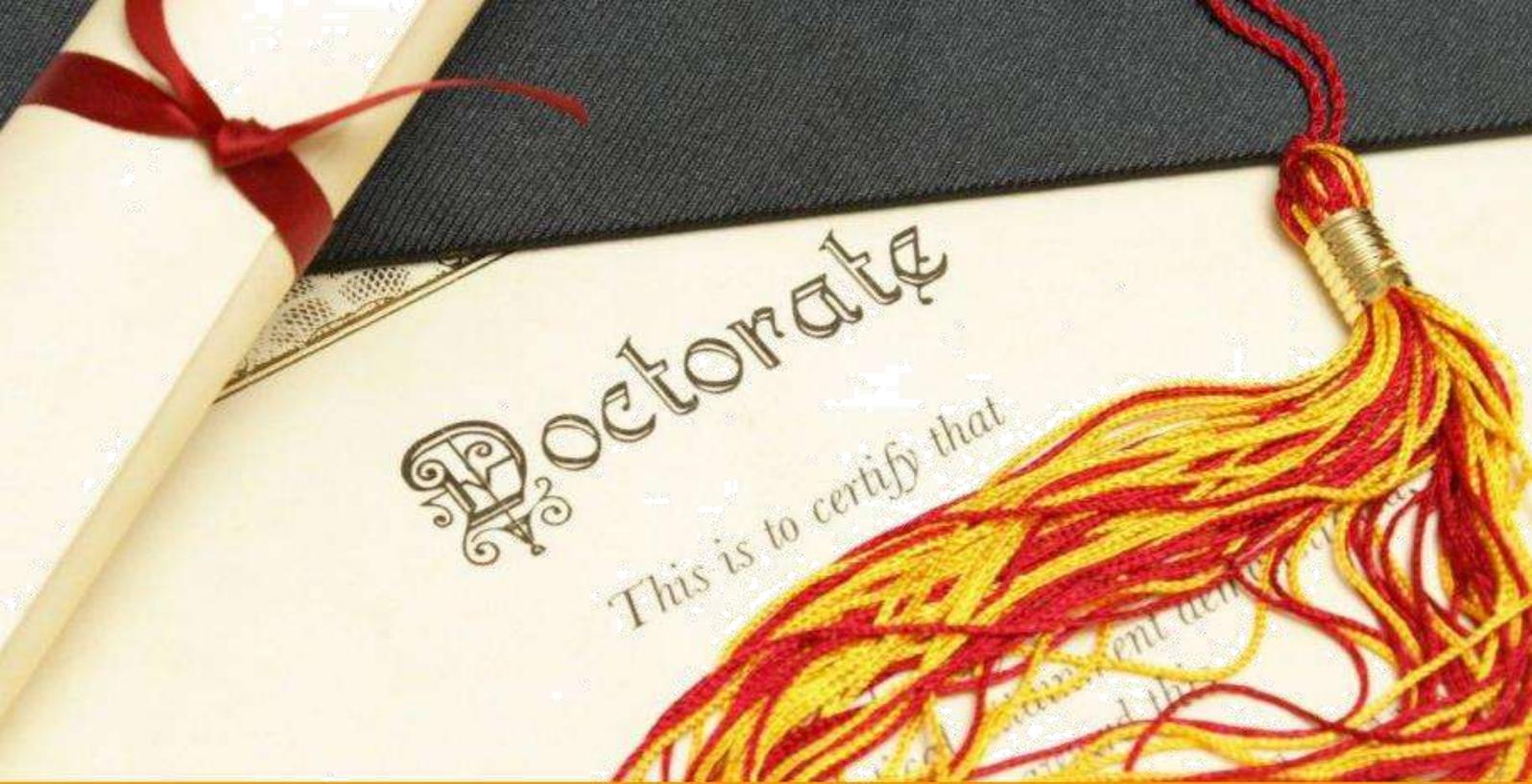


Constructing “Innovative” Doctorates: Scoping Evidence on Doctoral Structure and Practices from Six African Countries

Scoping Report to the Partnership for African
Social and Governance Research (PASGR)



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EXECUTIVE SUMMARY

This scoping study of doctoral education in selected African countries was ordered by the Partnership for African Social and Governance Research (PASGR).

According to the Terms of Reference issued with this order, PASGR's distinctive aim for the doctoral scoping exercise was to understand the key characteristics of both existing and planned doctoral programmes within the social sciences in terms of their content, structure, organisation, practices, management, and delivery. In more practical terms, this exercise included examining the policy framework for doctoral training at institutional and national levels as far as possible; doctoral recruitment practices; content and structure of doctoral programs, pedagogical practices, and the organisation of doctoral supervision.

The scoping study therefore pursued three core objectives:

- i. Document best practice in doctoral education and identify university-level relevant policies and structures that promote doctoral education;
- ii. Examine variables that characterize the quality of ten (10) social science doctoral programmes, and
- iii. Determine area(s) of focus for a new doctoral initiative and recommend potential partners.

Due to time and resource constraints, the methodology of the scoping study emphasized analysis of published documents, secondary data, and examination of university websites. The study also conducted a limited number of personal interviews and phone conversations wherever possible to complement other sources of data.

The first phase involved a review of more than 100 doctoral programs from 10 universities. Thereafter we selected a small set of 10 significant doctoral programmes for more detailed study. This set of 10 also included three additional PhD programs from strategic institutions that were not part of the initial sample of universities (University of Cape Town, CARTA, and University of Nairobi). These programs were analysed in terms of their organisation, structure, content, and practices. The applied the systems approach to inform this comprehensive analysis; whereby the doctoral training process is considered as consisting of three distinct but interrelated components: inputs, research environment, and outputs, informed this comprehensive analysis.

The study also drew on some of the most robust global frameworks for organising doctoral training, including the European Union's Seven Salzburg Principles for Innovative Doctoral Training as well as various blueprints from the UK's Quality Assurance Agency focusing on quality assurance and characterisation of doctoral education. The findings and recommendations are condensed into a coherent portfolio of pathways or best practices focusing on three critical areas: doctoral recruitment, doctoral structure and organisation, and doctoral supervision.

1. Pathways to Robust Recruitment

The following findings with respect to structures and practices for doctoral recruitment are recommended to form part of a coherent and innovative PASGR doctoral initiative:

Prior consultation on draft research proposal: This helps to establish if the candidate's intended research is feasible and coherent with the expertise and priorities of the prospective department. It might demonstrate the candidate's overall quality and preparedness for doctoral education. It can also offer vital guidance on early supervisor choices.

Robust, accountable, and equitable recruitment practices: Recruitment mechanisms should be rigorous, equitable, transparent, and clearly anticipate and define the characteristics of candidates that are required on the program. This will ensure the university attracts candidates of the highest quality who have higher chances for success on the doctoral program.

Adequate and accurate Information: Prospective doctoral candidates are entitled to detailed, accurate, and accessible information about the availability of doctoral opportunities in order to make informed and appropriate decisions. Doctoral education providers are expected to provide adequate and complete information about their programmes to ensure transparent, competitive, and equitable recruitment processes that are more likely to create appropriate opportunities for attracting high quality doctoral candidates that are in turn critical for sustaining high quality doctoral program.

Quality assurance and gate-keeping: Departments need to devise effective gate-keeping practices which serve as quality assurance mechanisms and for ascertaining adequate progression through the doctoral process. This can include practices such as provisional admission into MPhil for a limited period until the candidate passes a major progression milestone before conversion into PhD.

Promoting full-time rather than part-time study: Regulations and policies that promote full-time enrolment and discourage part-time enrolment can be helpful in ensuring that candidates accord sufficient attention to doctoral research.

2. Pathways to Effective Supervision

The following findings with respect to structures and practices for doctoral supervision are recommended to form part of a coherent and innovative PASGR doctoral initiative:

Codes of practice: A Code of Practice put in place to shape supervision processes and practice can be instrumental in promoting transparency, accountability, and consistency in the conduct of doctoral supervision and other aspects of doctoral education more broadly.

Linking recruitment to supervision capacity: Enrolment of doctoral candidates should be on the basis that adequate capacity exists for effective supervision. Prior discussion of a candidate's research proposal can help ensure that adequate supervision is available before recruitment.

Joint supervision model: Effective supervision is without doubt one of the most fundamental factors in assuring the quality and efficiency of doctoral education. Joint supervision allows the candidate to benefit from a diverse portfolio of expertise, knowledge, perspectives, and experience at the same time; which cannot be reasonably achieved through the single supervisor model.

E-supervision: The e-supervision approach can enable universities to tap into and utilise strong supervisory capacities that exist outside national or institutional boundaries in order to strengthen local capacity to deliver high quality PhD supervision. E-supervision can also be a cost-effective, innovative, and efficient since it surmounts most physical, financial, and cultural barriers.

Progress reporting: Periodic reporting is a tool for monitoring progress made over a specified period of time during doctoral studies. It can be suggested that the shorter the reporting period the more robust the progress monitoring regime and the higher the likelihood that the candidate might make adequate progress and emerging problems can be identified and resolved much earlier.

Continuing professional development: It can be misleading to assume that all supervisors possess the required knowledge, skills, and experience to navigate the complexities surrounding supervision and discharge their duties effectively without continuous training and development. Providing professional development opportunities for supervisors is therefore a critical element in promoting quality doctoral education and developing best practice in supervision.

Incentive structures for supervisors: Providing various kinds of material and reputational incentives to supervisors can function as a powerful motivating factor that might drive academics to participate in and remain committed to supervision as well as to aspire for excellence in doctoral supervision. Recognition and promotion can also be used as reputational incentives to encourage excellent practice and commitment to supervision.

3. Pathways to Innovative Doctoral Structure

The following findings with respect to structures and practices for doctoral structure and organization are recommended to form part of a coherent and innovative PASGR doctoral initiative:

Structured coursework and thesis: This study found significant evidence and consensus across different universities indicating that a more structured model of doctoral education consisting of integrated advanced coursework and supervised research represent a more robust form of doctoral education for Africa compared to the unstructured thesis-only doctoral model.

Coursework depth and quality: Where the structured doctorate is already being provided, it is still critical to carefully consider the quality, depth, and scope of the coursework component. Interviews and analysis of documents showed that structured coursework should provide sufficient depth and breadth in terms of building the candidate's theoretical, conceptual, and empirical understanding. Academics interviewed suggested that the capacity to teach courses at this advanced level needs to be considered and strengthened where required.

Capstone courses: Another good practice in delivering integrated coursework design is the provision of an overarching and mandatory capstone module that traverses all doctoral programs across the social sciences within a university. This core module can be used to introduce all doctoral candidates to a uniform and coherent range of key concepts, methodologies, and perspectives that transcend disciplinary boundaries and are fundamental to a developing a coherent background.

Transferable skills development: The evidence from some of the ten doctoral programmes suggests strongly that the development of transferable skills and professional competencies can become a key part of a coherent portfolio of advanced coursework and career development.

Information! Information!: Provision of detailed, accurate, and readily accessible information and descriptions about program components represents an important element of best practice for assuring quality, accountability, equity, and transparency. Course handbooks and other literature can provide critical course details including course content, objectives, assessment, credit weightings, and sequencing. These details are all critical if students are to be assisted to make informed decisions and achieve optimum benefit from available learning opportunities.

Experiential learning and external engagement: Creating opportunities for doctoral candidates in African universities to gain practical experience within external non-academic settings can be critical for developing transferable professional skills and consolidating useful professional networks and generic competencies. Integrated experiential learning and internships are aspects of innovative practice that can be developed and strengthened in doctoral programs.

Collaboration, mobility, and internationalization: The importance of adopting a collaborative and international approach to doctoral organisation and research training is increasingly emphasised. The Salzburg Principles consider “networking, collaboration and mobility” as central to organizing more innovative doctoral training programs (EUA 2010).

Networked cluster model (“MRPP Pathway”): This refers to a framework for organizing doctoral training whereby a consortium of carefully selected universities come together to deliver a specific doctoral program/s through a collaborative network. This approach to doctoral organisation provides for in-built mobility, collaboration, and international orientation in doctoral training while also promoting efficiency and economies of scale. In the PASGR context, this networked doctoral model can provide a useful pathway of progression for students who are currently pursuing the Master of Research and Public Policy (MRPP).

4. Pathways for PASGR Doctoral Initiative

Drawing on the analysis of the structure and organisation of doctoral programs across universities and across existing postgraduate collaborative initiatives in Africa and elsewhere, we suggest the following three options as the most effective and appropriate for PASGR to adopt in the proposed doctoral initiative:

Option 1: PASGR develops a new collaborative PhD program:

This option will require PASGR and its partners to configure a new and rigorously designed doctoral program that is inter-disciplinary, collaborative, externally engaged, and coherently linked to local or national socioeconomic development issues. A network or consortium of universities together with PASGR and its technical partners will be involved in developing the structure and content of this new doctoral programme. The proposed PhD programme must incorporate many of the innovative elements suggested in the Seven Salzburg Principles, as well as the features articulated in this report with respect to robust doctoral recruitment, organisation, and supervision. Doctoral candidates undertake mobility across the partner universities on a rotational and periodic pattern to attend advanced coursework teaching, professional development, and research training.

Option 2: PASGR adopts a cluster doctoral model

This model is similar to the existing MRPP structure and is built around a new innovative doctoral program as explained in option one. A network or consortium of universities together with PASGR and its technical partners will be involved in developing the structure and content of this new doctoral program as explained under option one. With respect to delivery, the doctoral program will be hosted at each of the selected partner universities; whereby each participating university will recruit, train, examine, and award the PhD degree to their own cohorts of students. The difference with option one above is that in this model, the students are hosted locally at their home institutions and mobility to other partner universities is not necessarily emphasized.

Option 3: PASGR adopts a “hub-and-spoke” model

The hub-and-spoke model refers to an approach for organizing doctoral training where selected universities become part of a network of institutions each hosting a specific doctoral program based on the presence of demonstrable academic capacity in a particular disciplinary area. In practical terms, each university then becomes the “hub” or “center of excellence” for a particular PhD program. Under this approach, PASGR will identify a set of three or four highly relevant and reputable PhD programs that are already established across the participating universities to become the focus of collaborative doctoral training and integrated capacity development. PASGR’s broader strategy in this scenario will be to expand and strengthen the selected doctoral

programmes in the respective “hub” universities by formulating and providing targeted interventions depending on where PASGR has identified specific gaps. Interventions can include program structure and content, supervision, teaching capacity, student recruitment, pedagogical practices, strategic management and monitoring, quality assurance, as well as policy framework development and embedding.

