please elaborate on any relevant aspect.
- (11) What is the history of this programme? (date started, how it might have changed with time)
- (12) What makes this programme one of the best? Any notable graduates, ranking achievements, patents or so (or other 'bragging rights' or significant achievements or recognitions worth mentioning)?

#### Admission requirements

- (13) Minimum prior qualification plus other requirements (e.g. masters GPA or score average points/merits; work experience; professional registration, or the like)
- (14) Application date & start date of programme (deadlines)
- (15) Formal application procedure and requirements for supporting documents (e.g. PhD proposal; CV; sample writing; etc.)
- (16) Contacting and assignment of supervisor(s)

(17) Please comment: Are these admission requirements typical for all doctoral programmes nationally, in this institution, or are they specific to the HUM or STEM, or are they unique to this particular programme?

### **Structure and content of programme**

(18) Assignment of supervisor and supervision model

- i. one student-one supervisor (traditional / apprenticeship model);
- ii. one student-several supervisors (team supervision model);
- iii. many students-several supervisors (cohort supervision)
- iv. is there a contract between supervisor and student?

(19) Collaborative supervision aspects and other research support (e.g. joint cohort research days; postgraduate academies; etc.)

(20) Provisional vs. full registration rules e.g. Is there a period when one is provisionally admitted pending some procedures? such as proposal presentation and acceptance, title registration;

### **Programme requirements:**

(21) Compulsory elements (e.g. compulsory orientation; compulsory course work; minimum lab work; seminar attendance; residency requirements; professional work/internship requirement; field work requirements;)

(22) Other elements, e.g. exchange programmes

(23) Milestones and outputs of the programme:

- i. Requirement to present (inhouse or at a conference)
- ii. Requirement to publish (type and number of minimum publications)
- iii. Thesis by monograph, by professional capstone, by articles (explain all in detail)

(24) Duration of the programme: Minimum time to graduation; maximum time to graduation

(25) Financial obligations and benefits

(26) Costs of the programme (per annum; overall)

(27) Funding opportunities: availability of sponsorship, bursaries, scholarships, assistantships; tutoring/lecturing; etc.

(28) Conference attendance (e.g. availability of sponsorship)

### **Assessment of this programme**

(29) Please comment: Is this structure and content of the programme typical for all doctoral programmes in this institution, or are they specific to the HUM or STEM, or are they unique to this particular programme?

(30) Please comment on the programme's comparability with other doctoral programmes you are familiar with.

(31) Please comment on best practices or the need to modify.

(32) What could be done to make the programme more harmonized with others within ARUA universities.