Potential prospects for collaboration

The study examined a wide range of programs and initiatives in African in order to identify potential partners for PASGR’s doctoral initiative. The prospects recommended below are essentially indicative rather than definitive or exhaustive. Based on the analysis of key global trends, this study suggests that research and training initiatives that coherently seek to straddle and connect the STEM sciences and social sciences will represent the future of successful collaborative knowledge production. This will include social science initiatives that complement and broaden STEM initiatives.

Inter-Universities Council for East Africa (IUCEA): The IUCEA is the implementing agency for the African Centers of Excellence (ACE II) Initiative. The ACE II initiative provides opportunities for non-STEM sciences to participate as centers of excellence, including public policy management. This provides a potential opportunity for PASGR to compete for participation as a Centre of Excellence in public policy analysis and research within the ACE initiative. This will require a strong and rigorously designed doctoral program that is inter-disciplinary, collaborative, industry-engaged, and coherently linked to local or national socio-economic development problems or issues.

University of Nairobi (Kenya): Nairobi University is one of the most highly ranked universities in Africa and the highest in Kenya according to the latest global ranking of universities in 2016. The University of Nairobi can therefore be a premium collaborator for PASGR both for the MRPP and for an innovative doctoral program, particularly in political science. PASGR can consider collaborating with the Department of Political Science to strengthen PhD training in political science by creating a new collaborative doctoral program that incorporates structured coursework, external engagement, stronger supervision, mobility, and integrated supervisor development initiatives.

Next Einstein Forum (www.nef.org): NEF Ministerial Forum 2016 resolved to establish an ambitious initiative to strengthen and expand doctoral education in Africa. This will include diversification and redesign of PhD programs, national evaluation and mapping of doctoral activity and outputs, and promoting intra-Africa doctoral student academic mobility. These initiatives indicate potential collaborative opportunities for PASGR’s doctoral initiative and funding mobilisation.

University of Ghana (PhD Population Studies): The PhD program in population studies is suitable for selection as a potential doctoral program for collaboration. The program has a structured doctoral model incorporating advanced coursework, comprehensive examinations, and supervised thesis. The program is also multidisciplinary and integrates an innovative program of experiential learning across academic and non-academic contexts outside the university. This hub can contribute to sharing of excellent practices in doctoral training and requires minimal interventions from PASGR.

University of Ibadan (PhD Political Science/PhD Economics): Ibadan is already collaborating with PASGR on the MRPP degree program hence making it easier to establish a hub at the university. The PhD programs manifest a structured model incorporating advanced coursework, comprehensive examinations, and supervised thesis. PASGR will need minimal capacity building interventions to make this an excellent doctoral hub for political science or economics.

University of Botswana (PhD Public Administration/Political Science): Botswana is an exciting doctoral training hub since the university is already a partner to PASGR in the MRPP program. The PhD in Public Administration or the PhD in Political Science are both suitable for selection as the focal program for a doctoral training hub. Like the other programs outlined above as potential hubs, these PhD programs at Botswana are structured and consist of a strong coursework component and independent research.

01

Background to the Doctoral Scoping Study

1.1: Introduction

This scoping study was designed to deliver the specific aims and outputs articulated in the PASGR Terms of Reference. PASGR's distinctive approach to the doctoral scoping exercise emphasizes the critical importance of understanding the key characteristics of both existing and planned doctoral programmes within the social sciences in terms of their content, structure, pedagogical practices, management, and delivery. More specifically, this included examining the policy framework for doctoral training at institutional and national levels as far as possible; doctoral recruitment practices; content of doctoral programs, pedagogical practices, and the organisation of doctoral supervision.

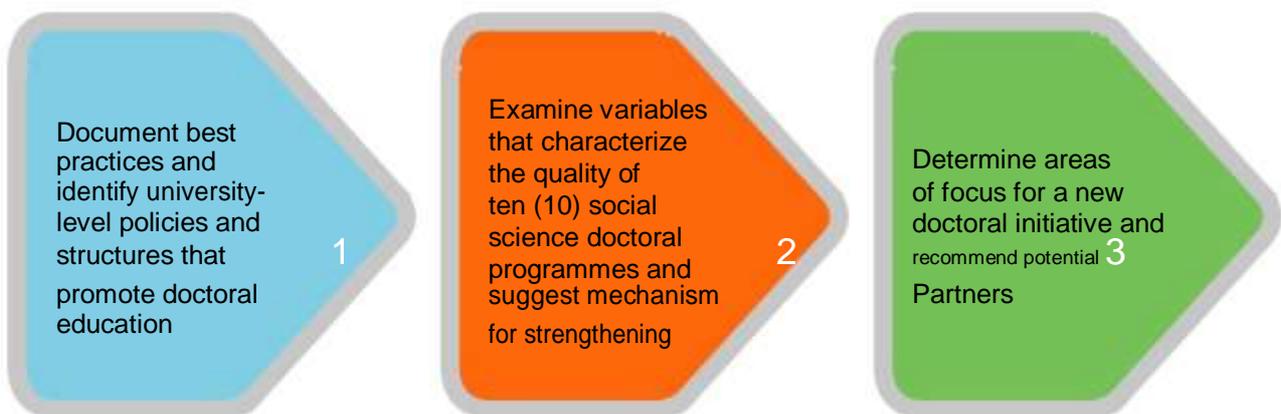
The doctoral scoping activity also focuses on understanding the nature and scope of collaborative and internationalisation initiatives that are in place to develop or promote doctoral training within the social sciences. In the broadest terms, PASGR aims for the scoping study to clearly identify and analyse core elements pertaining to the quality of doctoral training programs within the social sciences by providing evidence-based analyses and recommendations pertaining to how innovative and high quality doctoral programs can be organised and delivered in the social sciences. The Terms of Reference initially included the aim of examining the quality of the

output of doctoral programs in terms of research outputs, publications, and doctoral graduates. However, this aim was removed after it was agreed that it was beyond the scope of the time and resources available for this scoping study.

1.2: Operationalization of Terms of Reference

This section is aimed to demonstrate how the study conceptualised the Terms of Reference and how it set out to deliver all the required outputs. In broad terms specified in the Terms of Reference, this scoping study entail a review of relevant doctoral programmes within the social sciences to help understand: the structure and organisations of doctoral programs in selected universities; interrogate the management and delivery of programs, investigate the partnership or collaborative initiatives that support doctoral programmes. The study also interrogates the character of doctoral programs, including structure and content of programs, recruitment systems, and supervision practices. The study identifies good practices and provides concrete recommendations focusing on areas where PASGR can strategically intervene to deliver collaborative initiatives that can significantly strengthen the quality, relevance, and diversity of doctoral training in various universities.

The specific objectives of the scoping study are analysed below



1. *Document best practice in doctoral education and identify university-level relevant policies and structures that promote doctoral education;*
2. *Examine variables that characterize the quality of ten (10) social science doctoral programmes (including content and structure, procedures for thesis supervision, quality of research outputs, number and qualifications of teaching staff and doctoral graduation rates) and suggest mechanisms of strengthening the programmes;*

Drawing on the systems theory (see section 1.4 below), the doctoral training system and its quality can be examined in terms of three interrelated components: quality of inputs; quality of the research environment, and quality of outputs. More specifically, quality of inputs in a doctoral training system is concerned both with the key characteristics of the doctoral candidates as well as the robustness of the recruitment procedures through which candidates are selected into the doctoral programs. The quality of the doctoral recruitment systems will focus on the presence of doctoral admission regulations, admission requirements, advertisement of doctoral opportunities, decision-making structures and processes, and whether candidates are enrolled as part of cohorts or individually.

The second dimension of the doctoral research system is the quality of the research environment. Basically, this dimension encompasses a wide range of variables and attributes that pertain directly to the

content and structure of the actual doctoral programs together with the structures, processes, policies, and infrastructure within which the doctoral programmes are being developed, organised, and delivered. Data was gathered on the content of doctoral programmes; structure and organisation of doctoral programmes; supervision practices; as well as pedagogical and assessments practices applied within doctoral programmes. The study also sought to understand whether and how the different academic units provide generic professional development skills to doctoral candidates.

Analysis of the research environment also entails data on the presence of university research strategy and priorities, alignment of doctoral research, and existing research facilities. Management and organisation of doctoral programs has been examined; gathering data on the presence of postgraduate or doctoral schools; doctoral codes of practice and guidelines, doctoral policy/ strategy, incentive structures, candidate progress monitoring, as well as doctoral data management policies and practices. Data on doctoral supervision regulation, procedures, and practices was gathered from university websites and through personal interviews with senior academics involved in PhD training. The study

gathered data on the presence or absence of international and collaborative initiatives and characteristics manifested within the various doctoral programs. Under this dimension, the study focused on the presence or absence of international



activities; including involvement in collaborative doctoral programmes; mobility initiatives; as well as participation in networks or consortia of any kind.

3. *Determine area(s) of focus for a new doctoral initiative and recommend potential partners.*

To deliver this aim, the range of outcomes and findings pertaining to structure, organisation, and best practices drawn from the analytic procedures outlined above were synthesised to conceptualise and re-imagine how a new PASGR doctoral initiative might be constructed and implemented. The over-arching strategic aim is to identify opportunities, best practices, and gaps across multiple programs and institutions that can potentially become the focus or basis for PASGR to get involved in coherent collaborative activities and synergy building interventions aimed at strengthening existing doctoral programs or developing higher quality doctoral training initiatives that are more relevant to public policy and development in African countries.

The study drew on evidence of best practices and key characteristics of successful doctoral programs at the selected universities in order to outline clear recommendations regarding the structures, content, organisation, management, and modes of delivery that are most likely to characterize high quality doctoral programmes. The study examined how emerging global trends in doctoral training including collaboration, internationalisation, interdisciplinarity, mobility, and industry linkages can be nurtured, scaled up, and embedded into the development, organisation, and delivery of doctoral training systems in African universities.

1.3: Approach and Methodology

The research methodology, methods, and approaches that were deployed in this scoping study are shaped by the aims of the doctoral scoping study and the required outputs as specified in the Terms of Reference above. The research design embraces the nested case study approach whereby 10 doctoral programs in the social sciences were selected for detailed study. The individual doctoral program is the unit of analysis in this study; however the doctoral program is further embedded within an academic unit and the university. The Terms of Reference specify that 10 (ten) doctoral programs within the social sciences must be included in the sample for detailed scoping study.

The study extended the scope slightly to include doctoral programs within emerging interdisciplinary fields in order to accommodate possibilities for overlap across disciplines as well as interdisciplinary programs which are increasingly attracting significance (Harle 2010). The choice of countries and universities was guided by the importance of building synergies and strengthening PASGR's existing interests and capacities, hence we considered it more strategic to purposively prioritize countries and universities that PASGR is already collaborating with under the existing MRPP initiative. For purposes of strategic alignment and diversity, the study

also includes three additional reputable institutions which are not currently part of the PASGR family.

PASGR is currently delivering the collaborative master's programme in 12 universities across 7 African countries. Based on this set of focal countries as the sampling frame, the scoping study purposively selected five countries currently covered under the MRPP programme (Nigeria, Botswana, Ghana, Kenya, and Tanzania). Uganda was left out since the MRPP partner universities in Uganda were not currently involved in doctoral programs. The University of Sierra Leone was also excluded for lack of adequate information online as well as due to complete non-response to email inquiries. In each of these existing five MRPP countries, the study selected at least one of the universities that are already partnering with PASGR in delivering the MRPP degree program as follows: Nigeria (2 universities), Kenya (2 universities), Ghana (1 university), Tanzania (1 university), and Botswana (1 university).

The study then decided to expand the scope beyond the universities currently partnering with PASGR. In this regard, the University of Cape Town (South Africa) and University of Nairobi (Kenya) were included based on their leading reputation in their respective countries in the 2016 league table of global rankings. Finally, CARTA (Consortium on Advanced Research Training in Africa) was also added to the sample to bring diversity in terms of considering a collaborative doctoral initiative.

Within each of the 10 case study universities/institutions, the study generally reviewed nearly 100 PhD programs in the social sciences to capture a portrait of the doctoral landscape. The study then selected one significant doctoral program which offers a compelling range of features as pertains to its structure, content, organisation, innovativeness, perceived quality, and overall significance of the program within the host academic unit as well as across the wider university. This selection exercise encountered considerable challenges particularly due to the inadequacy of key factual information and data about the majority of the doctoral programs.

For instance, even basic facts such as accurate data on PhD enrolment figures was difficult to locate through online searches and phone calls. Data on departmental outputs and quality of doctoral theses was nearly impossible to obtain since most universities do not display this information on their websites, and a large majority of academics who were contacted via emails and telephone did not respond at all. We then used various fragments of incomplete facts and information to make the best determination of which 10 doctoral programmes to select. The following ten doctoral programs then became the units of analysis nested within the selected universities.

Figure 1: Selected ten PhD programs in social sciences across six countries

PhD Program	PhD program
PhD in Economics (University of Botswana)	PhD in Gender and Development (Egerton)
PhD in Sociology (Maseno University)	PhD in population Studies (University of Ghana)
PhD in Economics (University of Jos)	PhD in Geography (Dar es Salaam University)
PhD Political studies (University of Cape Town)	PhD in Psychology (University of Ibadan)
PhD in Demography and Health (CARTA)	PhD in Political Science (University of Nairobi)

A more detailed analysis was conducted on each of these 10 doctoral programs using multiple methods, including analysis of key institutional policy documents and websites. A limited number of in-depth interviews with key actors involved in the doctoral program including deans and key academic faculty members were conducted in some of the departments. Program documents and records were also collated and examined to capture key information about the structure, content, organisation, management, and delivery of the doctoral program. The following specific research methods were applied:

Review of digital content and documents:

Mapping of the doctoral landscape was accomplished by harvesting, reviewing, and analysing digital content and documents available on the websites of the case study universities. This method encountered considerable challenges since some universities had limited content on their websites, some had poorer quality or inaccessible content, while others did not make key documents available on their websites at all. The study also conducted a thematic desk-based review of existing published research and literature addressing broad issues, trends, and debates pertaining to doctoral training at national, regional, and international levels.

In-depth interviews:

For the purpose of gathering enriched qualitative data around doctoral training and issues across the selected universities, the study conducted a total of 12 interviews with key stakeholders including academic departmental leadership, senior academics, and some external stakeholders associated with doctoral education. Although the scope and resources of the study did not provide for physically visiting the case study universities and conducting in-depth interviews with participants, a unique opportunity arose through the researcher's participation at the MRPP Workshop event held in August in Nairobi, Kenya.

This workshop was attended by 100 (one hundred) senior academics, students, and delegates drawn from all the 7 countries and 13 universities that PASGR is currently collaborating with on the MRPP initiative. The researcher managed to conduct semi-structured interviews with a number of key delegates during this three day event and gathered some useful data. Thereafter, the consultant visited Maseno University and Egerton University and conducted in-depth interviews with departmental leaders in the social science faculties. The consultant also

interviewed a senior official within the CARTA (Consortium for Advanced Research Training in Africa) program hosted at the African Population and Health Research Consortium (APHRC).

The interviews' focus on the 10 selected doctoral programmes aimed at capturing various perspectives and insights focusing on the content, structure, research themes, organisation, quality, and challenges of doctoral education at the selected academic unit. Despite the obvious limitations of relying on secondary sources, this study devised innovative and resilient strategies to mitigate the impacts of these limitations and still emerge with data of adequate quality and validity.

1.4: Conceptual Framework

Doctoral research and its organisation in any context can be considered from a systems perspective. General systems theory refers to a framework by which one can investigate and describe any group of objects that work together to produce some defined result. A system can be said to consist of four interconnected things: objects of the system (parts, elements, or variables); attributes of the objects; relationships among the objects; and an environment in which the system and its objects are embedded (Midgely, 2003). A system, then, is a set of things that affect one another within an environment and form a larger pattern or entity that is different from and larger than any of the constituent parts.

A system is described as 'open' if it interacts dynamically with its environment through continuous exchange loops; otherwise it would be considered as a 'closed' system. Drawing on this multidisciplinary and versatile tradition, open systems theory provides a useful conceptual framework for examining the content, organisation, functioning, and outcomes doctoral training. Technopolis Group (2010) propose that a doctoral research system consists of four main components.

The first component is the 'inputs' which consist of funding, training, quality assurance, and research. The second facet consists of 'actors' (policymakers, higher education institutions, and doctoral candidates); whereas the third part comprises the 'overall organisation of studies'. The fourth component of the system is the 'outputs' which is considered to consist of research production and doctoral graduates (Technopolis Group, 2010). This model offers a fairly comprehensive way to look at the key components of a doctoral research and training system. However, some relatively minor technical

variations can be suggested, such as considering doctoral candidates as inputs into the doctoral system rather than just as ordinary actors.

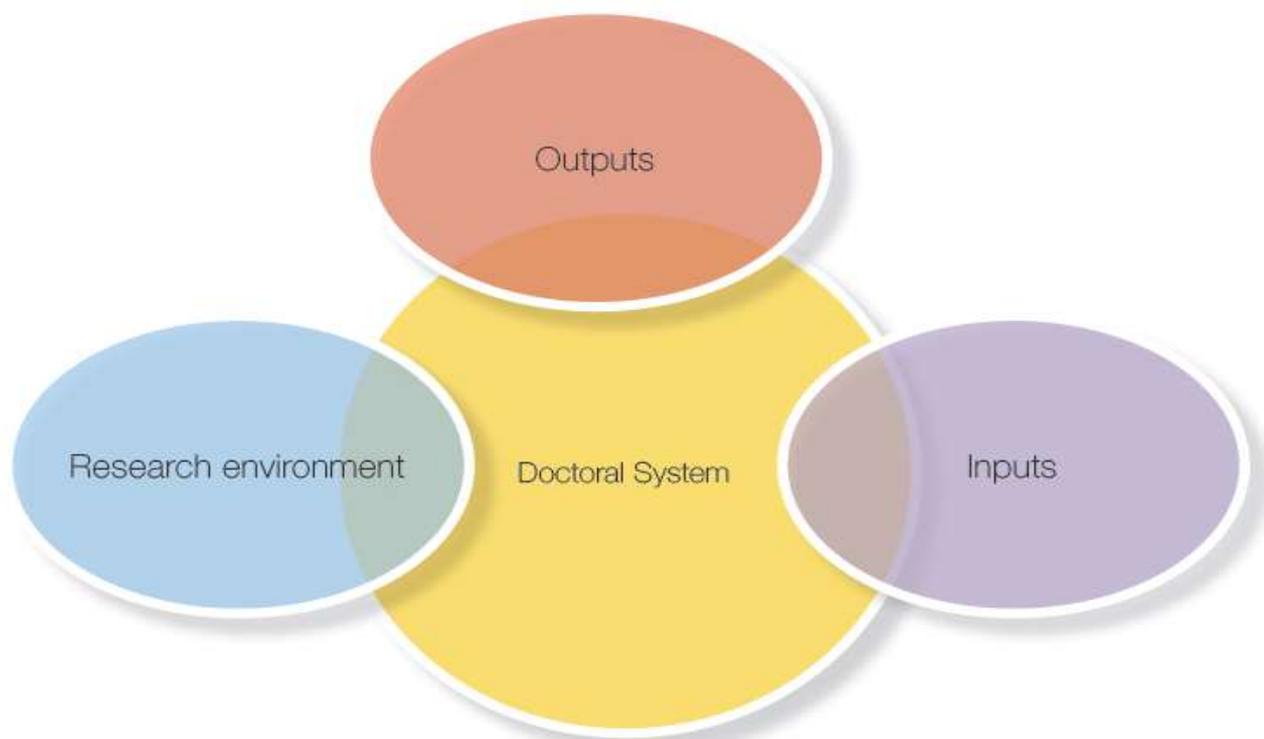
Hence the doctoral system can alternatively be understood as consisting of three interrelated key dimensions: the inputs, the research training environment, and the outputs (NIFU 2012). According to this model, 'inputs' consists of doctoral candidates, recruitment processes, academic staff, and resources/funding. The 'research training environment' encompasses content and organisation of doctoral programmes, supervision processes, research infrastructure, and administrative support. Finally, the 'output' is understood as consisting of the results of doctoral training such as doctoral theses, publications, and transferable skills of doctoral graduates (NIFU 2012, p.33).

- **The outputs:** this component would constitute the doctoral graduates (their knowledge, transferable skills, and experiences), doctoral theses, and publications.

Drawing the systems approach to doctoral training, the following questions will structure our approach of this scoping study:

- *How are the most successful doctoral programs in the social sciences structured, organised, and delivered? What models of training and pedagogical practices do they use?*
- *What are the key attributes that define these successful doctoral programs?*

Figure 2: The Doctoral System and its components



Using the analytic model above, this study adopts the perspective that the doctoral system consists of three components defined as follows:

- **The inputs:** This consists of doctoral candidates, recruitment mechanisms, academic staff, and funding/resources).
- **The research environment:** This entails doctoral programs (content, structure, practices, organisation, and pedagogy), regulatory and support structures (policy, services, professional development), and research infrastructure (libraries, ICT, academic networks).

- *How can successful doctoral training models and practices be scaled out horizontally? What opportunities can be identified for collaboration and synergy building in doctoral training?*

2.1: Introduction

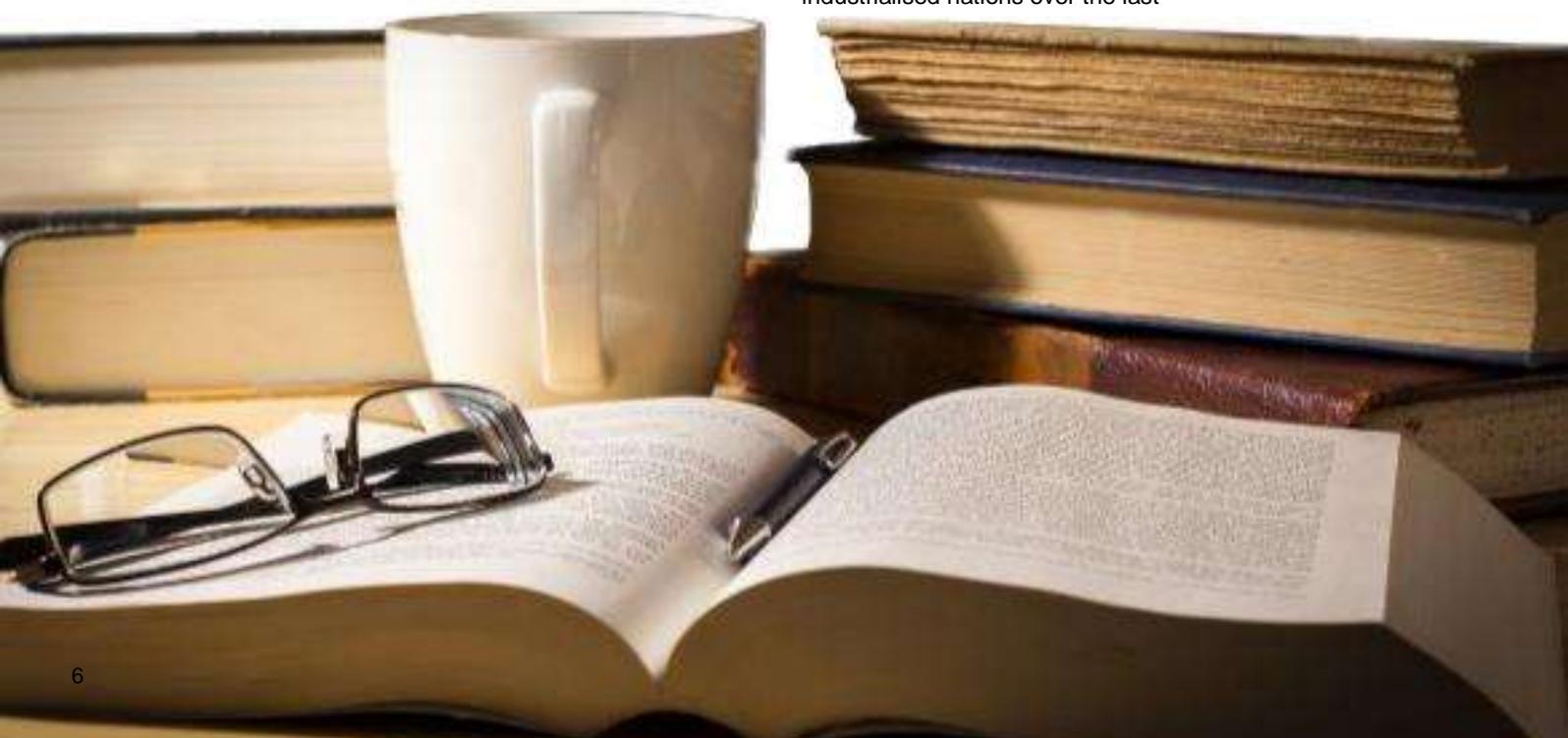
There is now little dispute worldwide that higher education and the knowledge it produces is a leading instrument in promoting social development and economic growth (World Bank, 2012). Growing evidence worldwide continues to demonstrate that countries with higher Knowledge Economy Index (KEI) continue to achieve faster economic growth, are more competitive and can consolidate sustained socio-economic development compared those with lower KEI (World Bank, 2012; Hanushek and Woessman, 2006).

This idea is not completely new or unknown to the African continent either. In the period shortly after independence, African founding political leaders clearly recognised the important role that high quality higher education could play in building the social, economic, and political infrastructure of these new nations (Sawyer, 2004). In equal measure, contemporary African higher education institutions have continued to view this historic developmental function as being core to their mission, purpose, and mandate towards the wider African society (Sawyer, 2004; AAU, 2009; Obamba, 2013). And this tendency has seemed to intensify in more recent decades as further evidence continued to accumulate about the complex but strong links between advanced knowledge and economic growth as part of the idea of the knowledge economy (World Bank, 2012; Bloom et al., 2006; Cloete et al., 2011).

The OECD provided the ground-breaking definition of knowledge economies as 'economies which are directly based on production, distribution, and use of knowledge and information' (OECD, 1996, 7). Although the global knowledge economy is a deeply fragmented and contested phenomenon (Stiglitz, 2002; Cloete et al., 2011), it is widely considered that the knowledge produced by the higher education system and the advanced knowledge and skills possessed by its graduates are becoming the most significant determining factors in promoting economic competitiveness and social welfare (World Bank, 2014). Research evidence indicates that knowledge has been the single-most important engine of growth and the driving force of economic performance in OECD countries over the past decades (UIS/OECD, 2003). Countries which have an expanded system of higher education with higher levels of investment in knowledge production and development have higher potential to grow faster in a knowledge economy (World Bank, 2012; Varghese, 2013).

2.2: Doctorate and Knowledge Economy

The growing importance attached to doctoral training and research worldwide over the recent few years can be viewed predominantly in the context of the demands and dynamics of the knowledge economy and knowledge society (European Commission, 2011; Jorgensen, 2012). A broad and prolific body of studies has emerged among the industrialised nations over the last



two decades examining the subject of doctoral training and its relationships with the knowledge economy within the context of national development and economic competitiveness (AEU, 2010; LERU, 2010; EC, 2011). These studies all point to the growing importance of the doctorate in securing a competitive advantage for nations seeking to compete in a global knowledge-driven economy (Mouton, 2011; EUA, 2010). Three clear trajectories of convergence in global doctoral discourse can be isolated from the growing recent literature. The first area of convergence is the discourse of doctoral education as an instrument of the knowledge economy and a driver of strategic economic competitiveness within and among nations.

The emergence of globalisation and the knowledge economies along with their associated dynamics of knowledge commoditisation have led to a fundamental paradigm shift in the way in which knowledge production is organised within higher education systems and how the training and reproduction of future knowledge producers can be most effectively configured (Kehm, 2006; EUA, 2005). Doctoral education is therefore no longer viewed as some individualised and informalised undertaking driven by basic curiosities and neutral pursuit of knowledge for its own sake. Instead, doctoral training and the production of new knowledge are now widely seen as major investments of great strategic and geopolitical importance for a country's economic competitiveness. Doctoral education is therefore viewed as demanding more structured and professionalized governance regimes (Kehm, 2006; EUA, 2010; Mourton, 2012).

The second strand of convergence is concerned with the phenomenal growth in doctoral enrolments and the numbers of doctorate degrees awarded in most countries in the last two decades. The third commonality is the growing emphasis on the importance of collaborative and highly structured doctoral training to ensure higher quality and greater relevance of doctoral education in a context of scarce resources (Kehm, 2006; EC, 2011).

The international discourse around the growing prominence of the doctorate is also concerned with the contribution to and place of the doctoral graduate in the knowledge economy. At least two relatively distinct strands to this debate can be recognised in the literature. The first strand is concerned with the question of capacity development and is generally connected to the task of strengthening the capacity of the university as a knowledge producer. Within this strand, increasing the number and quality of doctorates is considered to be part of the link between high-level research training, knowledge dissemination through research networks and teaching, and creating linkages which contribute to the elaboration of national innovation systems which are considered to drive economic growth and competitiveness (EUA, 2007). The second strand of the discourse relates to the link between advanced knowledge and the wider non-academic labour markets. This is concerned with the idea that doctoral training is increasingly seen as a vital

mechanism for the production of specialist knowledge, talent, and skills required to drive productivity and competitiveness within the wider economy beyond narrow boundaries of the academic sector (EUA, 2005, 2010). This latter view is more closely connected with the idea of knowledge societies or knowledge economies which are understood to be dominated by the production, diffusion, sharing, adaptation, and use of new knowledge within a collaborative and dynamic context as outlined earlier (LERU, 2010).

2.2: Harmonisation and Professionalisation

There is also a growing sub-family of policy literature produced predominantly within Europe and other Europe-based transnational agencies over the last decade. This strand of literature has consisted of policy documents and protocols and has distinctively focused on defining and conceptualising the core features, meanings, and purposes of doctoral education; developing its professional codes of practice, and establishing common quality assurance protocols and standards that are required to apply across European higher education institutions (LERU, 2010; EC 2011; Bologna Process, 2003). The most significant and widely known European initiatives in this category include the Lisbon Strategy (2000) and the Bologna Process (1999) which both contributed to the establishment of a harmonised higher education and research landscape across Europe.

Whereas both the Lisbon and Bologna instruments focused on the first and second cycles of the higher education system (bachelors and masters), the subsequent Berlin Communiqué (2003) broke a new ground by expanding the scope of the Bologna Process to include doctoral education as a distinctive third cycle within European Research Area (Kehm, 2006). This emphasises the growing interest in advanced research training and knowledge production. These instruments also provide the clearest framework for governing and strengthening quality assurance and supervision practices in doctoral training across Europe. The inclusion of doctoral education into the jurisdiction of formal Europe-wide regulation and control represent a significant part of the modernisation of doctoral training. It also signals the growing professionalisation, standardisation, and formalisation of its governance regimes and practices (Jorgensen, 2012; Kehm, 2006).

2.3: More or Fewer Doctorates?

A more recent stream of discussion has its basis on the claim that there could be an over-supply of and diminishing demand for doctoral graduates in most doctoral training systems around the world, particularly within the academic labour market (Cyranoski et al., 2011; Hacker and Dreifus, 2011). The Postgraduate Research Experience Survey in the UK (Bennet and Turner, 2013) show that doctoral graduates are now more widely scattered, with only 45% being absorbed within academic research and teaching. In the US, universities produced more than 100,000 doctorates between 2005 and 2009,

yet only about 16,000 professorships became available during that period (Hacker and Dreifus, 2011). The overall pattern emerging across most of the industrialised countries is that the volume and rates of doctoral graduate production are sufficiently high to provide for a more complex and diversified landscape of academic and non-academic markets (LERU, 2007; 2010). The focus in Europe therefore tends to be on strengthening quality assurance standards, creating interdisciplinary and collaborative arrangements for doctoral training, establishing common frameworks and standards to allow for harmonisation, greater cross-border mobility, and effectiveness in the development, management, and delivery of doctoral training programmes (LERU, 2010; EUA, 2010, CODOC, 2012, QAA, 2014).

A key part of this strand of thought is that high quality doctoral training should create flexible structures and opportunities for developing transferable employability skills and generic professional competencies that prepare doctoral graduates for employment within both the academic and non-academic sectors (Kehm, 2006). Nerad (2004) and Nerad and Heggelund (2007), writing about American doctoral space, have argued forcefully that one of the most serious weaknesses of the American doctoral training is that doctoral graduates are narrowly trained with a focus on the academic workforce and have few transferable competencies and little interdisciplinary knowledge required for employment in the non-academic and third sectors of the economy.

The authors make a strong pitch for more broad-based interdisciplinary training incorporating significant opportunities for transferable skills development, mobility, and collaborative interfaces with the public, private, and third sector actors across a range of domains. This global uncertainty about the need for more or fewer doctorates as well as the nature and purposes of the knowledge and competencies that doctoral graduates (are supposed to) possess is directly relevant to the African context (Cloete et al., 2015).



2.4: Doctoral Initiatives: International Landscape

As sketched above, doctoral training is now regarded as a matter of strategic interest and subject to substantial investment, harmonisation, and professionalised management (Kirkland and Ajayi-Ajagbe, 2013; Sadlak 2004). A wide range of different quality assurance initiatives have been developed in Europe and North America over the last two decades to establish frameworks and common standards of practice for higher quality doctoral training.

In Europe, this work has been spearheaded largely by European-level inter-governmental bodies in the first instance as well as transnational professional associations and consortia. European Association of Universities (EAU), the League of European Research Universities (LERU), and COIMBRA Group are examples of the leading trans-organisational actors involved in streamlining, elaborating, and structuring doctoral education on the continent. National level initiatives are also being implemented in various countries across parts of Europe to professionalize and standardise the governance and practice of doctoral education, notably in the United Kingdom (Parks, 2005; Quality Assurance Agency, 2011; 2014) as well as in the Netherlands, Germany, and elsewhere (Kehm, 2006; Sadlak, 2004).

The EAU's Council for Doctoral Education, at their 2005 conference in Salzburg, produced a set of common guidelines for doctoral training that came to be known as the Salzburg Declaration (EAU, 2005). The Salzburg Declaration is widely regarded as the very first and most outstanding attempt at establishing a set of key principles for more innovative and high quality doctoral training. The Declaration consists of the Salzburg Principles, a set of ten principles believed to be critical and necessary for developing high quality doctoral training that is fit for purpose and adequately responsive to the changing and complex demands of a competitive knowledge-intensive economic order (EUA, 2005). In summary, the Principles are concerned with the purposes of the doctorate, the need for institutionalised strategies, the importance of supervision, collaboration, and mobility, as well as the need for stable funding. The box below outlines the details of the ten Salzburg Principles.

The ten Salzburg principles have been further extended, consolidated, and enriched by the EAU during their second round of consultations at Salzburg in 2010 that resulted in the Salzburg II Recommendations; these represent a more concrete and nuanced articulation of the initial ten Salzburg principles. The Salzburg II Principles and Recommendations (EAU 2010) are widely endorsed and arguably considered the most comprehensive set of guidelines on doctoral training that exist worldwide. They cover the nature of doctoral training, its structure and organisation, as well as the optimum conditions for success in the establishment of high quality doctoral training.

Box 1.0 below provides a more detailed outline of the Salzburg Principles.

Conclusion and Recommendations from the Bologna seminar on 'Doctoral Programmes for the European Knowledge Society'

(Salzburg, 3-5 February 2005)

- i. **The core component of doctoral training is the advancement of knowledge through original research.** At the same time it is recognized that doctoral training must increasingly meet the needs of an employment market that is wider than academia.
- ii. **Embedding in instructional strategies and policies:** university as institutions need to assume responsibility for ensuring that doctoral programmes and research training they offer are designed to meet new challenges and include appropriate professional career development opportunities.
- iii. **The importance of diversity:** The rich diversity of doctoral programmes in Europe – including joint doctorates – is a strength which has to be underpinned by quality and sound practice.
- iv. **Doctoral candidates as early stage researchers:** should be recognized as professionals – with commensurate rights – who make key contribution to the creation of new knowledge.
- v. **The crucial role of supervision and assessment:** in respect of individual doctoral candidates, arrangements for supervision and assessment should be based on a transparent contractual framework of shared responsibilities between doctoral candidates, supervisors and the institution (and where appropriate including other partners).
- vi. **Achieving critical mass:** doctoral programmes should seek to achieve critical mass and should draw on different types of innovative practice being introduced in universities across Europe, bearing in mind that different solutions may be appropriate to different contexts and in particular across larger and smaller European countries. These range from graduate schools in major universities to international, national and regional collaboration between universities.
- vii. **Duration :** doctoral programmes should operate within an appropriate time duration (three to four years full time as a rule).
- viii. **The promotions and innovative structures:** to meet the challenge of interdisciplinary training and development of transferable skills.
- ix. **Increasing mobility:** doctoral programmes should seek to offer geographical as well as interdisciplinary and intersectoral mobility and international collaboration within an integrated frame work of cooperation between universities and other partners
- x. **Ensuring appropriate funding:** the development of quality doctoral programmes and the successful completion by doctoral candidates requires appropriate and sustainable funding

In 2011, the European Commission also captured the Salzburg Principles and developed a set of seven principles for innovative doctoral training in the framework of the European Research Area. In their Report of Mapping Exercise on Doctoral Training in Europe (EC, 2011), the EC provides a more precise and consolidated set of seven principles that can be easily extended and adapted to provide a clear and flexible framework for high quality doctoral training in diverse educational and national contexts. These seven EU principles were distilled from a series of earlier blueprints, including the ten Salzburg Principles (EAU, 2005) and Salzburg II Recommendations (EAU, 2010), as well as good practices in Member States and the Marie Curie experience. The EC's seven

Principles of Innovative Doctoral Training are articulated as follows (European Commission, 2011):

- promoting research excellence;
- developing an attractive institutional environment;
- encouraging interdisciplinary research options;
- promoting exposure to industry and other relevant employment sectors;
- incorporating international networking and mobility;
- developing transferable skills training; and maintain a focus on quality assurance

Figure 3: The European Commission Principles of Innovative Doctoral Training (Salzburg)



Although these Seven Principles have been developed to guide doctoral training with the highly developed European doctoral context, it has been widely acknowledged that they can be extended or adapted to form a useful foundation and benchmark for building more effective and innovative doctoral programs in other contexts outside Europe. However, these principles need to be handled with caution when institutions outside Europe are considering adopting these principles as a basis for organising and restructuring their own doctoral training systems (Cross and Backhouse 2014). A recent evaluation report of the implementation of these principles across different parts of Europe itself highlighted the important role of the structure and hierarchy of these principles (the fact that they are not all equally important), the interrelations and interactions among the

principles, as well as the dynamics and impact of local context of implementation in terms of economic structure, policy systems, funding regimes, and culture (IDEA, 2015). Taking into account all these new critiques into the original principles, the IDEA report suggested that the seven principles should be divided into “basic principles” (research excellence, quality assurance, and attractive research environment) and “surrounding principles” which would comprise the other four principles. The evaluation report emphasized that “both quality assurance and an attractive research environment are seen as the building blocks for research excellence” (IDEA, 2015, p.58), indicating that these three principles are intertwined and are at the core of the doctoral system. The resulting conceptual framework is shown in the diagram below.

Figure 4: Reformulated Salzburg Principles (Extracted from IDEA 2015, p. 58)



The new insights arising from this report suggest clearly that transferring these seven doctoral principles to the African context is not a straightforward undertaking. Instead it would require elaborate and careful consideration of the diverse contexts of implementation as well as the relative weight that different stakeholders attach to the various principles in their own order of local priorities and conditions. Cross and Backhouse (2014) have suggested a useful framework that might form a starting point for domesticating the European principles into the African doctoral context and circumstances. According to this framework, evaluating or organising doctoral programs is viewed as consisting of six key elements that answer various questions or issues regarding doctoral training within a specific local context. The elements include: expected outcomes (what for?); curriculum (what?); structure (when and where?); candidates in context (who for?); resources and funding (how?); and partnership opportunities (how?) (Cross and Backhouse, 2014).

Some of these elements, such as partnership opportunities and funding seem to bear some direct resemblance to the Salzburg Principles. The rest of them represent the most basic factors that one would generally consider when designing or evaluating any educational program at any level. In some sense, these elements do not necessarily or readily articulate how universities may construct higher quality doctoral programs nor identify some of the key features that such doctoral programs should incorporate. Compared to the Salzburg Principles, the latter seems to provide more clarity on what features would characterise a high quality doctoral training system and programs. Nevertheless, the framework suggested by Cross and Backhouse (2014) is significant and useful in terms of the sets of questions they set forward to be considered as part of the doctoral organisation and evaluation process. The figure below captures these questions and elaborates on the six elements of the analytical framework.

Figure 5: Expanded Framework for evaluating PhD programs in Africa (Cross and Backhouse, 2014)



A range of different stakeholders in Europe and North America have also demonstrated interest in re-imagining, restructuring, and revitalizing the doctorate (Sadlak 2004). Some key actors in this regard include the League of European Research Universities (LERU), which has produced a growing body of publications on doctoral training, including an incisive position paper describing its vision and goals for European doctoral training beyond 2010 (LERU, 2010). The LERU position paper mirrors many of the Salzburg Principles, including an emphasis that doctoral training should prepare candidates to take up roles in driving complex changes in society, both within and outside the academia.

The COIMBRA Group of universities has also made a substantial contribution in describing the essential requirements for doctoral training and for the PhD degree; defining standards for the independence of research, supervision, duration of study; and quality assurance among other critical aspects of doctoral training. All these initiatives, among other national-level and program-based examples, clearly suggest that Europe has over the last decade embraced doctoral research training into its broader harmonization, professionalization, and standardisation agenda while inserting the doctorate into the core of the broader project of the European knowledge economy (EUA, 2010).

2.5: Doctoral Initiatives beyond Europe

Doctoral strengthening and harmonization initiatives have been observed as well across and beyond the Atlantic. The US Council of Graduate Schools, the European University Association, the Canadian Association for

Graduate Studies, the Deans and Directors of Graduate Studies (Australia), and the Association of Chinese Graduate Schools jointly agreed in 2007 to establish the Banff Principles on Graduate Education. The nine Banff Principles encompass both masters and doctoral programs and include the development of global career competences, stimulating stakeholder engagement, developing high quality graduate programs, and promoting innovative international collaborative postgraduate programmes (US Council of Graduate Schools 2007).

In a related recent development, a joint commission set up by the US Council of Graduate Schools (CGS) and Educational Testing Service (ETS) also produced an extensive report “The Path Forward, The Future of Graduate Education in the United States” (USCGS and ETS, 2010). The report outlines the challenges facing the otherwise successful US doctoral training system. The recommendations include the need to provide transferable employability training for US doctoral candidates. Taking all these European and transatlantic doctoral initiatives altogether, areas of convergence can be identified.

These include the focus on quality assurance of programs, the value of collaboration, the critical importance of developing professional and transferable skills, and the need for common standards and guidelines for high quality doctoral training. It can be argued that, in terms of scope and substance, the examples of doctoral strengthening and harmonization initiatives within the Europe are clearly more comprehensive, innovative, and radical in their nature compared to similar initiatives in North America and elsewhere.



2.6: The Doctorate in Africa

On the African continent, the interest in the doctorate as a field or subject of academic inquiry seems relatively more recent compared to both Europe and North America, but the growth in interest has been remarkably rapid. The literature examining the African doctorate is only beginning to emerge since 2000, and a large proportion of this research is located in and focusing on Southern Africa (Mouton, 2012) or at least the countries covered by the SARUA consortium (Kotecha, 2011).

Doctoral education research in other parts of Africa has received relatively less or sporadic scholarly attention (Timm, 2011). Discussions of doctoral training in Africa has generally been framed within a discourse of crisis, deficit, and uncertainty (Mouton, 2012; Cloete et al., 2015). For instance, during 2013 alone, University World News (UWN) published more than 30 articles on the doctorate in Africa, covering issues as diverse as the need for more or fewer PhDs, the importance and irrelevance of the doctorate in the knowledge economy, competition for and wastage of doctoral talent, international mobility and changing models of PhD programmes (Cloete et al., 2015).

2.6.1: Shape and Size

The fragmentation and scarcity of studies on doctoral education in Africa mean that Africa suffers a severe lack of complete and accurate data on doctoral education. The only exception to this malady is South Africa and SARUA region. This has made it considerably difficult, if not impossible, to paint a coherent portrait of the shape

and size of African doctoral landscape. This attempt to sketch out the dimensions of doctoral education in Africa relies on varied and sporadic studies and datasets from different isolated countries and hence bound to similarly incomplete and fragmented. Doctoral education in Africa is characterised by a dominant discourse of multiple permutations of crisis, deficit, and dislocation (Bawa, 2008, Mouton, 2012). The compelling narrative is that the African doctoral system is not producing adequate numbers of PhDs and is not doing so at a sufficient rate to meet new challenges (Mouton and Cloete, 2015). The quality of doctoral training in African universities and the resulting graduates have also come under question in recent years and become the subject of considerable debate and concern (Cloete et al., 2015).

Low doctoral production levels in African universities is widely acknowledged despite the inadequacy and incompleteness of data on all areas of doctoral education. Some good recent estimates showed that graduate enrolments between 1997 and 2007 were a total of 169,275 graduate students studying for master's degrees and PhDs, accounting for 6.9 percent of the total enrolment in all universities.

This figure increased by nearly 74% to hit 294,339 (9.3 percent of the total enrolment) between 2010 and 2013. The estimates show that approximately 20 percent of this total graduate enrolment were studying at the PhD level, which is far smaller compared to the master's level enrolments (Hayman and Ncayiyana, 2015). The SciDev has also put together some data on doctoral enrolments in a selection of African countries between 2005 and



2011. As expected, the data is generally incomplete and there are several gaps across countries and for different years.

No country on this SciDev list has a complete set of data for the entire three time periods for which data was compiled. In 2005, for example, Ghana had a total of just 226 enrolled PhD students (10 PhDs/ 1 million population), Kenya had 7,571 (211 PhDs/million), Nigeria with 8,385 (60 PhDs/million), and Tanzania 3,318 (85 PhDs/million). To put this into perspective, the USA and South Korea had 384,577 (1,301 PhDs/million) and 41,055 (852 PhDs/million) PhD enrolments in 2005 respectively. In 2011, the data shows that PhD enrolments in Ghana had risen to 721 students. No data is available in 2011 for the other countries. It is important to further recognise that these PhD enrolment figures do not say anything about PhD graduation rates or length of time to completion. Nothing is known still about the quality and effectiveness of the doctoral programs or the PhD graduates produced. A complex admixture of structural, contextual, and operational factors are implicated in Africa's low capacity to produce higher numbers of doctoral graduates.

Due to Africa's low Higher Education participation rate of only 5.2%, universities on the continent have a relatively smaller pool of students who can potentially proceed on to PhD programs, compared to other countries such as China who have participation rates of up to 90%. The narrow pool syndrome is compounded by the pipeline effect whereby master's enrolments are growing exponentially whereas PhD enrolments remain significantly low, stagnant, or decline altogether (Bunting et al., 2014; Mouton and Cloete, 2015; Hayman and Ncayiyana, 2015). The HERANA study conducted in 8 flagship African universities reported that the total master's enrolments in the eight universities more than doubled from 9,625 in 2001 to 25,652 students in 2011. During the same period PhD enrolments grew from 1,165 in 2001 to only 2,584 student in 2011 (Bunting et al., 2014). These figures indicate that Master's enrolment grew at 10% per annum whereas PhD grew by only 8% per year.

However, within individual universities, the growth in master's enrolments is more dramatic. In 2007, University of Dar es Salaam, for example, had 2,165 masters' students while PhD enrolment was only 190. At the University of Nairobi, Master's enrolment soared by 92% from 6,145 in 2007 to 11,807 in 2011. Eduardo Mondlane University saw Master's enrolment numbers expanding from 420 to 1,295 during the same period, representing a growth of 208% (Bunting et al., 2014). The same period saw significant differences between Master's and

doctoral graduations across the eight universities. The total master's graduation numbers tripped from 2,268 in 2001 to 7,156 in 2011, whereas the total number of PhD graduates for all the 8 universities grew from 154 to 367 over the same period (Cloete and Bunting, 2014).

The overall picture is that African universities produce fewer doctorates as a proportion of the total population compared to other countries with comparable levels of economic development. Mouton and Cloete (2015) estimated that in 2007 South Africa produced just 26 PhD graduates per million population, whereas Portugal produced 569 PhDs per million and Korea 187 PhDs per million. A recent report on Kenya's higher education provides a more complete picture of the doctoral landscape in Kenya (CUE, 2016). This comprehensive report reveals that Kenya has a total of 7,146 PhD enrolments in 2016, of which 4915 are males and 2,231 are females. If the earlier SciDev figures are accurate, then the CUE statistics might indicate that total PhD enrolment in Kenya has declined slightly from 7,571 in 2005 to 7,146 in 2016. The CUE report further indicates that Kenyan universities have a total of just 5064 academic staff who are PhD degree holders, which translates into just 34% of total number of academic staff.

The most recent Statistical Yearbook for Rwanda (Government of Rwanda, 2016) illustrates similar patterns of low doctoral enrolment amidst spiralling master's degree enrolments. The Yearbook shows that in 2015 universities in Rwanda had a total enrolment of 3,948 students in master's degrees (4.6% of total), whereas there were only 169 students enrolled



on PhD programs (0.2% of total enrolment). Other grim statistics from the report indicate that the Rwandese universities had a total workforce of 4,049 academic staff out of which only 16% were PhD holders (Government of Rwanda, 2016, pp.75-80). Overall, it is extremely rare to find reliable national-level data of postgraduate enrolments in African countries, hence Rwanda and Kenya are among the very few exceptional examples outside of Southern Africa.

2.6.3: The “Quantity” Discourse

The doctoral debate in Africa is quite different and only remotely linked to the mainstream issues and patterns observed in European doctoral debates and studies as discussed in the earlier sections. Over the past decade of its short existence, doctoral research in Africa has continued to elude precise understanding and description due to the persistent absence or incompleteness of critical statistics on doctoral education (Mouton, 2012; Hayward and Ncayiyana, 2014; Cloete et al., 2015). It is hardly too far-fetched therefore to claim that no one is currently in possession of complete and accurate data on the number of doctoral enrolments or completions for any African country, with the exception of South Africa where most of the doctoral studies have been concentrated.

Partly due to this scenario, doctoral discussion and research in Africa has been preoccupied with a singular focus on the quantity of people holding doctoral degrees and whether they were being produced fast and efficiently enough to replenish the dwindling stock of senior faculty and Africa’s aging professoriate (British Academy, 2012; Tetey, 2010). A large proportion of existing studies on the

doctorate in Africa has been concerned primarily with quantitative measures including enrolment numbers, completion rates, numbers of faculty with doctorate degrees, how long it takes to complete the doctorate, and similar kinds of directly measurable parameters. This narrative is often framed within the broader structural challenge of producing and retaining the next generation of senior academic staff in most African universities (Tetey, 2010; Malet, 2013).

The crisis of academic capacity to train and supervise doctoral candidates continues to dominate the discussion, with large numbers of existing

doctoral programs in many African universities lacking sufficiently qualified faculty to teach or supervise doctoral candidates (Harle, 2010; Mouton, 2012). A recent study conducted by HERANA embracing 8 flagship universities across sub-Saharan Africa revealed significantly low and varied proportions of academic staff holding doctoral degrees (Bunting et al., 2014). The proportions ranged from a low of 17% at Eduardo Mondlane University in Mozambique; 45% each at the University of Dar es Salaam and Kenya’s University of Nairobi, through to University of Botswana with 65% at the highest end of the spectrum (Bunting et al., 2014). Harle (2010) also reported a substantial lack of faculty with doctoral degrees in his recent scoping study of postgraduate programs in 31 universities across 6 African countries.

A substantial number of Southern African-focused studies have examined issues around doctoral enrolments, graduation patterns, policy of doctoral programs (Kotecha, 2011; Bunting and Sheppard, 2012; Cloete, Mouton and Sheppard, 2015). Only a relatively small number of studies have focused on doctoral studies at universities in other parts of Africa (Timm, 2011). The International Association of Universities (IAU) study focused on doctoral enrolments and completions in Rwanda, Kenya, Nigeria, Benin, Cameroon, and Senegal (IAU, 2011). The HERANA study (Bunting et al., 2014) covered eight flagship universities across Kenya (Nairobi), Ghana (University of Ghana), Nigeria (Ilorin), Tanzania (Dar es Salaam), Mozambique (Eduardo Mondlane), Botswana (University of Botswana), Uganda (Makerere), Mauritius (University of Mauritius), and South Africa (Cape Town).

These doctoral studies were largely focused on the quantitative measures of doctoral education, such as enrolments. It seems clear that the biggest challenge dominating doctoral discourse in Africa is how to develop and expand doctoral production while managing the rapid growth in undergraduate and master’s level enrolments within the context of a severely depleted knowledge infrastructure, inadequate supervision capacity, poor funding opportunities, and over-stretched academic capacity (Cloete et al., 2011; British Academy, 2012).

However, it is important to recognize that the doctoral crisis in Africa seems to stretch beyond merely increasing the numbers of academic faculty holding doctorate degrees or even the numbers of candidates completing their doctoral studies. There is no dispute that increasing the number of PhDs is likely to promote economic development; however, it is not enough in itself (Friesenhahn, 2014). Many commentators have observed that the quality and under-preparedness of most doctoral candidates would remain a much bigger challenge even if supervisors with doctorate degrees were provided in sufficient numbers (Bates et al., 2011; Cloete et al., 2015; Boughey and McKenna, 2013).

A study of PhD production in China reported that while the numbers of PhDs had increased exponentially, the quality of doctoral training has continued to deteriorate (Cyranoski, 2011). This is a reminder that the quality,



organisation, and relevance of doctoral programmes is also a fundamental matter to consider, not least because the quality of the doctoral graduates cannot surpass the quality and integrity of the doctoral programme that produced them in the first instance.

Friesenhahn (2014) has captured this situation most strikingly, observing that “the quality of higher degree programmes and their relevance for Africa’s challenges are a problem most African governments need to tackle in their approach to expanding doctoral education”. Morton and Cloete (2013) also drew attention to the importance of supervision as the most critical element for quality doctoral training and suggested that the lack of supervision capacity in Africa presents “the most serious threat” to quality doctoral production.

All these issues point to the importance of putting in place robust and transparent mechanisms for recruiting and inducting doctoral candidates, ensuring that candidates admitted into doctoral training programs are of the highest quality; adequate supervision and teaching capacity is available, as well as developing attractive research environments which stimulate and consolidate excellence in doctoral training (Mouton and Cloete, 2013; Cross and Backhouse, 2014). In short, the African doctoral debate has reached a critical time where a paradigm shift from the quantity discourse to a deeper and more discerning narrative is required and is perhaps gradually beginning to emerge.

2.6.2: The “Revitalisation” and “Structuration” Discourse

The few recent years have seen a new turn in the discourse of doctoral education and doctoral research in Africa. The debate in Africa is gradually shifting and broadening to embrace a focus on revitalizing and promoting the quality and effectiveness of doctoral training, strengthening its structure and organisation, and attempting to make it more relevant to socioeconomic priorities and problems facing African societies (ASSAf, 2010; Cloete, Mouton, and Sheppard, 2015). This body of studies is still relatively small and in its infancy. Perhaps the largest and most comprehensive doctoral research project in this emerging category is the study completed by the Academy of Science for South Africa (ASSAf, 2010). The mammoth study consisted of multiple components covering a broad spectrum of critical issues ranging from profiles and experiences of doctoral students, doctoral attrition patterns, system blockages, graduate destinations, institutional capacity to deliver and fund doctoral training, through to policy analyses and case studies of exemplary doctoral programs in South African Universities.

Although also partly focused on the “quantity” of doctoral training on the continent, the ASSAf study drew out a wide range of key findings that lie beyond the traditional quantitative paradigm to African doctorate research. One of the most important for our purposes is the finding that the traditional apprenticeship model of doctoral education and supervision is no longer adequate for producing high

quality doctoral training. The study further makes a strong pitch for more formalised, structured, and collaborative models of doctoral training and supervision to meet the new demands being placed upon universities to produce knowledge that will tackle the most complex challenges facing modern African societies (ASSAf 2010). Conclusions concerning the urgent need for more structured and collaborative doctoral training and supervision have been drawn by several recent literature in Africa (such as Boughey and McKenna, 2013; Aryeetey, 2013; Cross and Backhouse, 2014).

Collaborative programmes such as CODOC (Jorgensen, 2012) and African-Spanish Higher Education Platform (ACUP, 2012) have also completed studies examining the changing doctoral landscape in various African countries, with CODOC covering the 15 SARUA member countries while ACUP focused on six countries: Mozambique, Ethiopia, Cameroon, Madagascar, Angola, and Senegal. This body of studies draw a range of different findings and conclusions regarding doctoral training in Africa. The ACUP study, for example, highlighted a range of deficits, including the lack of coherent policy frameworks for doctoral training in most sub-Saharan African countries; inadequate opportunities for collaborative doctoral training and mobility initiatives; as well as the fact that doctoral candidates in African universities lack international exposure and undergo fragmented training environments and practices that do not provide for the development of professional, organisational, and managerial competencies required for a changing labour market (ACUP, 2012). Similar issues and themes have emerged from another handful of studies.

An evaluation study of the PREPARE-PhD initiative involving three universities in East Africa (Timm, 2011) arrived at a wide range of important findings and recommendations. Crucially, the report presented evidence that doctoral candidates in the three universities were generally deficient in disciplinary content as well as key aspects of academic practice such as knowledge production, teaching, and dissemination. Citing supervisors and PhD students, the report emphasized that “in order to promote efficiency and effective PhD studies there is a huge need for many students to get access to coursework activities”. The study draws key recommendations including: more efficient tracking of candidate progress, better and more strategic management and use of critical data about various aspects of doctoral training, continuous professional development of supervisors, and creating of virtual communities and platforms where doctoral students can collaborate, exchange ideas and generally develop a sense of community and belongingness which is often a big challenge in the doctorate (Timm, 2011).

Mouton (2012) has completed significant research looking at the changing doctoral landscape in Africa in terms of the organisational, policy, and structural weaknesses of doctoral training systems in most African universities as well as emerging opportunities. Mouton has characterised the broader structural and systemic



problems facing doctoral education in African in terms of the processes of de-institutionalisation, casualization, and individualisation (Mouton, 2012; Cloete et al., 2015). According Mouton's analysis (Mouton, 2012), de-institutionalisation and individualization are interconnected processes driven by the lack of research infrastructure (strong research centres with a critical mass, sustained funding, and institutional continuity) which then leads most scholars to end up engaging in research projects and consultancy initiatives that are often episodic, disjointed, non-cumulative, non-collaborative, individualised, and therefore have little capability or vision to contribute to the building of sustainable institutional research capacity or coherent clusters of research excellence which can serve as platforms for developing doctoral research and training.

A similar tendency is observed in the continuing predominance of 'individualised' or 'apprenticeship' model of doctoral training whereby an isolated doctoral candidate engages in largely unstructured independent research activity under the guidance of a singular supervisor without access to coursework or generic competency training (Szanton and Manyika, 2002; Cross and Backhouse 2014). This model would then result in doctoral students having a generally fragmented and superficial experience of the doctoral training process and being generally disconnected and excluded from the research communities within and outside their own departments and universities (Kehm, 2006; Aryeetey, 2013; Boughey and McKenna, 2013).

Casualization, on the other hand, is applied to describe the fact that doctoral studies in most African universities is regarded as a casual or part-time engagement rather than a full-time academic venture, with most candidates being relatively older and already established in full-time employment for their own economic survival (Mouton, 2012; Backhouse, 2009; Cross and Backhouse, 2014). The casualisation of doctoral training is widely linked to widespread lack of mechanisms and opportunities for funding doctoral studies in most African countries which leads to over-dependency on research funding and

programmes from international sources which often tend to be short-term, fragmented, and not necessarily consistent with or supportive of existing institutional research priorities and capacities (ASSAf 2010; Cloete et al., 2011; ACUP, 2012). Casualisation is further fueled by the reality that most doctoral students are self-funding through full-time employment and are vulnerable to financial difficulties and predisposed to low levels of commitment to their studies.

Unlike in Europe and other parts of the developed world with well-established and highly evolved doctoral training cultures and structures, Africa still lacks common frameworks and codes of practice governing the organisation of doctoral training in terms of recruitment, curriculum, structure, quality assurance, and supervision (ACUP, 2012, Cross and Backhouse, 2014). This absence of mutually accepted frameworks has led to increased fragmentation and variation in doctoral training across and within Africa countries and universities, contributing to or compounding the casualisation crisis.

The doctoral problem in Africa is also often compounded by superficial understanding of its magnitude, over-reliance on declarations instead of coherent policymaking, and general lack of consensus and commitment around what needs to be done to revitalise doctoral research training on the continent (Cloete, Mouton, and Sheppard, 2015, p.10.). Literature on the doctorate in African universities is still largely preoccupied with the idea that doctoral training is aimed primarily at producing skilled knowledge practitioners for teaching and research roles within the academic market (British Academic, 2009; Tettey, 2010). Unsurprisingly therefore, unlike in Europe and North America, there seems to be relatively limited discussion around the wider role of doctoral training in producing professionals with skills and knowledge to drive productivity within the wider non-academic marketplace as part of contributing to the knowledge economies and societies of African countries (IAU, 2011). This paradigm shift in doctoral education is still relatively rare in the African context and is gradually becoming the focus of a large proportion of recent collaborative doctoral initiatives discussed in more detail below.

03

Collaborative Doctoral Initiatives in Africa

3.0: Introduction

Recent years have seen a new pattern of increasing structural elaboration and ‘thickening’ in the organisation and management of doctoral research and training programs in many parts of the world (Sadlak, 2004; EUA, 2010), including more recently in Africa (Mouton, 2012; Louw and Muller, 2014). Growing numbers of universities increasingly develop structures and processes for a more efficient management of their doctoral training programs. However, these trends are mostly incomplete, uneven, and vary within and across countries, universities, and even departments within the same university (IAU, 2010; Cloete et al., 2015; Jorgensen, 2012).

There is a small but growing number of innovative regional initiatives and collaborative programmes which tend to provide mechanisms for more structured and cross-national doctoral study on the African continent. Mouton (2011, 2012) describes this trend in terms of a paradigm shift in doctoral training from the traditional “thin” approach toward a “thicker” model, which represents a more elaborate and formalised model of organising doctoral training programmes. The thick approach consists of relatively more structured and transparent recruitment requirements, introduction of formal coursework, structured research proposal development and dissertation work, formalised joint supervision, and a requirement for publishing journal articles before graduation (Louw and Muller, 2014).

A large proportion of these collaborative initiatives have involved universities in Southern Africa at the expense of universities elsewhere across the continent. Northern Africa is the least engaged region at least concerning the current collaborative initiatives. In the next section, we review some of the major examples of well-established innovative approaches to doctoral training in Africa with a focus on identifying best practices and innovative breakthroughs that have high potential for transfer and scale-up. The leading collaborative initiatives in terms of scope and coverage include the African Economic Research Consortium (AERC), Consortium for Advanced Research Training in Africa (CARTA), African Centres of Excellence (ACE), RUFORUM, and Regional Initiative on Science and Education (RISE). Other notable initiatives include LEADHER (Leadership Development for Higher Education Reform), USEPHiA (University Science

Humanities and Engineering Partnerships in Africa), PANGeA (Partnership for Africa’s Next Generation of Academics), ARUA, and DocLinks.

3.1: African Economic Research Consortium (AERC) Program

The AERC collaborative doctoral programme was established in 2002. The initial proposal and rationale for establishing a collaborative doctoral program within the AERC had been elaborated in a report published five years earlier (Fine, 1997). The aim of the AERC joint doctoral programme is to strengthen capacity for economic research, analysis, and expertise within the African continent through the development and delivery of an innovative and relevant collaborative PhD training model that focuses on and utilises African tools, African problems, African data, and African epistemologies and frameworks that offer the best chance of tackling real-life economic challenges facing the continent. It also aims to promote the development and retention of high level expertise in economics and public policy in Africa.

A total of 8 universities across 6 African countries have been competitively and equitably selected to participate in the AERC collaborative doctoral program. Unlike other joint doctoral initiatives, the AERC programme is spread equitably across the African continent, covering Southern Africa, Eastern Africa, Anglophone West Africa, and Francophone Africa and with each region having a focal partner university. This regional spread allows for equity and optimization of impact in the selection of partner universities and doctoral students, as well as academic mobility. The AERC doctoral program has had tremendous impact. Between 2002 and 2012, the program had produced 160 doctoral graduates in economics across the 8 partner universities spread in 6 countries (Cross and Backhouse, 2014).

The AERC is structured according to the principle of division of labour and specialisation. Participating universities are categorised as either “host degree-awarding universities” or “non-host degree-awarding universities”. The former category consists of four universities that have been assigned the responsibility of teaching the core courses and administering comprehensive examinations to all students admitted into the collaborative PhD programme. This designation is based on the universities’ demonstrated capacity to

adequately deliver high quality advanced teaching in the core subjects of microeconomics, macroeconomics, and econometrics/quantitative methods. This category of universities includes University of Cape Town, University of Dar es Salaam, University of Ibadan, and University of Yaoundé II. The non-host degree-awarding universities, on the other hand, do not teach the core course. Their role is to recruit doctoral students and send them to the regional host universities to attend advanced core courses and thereafter participate in the Joint Facility for Electives (JFE) to undertake the elective courses. The non-host universities also coordinate supervision and production of doctoral theses and award of degree to successful candidates. Four regional universities are in this category: University of Witwatersrand, University of Nairobi, University of Benin, and Université Félix Houphouët-Boigny (Cote d'Ivoire).

The overall structure and organisation of the AERC doctoral program demonstrates some innovative practices that are worthy of note. First, the regional distribution of universities and division of labour allows for enhanced mobility and interaction among doctoral students and academic experts across the various partner institutions. The use of a collaborative model among a consortium of leading universities across different regions of the continent allows the AERC to develop a sustainable critical mass of researchers consisting of doctoral candidates and international experts working together. The presence of a critical mass, together with the synergies created through sharing of human and technical resources across universities, is important in creating a more vibrant research environment that promotes higher quality doctoral training and research (EAU, 2005; 2010; EC, 2011).

Secondly, the integration of advanced coursework in core subject areas of economic ensures that doctoral candidates acquire substantial conceptual and theoretical depth in their knowledge and understanding of discipline. Candidates also receive advanced training in research methods acquired through a structured and supervised program of research and dissertation work. The Joint Facility of Electives component provides doctoral candidates with a unique and enriched community of practice where candidates can interact with local and international experts, develop and consolidate professional networks, and share ideas and experiences within a community of common interests and shared endeavours. Joint doctoral supervision is another innovative practice within the AERC doctoral program. Several recent studies in Africa have pointed out that the traditional personalised apprenticeship model of supervision is far from adequate in ensuring high quality doctoral training in the emerging context of growing pressure for relevance in doctoral education (ASSAf, 2010; Boughey and McKenna, 2013; Aryeetey, 2013).

Structural organisation of the doctorate has gained prominence in discussions of how to improve doctoral training in different parts of the world, including Europe, North America, and Africa. The emphasis seems to be towards a more coherently structured doctoral program consisting of coursework, summative assessments, and independent supervised research and dissertation work. One of the key strengths of the AERC doctoral program is its coherent structure and pedagogical ethos. The first year of the AERC Collaborative PhD Programme is to introduce new doctoral candidates to an in-depth appreciation of the contemporary conceptual, theoretical, and empirical frontiers of knowledge through a series



of intensive core courses taught by African scholars and leading international experts. These core courses are identified beforehand and described in great detail to demonstrate to candidates the aims, scope, and intended outcomes of the courses.

The second academic year of the doctoral programme features the 16-week intensive teaching of the elective courses at the Joint Facility for Electives (JFE) where students mobilise to the JEF venue in Nairobi. The programme provides a wide range of specialist elective topics that students can choose from based on their own areas of research interests. Students are required to select two fields of specializations from among a portfolio of eleven approved elective courses drawn from different branches of economics.

The JEF component also consists of weekly seminars featuring African and international experts that provide an opportunity through which students are initiated and guided in the practical science and art of writing and presenting academic papers through “learning-by-doing” (AERC website). This demonstrates that transferable skills and research training are core elements in the AERC program. A comprehensive summative examination consisting of four papers covering macroeconomics, microeconomics, and two elective courses is conducted at the end of the JEF session when candidates have returned to their respective host institutions. This examination is aimed to encourage students to deepen and consolidate their knowledge and understanding of the advanced concepts and specialist subject matter covered in the core courses and the electives.

Identification of thesis topics and development of research proposals under the guidance of supervisors commences in the third year of study after the comprehensive examinations. Joint thesis proposal workshops are

convened to give candidates an opportunity to elaborate and disseminate their ideas, defend their proposals, and receive constructive feedback from academic experts and fellow students. Third year students proceed to fieldwork to conduct data collection in a process that culminates in the post-fieldwork joint workshop, again featuring local and international experts and consisting of students discussing and interrogating their data collection and analytical processes. The fourth and final year of the collaborative PhD programme is devoted to final thesis write-up and defence at the degree awarding university.

The AERC PhD programme also provides a non-mandatory one-year placements and postdoctoral fellowships on a competitive basis to enable doctoral graduates to spend time at leading regional and international organisations concerned with economics and public policy, such as the World Bank Institute or the African Development Bank Institute. Attendance at international conference is also supported within the AERC programme to expose new graduates to the latest developments and debates in their fields.

Taken all together, this broad portfolio of structured and results-oriented joint events and interactions provide adequate and innovative opportunities for eliminating such deficiencies as lack of coherent coursework, poor thesis supervision capacity, and dislocation from the rapidly unfolding developments and debates within disciplines. The collaborative model further enables students to benefit from exposure to international experts without losing the African experience while at the same time helping to promote capacity building and retention of highly trained doctoral graduates within Africa.

Figure 6: Summary of best practices from the AERC Doctoral Initiative

Collaborative Initiative	Summary of Best Practices
AERC Doctoral Programme	<ul style="list-style-type: none"> • Structured doctorate by coursework and thesis. Core course teaching deepen conceptual and theoretical knowledge • Collaborative teaching and supervision by local and international faculty enhances interdisciplinarity • International mobility promotes professional networks and nurtures communities of practice for students • The concept of teaching and non-teaching universities allows for specialisation and optimal use and building of academic capacity rather than spreading thin. • Sustainable funding through competitive fellowship awards promotes successful and timely completion • Highly competitive and peer reviewed selection process assures attraction of high calibre candidates • Professional development and transferable skills training provided on the programme • Competitive “placement fellowship grant” upon completion provides opportunity for career development and building critical mass of researcher

3.2: Consortium for Advanced Research Training in Africa (CARTA)

Consortium for Advanced Research Training in Africa (CARTA) is a collaborative doctoral training initiative housed within the African Population and Health Research Consortium (APHRC) based in Nairobi, Kenya. Established in 2008, CARTA's doctoral program is aimed at building capacity within Africa for internationally competitive research in the specialist field of population health. The consortium brings together 9 African universities, four African research institutes, and 7 northern partners.

The CARTA doctoral program is interdisciplinary, collaborative, and highly structured to allow for a coherent program of doctoral study consisting of advanced coursework seminars, professional and academic development, and advanced research training. The emphasis on interdisciplinarity and diversity allows CARTA to attract research topics, candidates, and expertise from a wide range of different subject areas, including economics, anthropology, geography, sociology, public health, demography, statistics, and so on.

A core component of the CARTA doctoral program is the 4-week Joint Advanced Seminars (JAS) which are organised in a collaborative and residential fashion; allowing doctoral students "to focus fully on specific program tasks, learn collaboratively, interact with local and international experts, and develop and consolidate professional networks" (CARTA online). The content of the JAS is designed to develop and build academic skills, professional development competencies, and conceptual depth at progressively advanced levels each year.

A total of four JAS sessions are conducted at regular intervals over the 4-year lifetime of the CARTA doctorate program. The first JAS introduces student to core research competencies, interdisciplinary literacy, critical thinking, and technical skills in academic practice. The second JAS covers data management and analysis including the use of analytical software application, giving way to data interpretation and presentation, academic writing, and scientific communication which takes place during JAS 3.

The programme concludes with the fourth JAS which is dedicated to professional development, including a broad range of competencies covering fundraising, grant writing, management of research funds, research management, course development, teaching and management of large class sizes, as well as supervision and mentoring of graduate students. This represents an innovative approach to structured doctoral training

incorporating clearly outlined professional development interventions. There seem to be some areas where the CARTA doctoral model might be found less adequate compared to the AERC model.

First, the coursework component puts emphasis on generic and research skills but does not explicitly identify the advanced topical areas to be taught that could contribute to deepening of conceptual and theoretical understanding for the candidates. The level and scope of student and staff mobility is also limited.

CARTA invests great emphasis and resources on effective doctoral supervision as it sees supervision as the most important factor determining high quality doctoral education and higher completion rates. The CARTA doctoral program applies the practice of joint supervision as way of ensuring that doctoral candidates have access to a diverse range of expertise, academic support, and opportunities for professional development and networking. The traditional apprenticeship model of supervision restricts the student to the knowledge and experience of a single supervisor while isolating the student from a wealth of expertise and experience available within and outside their own departments or institutions (Boughey and McKenna, 2013). To strengthen supervision capacity in a broad and holistic manner, CARTA has developed a range of different interventions to strengthen supervision practice and capacity across the consortium.

The CARTA Research Governance and Management Initiative provides advanced training workshops for supervisors facilitated by local and international experts on doctoral training and supervision. The workshops aim to ensure that CARTA supervisors gain a deep and comprehensive understanding of rigorous and high quality supervision practices and the overall vision and goal of CARTA doctoral program. CARTA's approach to doctoral supervision capacity strengthening is generally holistic and integrated.

As part of this, the consortium also delivers advanced training in supervision to faculty and administrative staff in the partner universities to ensure that there is broad understanding of the importance of supervision, supporting graduate students, mentoring, and effective professional management of research. This is a ground-breaking and multi-pronged approach to supervision capacity development that is rarely seen anywhere else in Africa.

Figure 7: Summary of best practices from CARTA doctoral program

Initiative or project	Summary of Best Practices
CARTA doctoral programme	<ul style="list-style-type: none"> • Structured doctorate with coursework and thesis • Inter-disciplinarity and mobility are integrated into programme. • Collaborative teaching and supervision involving local and international faculty • Provision of sustainable funded fellowships for doctoral study • Rigorous recruitment and peer reviews to assure high quality doctoral candidates on CARTA program • Integrated professional career development and generic skills provided to candidates to promote employability • Joint Advanced Seminars build conceptual deepening, expand professional networks, and nurtures community of practice

3.3: Regional Universities Forum for Capacity Building in Agriculture

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) is a multi-country consortium consisting of some 60 member universities spread across 25 different countries in Eastern, Central, Western, and Southern Africa established in 2004. The aim of the RUFORUM is to strengthen capacity in advanced agricultural research to promote innovation and knowledge transfer mechanisms that support small-holder farmers across target African countries.

The wider goal of these initiatives is to contribute to sustained socioeconomic development and poverty reduction by strengthening the role of agriculture in local and household economies. A key component of the RUFORUM is the regional collaborative PhD program which was designed to contribute toward the realisation of the Comprehensive Africa Agriculture Development Program (CAADP). By all proportions, the RUFORUM is undoubtedly a complex and extensive structure with substantial organisational reach, extensive knowledge production and management capacity, and considerable financial and technical resources.

This imposing organisational character and influence has enabled RUFORUM to organise one of the most prestigious, widely spread, and heavily funded collaborative doctoral programs on the African continent. Between 2004 and 2014, the RUFORUM has awarded over 290 doctoral research grants to support training in agricultural sciences across the consortium of member universities (www.ruform.org). The RUFORUM doctoral programs are designed according to the increasingly preferred thesis and coursework model. Typically, the first year of study is dedicated to advanced coursework teaching drawn from various branches of agricultural science.

The program also includes integration of post-graduate students into existing research projects led by senior faculty and support to students in research methodology

and writing skills. The integration of doctoral candidates into research projects provides unique learning and networking opportunities that jointly contribute to higher level research skill and expertise as well as wider professional and personal development.

The RUFORUM, through its flagship Competitive Grants Scheme (CGS), has developed a broad range of financial support packages to support its portfolio of regional doctoral programs hosted across the 60 member universities of the consortium (RUFORUM Annual Report, 2013-2014). The first and main package is the Doctoral Regional Scholarship which competitively provides a grant of at least USD 65,000 to enable high calibre candidates pursue a 3-4 year doctoral program in a RUFORUM member university outside the candidate's country of residence. Since the scholarship targets university academic staff and requires that the studies be tenable abroad, it can be stated that the RUFORUM supports academic mobility, internationalisation, collaborative engagement, and institutional capacity strengthening by developing new high calibre faculty.

The RUFORUM also provides the Regional Doctoral Research Grant which is made available directly to doctoral candidates on RUFORUM doctoral program who are ready to proceed to fieldwork. In addition, there is also the Doctoral Finalization Support which is designed to assist doctoral candidates on RUFORUM doctoral programs to finalise their thesis, publish papers, and disseminate their research. This all-rounded funding model represents good practice since it ensures that candidates can fully commit their time to ensure high quality doctoral training. The highly competitive nature of the selection process ensures that the RUFORUM programs can attract the highest calibre and committed candidates who have higher chances of doctoral success.

A recent external evaluation of some of the doctoral programs within the RUFORUM consortium identified some of the key strengths and innovative features that drive the popularity of the programs (Njeru, 2014). The collaborative character and regional scope of the programmes

was viewed by participants are extremely useful in terms of bringing together students and faculty from different region hence promoting collaborative peer learning, mentoring by senior faculty, nurturing of a community of practice, and providing opportunities to establish and expand professional networks. Relevance was the second area of strength. The programs are considered to be relevant and meet the needs of the professionals in the field of agricultural sciences, helping them to acquire conceptual and disciplinary depth, gaining fundamental professional and technical skills, and expanding career opportunities and strengthening performance and service delivery in current positions.

The third innovative feature is concerned with the structure of the doctoral programs which consists of mandatory advanced coursework and independent supervised research leading to thesis. The coursework allows doctoral candidates to gain advanced conceptual, theoretical, and methodological knowledge of their discipline and surrounding disciplines while also providing some kind of coherent structure that enables candidates to plan and complete studies in time. It also contributes to nurturing a cohort or community of learners interacting with their senior faculty members. A key part of the coursework provision is that it is delivered through team or collaborative teaching which brings together local and international experts from multiple institutions to come and interact with the students and exposing the students to a broad range of perspectives and relationships beyond their own current contexts (Njeru, 2014).

3.4: African Centres of Excellence Program (ACE I and ACE II)

The African Centres of Excellence (ACE) programme World-Bank funded initiative that is coordinated through the Association of African Universities (AAU). The aim of the ACE program is to strengthen local capacity in African universities exclusively in the areas of Science, Technology, Engineering and Mathematics (STEM). The first phase of the programme (ACE I) covered 19 universities in Western and Central Africa. Among other key programme activities, ACE is involved in providing funding for doctoral training in STEM sciences through a network of Centres of Excellence located in different universities across countries. The idea is that these institutions will develop capacity and create synergies across networks to become regional nodes of advanced knowledge and expertise in different branches of science, engineering, technology, and medicine. One of the key result areas of the ACE initiative entails “providing fellowships to support faculty research; scholarships to train PhDs and Masters’ students; and support for information sharing on existing scholarship programs for the region funded by development partners” (World Bank, 2015, p. 17).

A central component of the ACE initiative is to establish a premier scholarship scheme to be known as “ACE Scholars” which is aimed to attract candidates of the highest calibre from African countries to pursue advanced postgraduate training in the STEM disciplines tenable are the various Centres of Excellence to be established in regional hubs. The most recent progress report of the

Figure 8: Summary of best practices from RUFORUM initiative

Initiative or project	Best Practices
RUFORUM	<ul style="list-style-type: none"> • Structured doctorate with coursework and thesis. Advanced courses build conceptual depth and research expertise • Doctoral programs directly connected to identified regional or local agricultural problems hence directly relevant to Africa • Provision of stable, multiple, tailor-made funding streams for doctoral students throughout the doctoral cycle • Collaborative supervision including international faculty • International mobility and networking is promoted since the doctoral program is tenable outside the student’s country • Rigorous and peer reviewed selection process ensures high quality doctoral candidates on RUFORUM programmes • Integrated professional development provided for candidates • Regional and networked scope expand professional networks, and nurture community of practice for students

ACE phase one (World Bank, 2016) indicates that 5,258 students are enrolled in new specialised short-term courses, some 1,711 candidates are pursuing Master and PhD programs in STEM sciences, while some 1,020 students have undergone an internship/placement of at least one month duration.

The report further highlights that the 19 African Centres of Excellence generated external revenue in the amount of US\$15.8 million (World Bank, 2016). The Bank's evaluation gives a generally positive overview of the progress of the phase one of ACE.

The second phase of this continental initiative (ACE II) commenced in 2014 and covers 10 countries in Eastern and Southern Africa. The ACE II aims to establish or strengthen between 18-22 regional centres of excellence across Eastern and Southern African regions. The Project Development Objective (PDO) for the proposed ACE II is to establish and strengthen specialization and collaboration among a network of higher education institutions in the Eastern and Southern Africa region to deliver relevant and quality education and applied research to address key development challenges facing the region (World Bank 2015). The most distinctive feature about the second phase of the ACE is the broadening of the scope of disciplines that are eligible for support to initiate Centres of Excellence.

Whereas ACE I was confined to STEM disciplines, the ACE II now opens the opportunity to both STEM and non-STEM sciences (World Bank, 2015). The key regional development priorities identified for the Phase 2 of the African Centres of Excellence Programme (ACE II) are in four cluster areas: Science, Technology, Engineering and Mathematics (STEM); Agriculture; Health; and Science, Technology and Innovation (STI) - Quality of Education and Applied Statistics (World Bank/IUCEA, 2014). The rationale for this expansion is that there are development challenges that are primarily anchored upon knowledge drawn from other non-STEM sciences, including public policy management, social sciences and potentially others. The Inter-University Council for East Africa (IUCEA) is the designated Regional Facilitating Unit in charge of managing the ACE program for Eastern and Southern Africa.

In collaboration with the Governments of the nine participating countries, the World Bank and IUCEA jointly issued a Call for Proposals on 31st July 2015 which attracted a staggering 108 applications seeking to establish African Centres of Excellence in the four development priority areas. A competitive multi-level peer review process was conducted which subsequently resulted in 23 ACE proposals being accepted for funding by the World Bank, spread in the clusters of agriculture (7 ACEs), health (6 ACEs), STEM (8 ACEs), and STI-education and applied statistics (2 ACEs). One of the core criteria for selection is that each Centre for Excellence must incorporate a coherent program of postgraduate training at master and doctoral level within the chosen disciplinary area.

The 23 Centres of Excellence are located in 15 universities across 8 countries (Malawi, Kenya, Zimbabwe, Uganda, Rwanda, Tanzania, Ethiopia, and Zambia), covering diverse scientific fields ranging from phytochemicals, transport logistics, molecular biology through to disaster mitigation, energy, climate change, and quality of education. Looking at the distribution of ACEs by cluster, it is clear that STEM still received the largest share of the slots. However, the ACE II can be commended for broadening the opportunity to include other non-STEM sciences.

A range of innovative good practices can be skimmed from the study of both ACE phase one and phase two. The result-based funding formula can be identified as a major innovation. The ACEs were funded flexibly based on their performance against mutually defined and agreed result-oriented indicators. This framework of financing encourages organisations to perform at optimum levels and achieve the key result indicators since their funding and survival depends on these results. The common performance standards and indicators can promote harmonization and synergies across the various organisations within a consortium since all will be operating within the same framework. The performance/ result indicators included short-term, medium-term, and long-term Key Result Indicators, including:

- graduate employability,
- level of private sector engagement and enterprise
- Improved community engagement
- Quality assurance (including research, academic programs, training, governance systems)
- Faculty professional development, and,
- Sustainability

These or similar performance indicators combined with results-based funding framework can form a useful basis for developing and financing new collaborative doctoral training initiatives in the social sciences. Another best practice linked to funding is that the Terms of Reference for each Centre of Excellence contained an in-built formula defining the manner in which the funding must be allocated and spent across the ACE's proposed programs. The guidelines stipulate that 15% of funding must be invested in partnerships involving the private sector whereas 10% must go towards expenditure for building partnerships with partners outside of the ACE hosting countries (World Bank/IUCEA, 2014).

This formula provides an in-built driving force towards achieving and maximising the broad aims of the ACE program regarding strengthening capacity through collaboration, stakeholder engagement, and knowledge sharing. One of the deliverables of the ACE phase two is "building networks among these institutions to promote regional collaboration and foster partnerships with other institutions and the industry in training and applied research to produce innovative solutions for real development impact" (World Bank, 2013, p.13).

Figure 9: Summary of best practices from African Centres of Excellence Programme

Initiative or project	Best Practices
African Centres of Excellence Project (ACE II)	<ul style="list-style-type: none"> • Doctoral/masters programs directly connected to identified regional or local development priorities hence directly relevant • Postgraduate training is embedded into existing development programs are the core of the Centres of Excellence (CoE's) • Network of CoE's help build a critical mass of researchers, community of practice, and professional networks • Provision of stable, multiple, tailor-made funding streams for doctoral students throughout the doctoral cycle • Rigorous and peer reviewed selection process of premium ACE Scholars ensures highest quality doctoral candidates. • Application of result-based funding formula promotes the achievement of CoE performance objectives and results • Development and use of performance indicators and results • Inclusion of non-STEM sciences in the ACE program provides opportunities for PASGR joint initiatives (through Inter-university Council for East Africa).

3.5: Regional Initiative for Science and Education (RISE)

The Regional Initiative on Science and Education (RISE) is a collaborative initiative consisting of five university-based thematic networks spread across 13 African countries. Established in 2008 by the Science Initiative Group, RISE is aimed at promoting postgraduate training in science technology and innovation (STI) in order to build local research and teaching capacity within African universities in various strategic areas of science. RISE adopts a networked organisational structure that consists of specialist thematic clusters located in different universities across various countries. These clusters operate like centres of excellence in the selected thematic area and help to promote concentration of expertise and resources in particular disciplinary areas where respective institutions can demonstrate unique expertise.

Some of the RISE thematic priority areas include: materials science and engineering, natural products research, water resources, biochemistry and bioinformatics, and marine science. The clustered network structure, also known as the "Hub and Spoke" model (McGregor, 2013) is gradually becoming the common standard for organising collaborative research and postgraduate training initiatives in Africa, widely seen in other similar initiatives such as the World Bank-funded African Centres for Excellence initiative. The use of clustered networks has the huge advantage of strengthening unique capacity in specific areas and institutions which then spread best practice and expertise. It also eradicates duplication of efforts as well as avoiding wastage of scarce resources and time through thinly-spread initiatives across several sites that achieve little or no impact on target outcomes due to insufficient investment.

RISE has achieved considerable success since its inception in 2008. A total of 26 women and 62 men drawn from African universities have since earned degrees through the RISE network of universities. As of 2016, an additional 37 women and 66 men are pursuing various science degrees within RISE. Part of the innovativeness of RISE relates to its comprehensive focus on both masters and doctoral education, which means that it can attract graduates into its masters programs who are then retained to pursue doctoral degrees within the RISE network. This approach ensures sustainability, continuity, as well as the development of a critical mass of researchers through the many cohorts. Examining the organisation and operation of the RISE consortium, one of the existing constituent networks seems to provide potential avenues for collaborative work with PASGR.

The Southern African Biochemistry and Informatics for Natural Products Network (SABINA) has developed a component known as SABINA-POL which focuses on providing public policy support, translation, and public engagement for the SABINA initiative. According to programme documents, SABINA-POL aims to connect SABINA to key stakeholders including policymakers, farmers, community groups, and business enterprises. It also aims to develop and provide be spoke training on intellectual property management, indigenous knowledge management, as well as policy development and translation. These are clearly potential areas where PASGR can work with RISE in developing and delivering the public policy component for SABINA and other RISE networks.

Figure 10: Summary of best practices and lessons from RISE Initiative

Initiative or project	Best Practices
Regional Initiative for Science and Education (RISE)	<ul style="list-style-type: none"> • Doctoral/masters programs directly connected to identified local development priorities hence directly relevant • Graduate training is embedded within networks of specialist clusters which help build unique capacities in key areas • Graduate work within clusters promote professional skills and development of useful professional networks • Comprehensive focus on both masters and doctoral training promotes high quality recruitment and cohort stability • Introduction of policy development and public engagement component in the SABINA network provides opportunities for PASGR involvement and strategic collaboration.

3.6: Other Joint Initiatives in Africa: ARUA, USHEPiA, LEADHER

Aside from the larger and longer-term collaborative initiatives towards innovative doctoral training reviewed above, there are other pockets of equally important and innovative joint initiatives in Africa aimed at strengthening postgraduate training. It is beyond the scope of this scoping study to review all or even the majority of collaborative programs on the African continent since they are numerous, constantly evolving, and some are not fully well-known. This section will therefore highlight just a handful of key examples. USHEPiA (University Science Humanities and Engineering Partnerships in Africa) is particularly noteworthy due to its longevity and impact so far. USHEPiA was established in 1995 through an initiative spearheaded by the University of Cape Town and supported by the Association of African University and Rockefeller Foundation. The partnership embraced eight African universities spread across seven countries; including South Africa (University of Cape Town), Botswana (University of Botswana), Uganda (Makerere University), Tanzania (Dar es Salaam University), Zambia (University of Zambia), Kenya (JKUAT and University of Nairobi), and Zimbabwe (University of Zimbabwe).

The aim of USHEPiA was to strengthen teaching and research capacities within the eight partner universities by providing fellowships to enable academic staff to pursue doctoral degree studies through the partnership (Mouton, 2010). The PhD training program is organised in a split-site or sandwich model whereby a candidate would spend part of the 4-year period in their home university and also at the University of Cape Town. Supervision was also adopted a joint structure, consisting of one home supervisor and one Cape Town supervisor for each candidate. The selection process is rigorous and multi-staged, including the conduct of a Planning Visit and a satisfactory report by the Cape Town University supervisor before the USHEPiA PhD fellowship can be firmly awarded (Mouton, 2010). USHEPiA has achieved significant

success so far. An evaluation report in 1998 indicated that USHEPiA had awarded a total of 33 fellowships at a cost of over USD 1.6 million (Mukubu, 1998).

A more recent study (Ojwang and Warner 2003) reports that by 2003 the USEPHiA fellowship awards had climbed to a total of 56 fellowships, including 19 degrees awarded through the partner universities. A major evaluation report of USHEPiA achievements (Shackleton, 2007, p.10) notes that 94% of all USHEPiA graduates have been firmly retained in employment of their home universities and only one candidate had ever dropped out of the USHEPiA program since inception. These are part of the key indicators demonstrating USHEPiA effectiveness in local capacity strengthening and high graduate retention and success rates. By 2010 USHEPiA had awarded a total of 64 fellowships in several cohorts across the field of science and engineering (35 fellowships), humanities (26), and food security (3) (Mouton, 2010, p.34). Available reports on USHEPiA do not provide much detail about the structure, organisation, and content of the postgraduate programs. It is therefore difficult to make any observations on these matters. However, some of the key successful features that can be scaled up from USHEPiA include:

- joint supervision;
- sandwich study model incorporating mobility and networking
- multi-level linkages at the institutional, departmental, and individual levels;
- rigorous and highly competitive recruitment process attracting high quality candidates,
- Flexibility in the design of each fellowship to meet the needs of candidate and supervisors.

A recent development in the African collaboration landscape is the African Research Universities Alliance (ARUA) which was established during the African Higher Education Summit hosted in Dakar, Senegal in 2015



by TrustAfrica and other agencies. The alliance brings together a consortium of 15 top-tier African universities in 8 countries. The ARUA bears significant structural and strategic convergence with similar kinds of consortia in Europe and elsewhere, such as European Association of Universities (EAU), LERU (League of European Research Universities), and COIMBRA in Europe and Group of Eight in Australia, among others.

The aim of ARUA is to strengthen and expand research capacity in a selected consortium of leading universities on the continent as part of a wider vision to reintegrate Africa into the global knowledge landscape and drive the socioeconomic development agenda of the African continent as articulated in African Union's "Agenda 2063" (Bothwell, 2016). Dr. Max Price of the University of Cape Town who is also the founding Chair of ARUA strikingly captured the vision of ARUA during the launch when he said: "The intention is to bring together our distinctive fields of expertise to achieve complementary and coordinated programmes of research and training, including addressing the key development priorities of the African continent." (McGregor, 2015).

ARUA aims to do this through a three-pronged approach that includes: supporting PhD training, capacity building, and promoting collaborative research among partner African universities and their global counterparts (McGregor, 2015; Bothwell, 2016). The eight countries covered by ARUA are South Africa, Kenya, Ghana, Tanzania, Uganda, Senegal, Nigeria, and Rwanda. ARUA is still in its infancy phase and does not currently have significant outcomes that are available in the public domain. The consortium is at the phase of embarking

on a comprehensive audit of existing capacity across the partner institutions and identifying priority research programs to be the focus of doctoral training and collaborative research (McGregor, 2015). However, its adoption of the networked "centres of excellence" model is worth noting as an example of good practice in ensuring more impactful concentration and incubation of research capacity strengthening within a few key institutions which can thereafter play a catalytic role in spreading expertise and research excellence across other institutions outside ARUA.

Malete (2013) reports on a range of different initiatives that have had considerable impact on doctoral training in various participating universities. He highlights USHEPiA but also discusses PANGeA initiative based at University of Stellenbosch. Malete observes that the PANGeA initiative, just like USHEPiA, was aimed at leveraging and optimising limited donor funding to provide sustained financing for a number of doctoral candidates in the participating universities, broadly configured within the broader vision to develop and retain the next generation of African academics. The LEADHER programme (funded by International Association of Universities and ACUP) and the EU-funded DocLinks and Intra-ACP Academic Mobility Programme were all focused on promoting capacity strengthening in African through knowledge sharing, academic mobility, and cooperation between doctoral candidates, senior academic experts, and early career researchers in Africa and Europe.

DocLinks offered a range of activities, including: initial needs analysis, development of EU-Africa Doctoral Network and development of EU-Africa Doctoral Website containing funding information, resources, networking portals, and advice on issues relevant to doctoral students in Africa and Europe (see www.doclinks.org). All the programs emphasise the principle of knowledge sharing and collaborative capacity strengthening embedded within the local African context in order to promote retention of a critical mass of highly trained academics. The overall aim of these initiatives was framed within the wider goal of mobilizing and harnessing diverse bodies of knowledge and perspectives to address local development challenges in Africa.

At the University of Ghana, Aryeetey (2013) reports the introduction a new innovative model of doctoral training. The university concluded that the traditional thesis-only doctoral model is generally informal and has limited structure which leads to significant difficulties with ensuring high standards of quality and timely completion for most doctoral students (Aryeetey, 2013, p.19). The new PhD program is therefore designed to be more coherently structured and consists of mandatory advanced coursework component, comprehensive summative examinations, practical research attachment, and independent supervised research and thesis work. As part of the mandatory practical research apprenticeship in the second year of study, doctoral candidates are required to join actual research teams and participate in organizing and conducting research projects alongside professors and senior researchers.

Candidates must then prepare a report of their learning experience which is presented at departmental seminars and assessed towards their final doctoral degree. The new doctoral model also emphasises internationalization and collaborative activity by aiming to attract international students, staff, and collaborators (Aryeetey, 2013). The length of the new PhD has also been extended from 3 years to 4 years full-time to allow for more comprehensive training and to be in tandem with international best practices. Joint supervision of doctoral candidates is also a core feature of the new doctoral model at the University of Ghana, as well as study visits for doctoral students to leading world-class universities abroad.

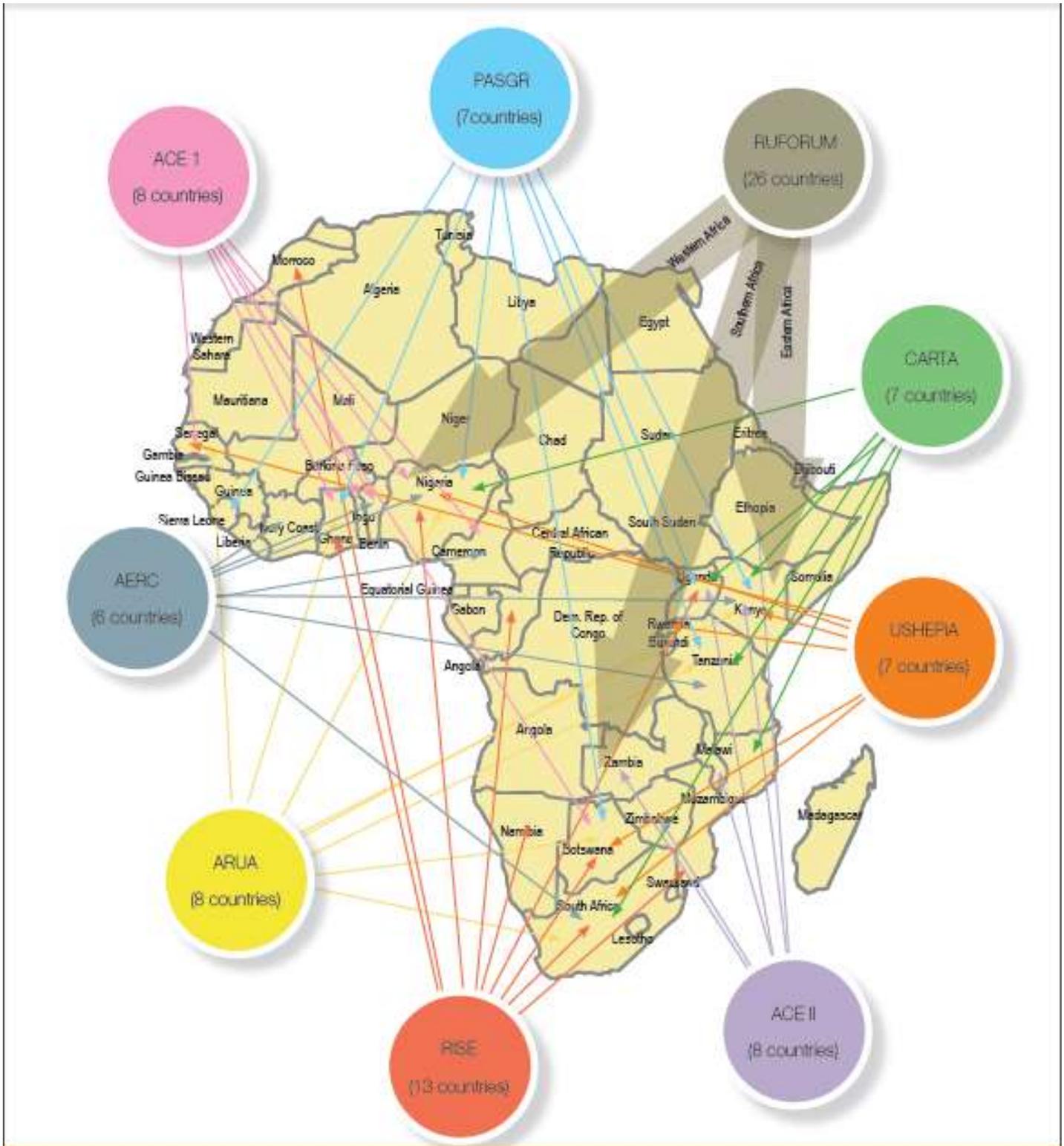
Kenyatta University (Kenya) has partnered with University of Catalonia (Spain) under the IAU-funded LEADHER program to introduce an innovative practice known as

e-supervision (electronic-supervision). This initiative aims to enable the university to tap into and utilise supervisory capacities that exist outside the university's boundaries towards strengthening its own capacity to deliver high quality supervision of doctoral candidates (Mwaura, 2013). As part of implementing the e-supervision initiative, Kenyatta University is reaching out to regional and international partner universities as well international organisations to create a database of local and international experts in various fields who can serve as electronic supervisors for Kenyatta's doctoral candidates.

The e-supervision is supported through the Personal Learning Environments for Doctoral Student (PLED) infrastructure. PLED is a lifetime personalised web space for each student equipped with software, communication, digital search, multimedia, and social media tools which empower doctoral students to gather, organise, create, and disseminate new knowledge within and across their professional networks rapidly over the internet (Vilalta and Gmelch, 2013). PLED and e-supervision represent highly efficient, versatile, virtual, and cost-effective approaches to building supervision capacity and digital visibility that defies many of the obstacles that currently hinder effective supervision and scientific visibility in African Universities.

The University of Cape Town's doctoral programme on Higher Education Studies features some innovative doctoral practices that are already seen in other doctoral initiatives elsewhere in Africa. For instance, the program conducts what it calls "Doc Weeks", a series of advanced residential seminars, debates, and paper presentations similar to CARTA's Joint Advanced Seminars or AERC's Joint Facility for Electives. The Cape Town doctoral programme also features what is known as "online classrooms" where students have a virtual learning and networking space similar to the LEADHER's Personal Learning Environments for Doctoral Student (PLED). Some isolated initiatives have focused on strengthening capacity for doctoral supervision. Since 2012 a consortium of four South African Universities have entered into a partnership with their Dutch partners to deliver professional development and training for doctoral supervisors at the partner southern universities (Molla and Cuthbert, 2016). It is reported that 18 out of the 23 public universities in South Africa have participated in this innovative professional development program (Boughey and McKenna, 2013).

Figure 11: Mapping of some key collaborative postgraduate initiatives in Africa



04

Doctoral Structures and Practices: Synthesis of Case Studies



The 3-year PhD programme that has been run at the University of Ghana for several decades is... fairly informal in the sense that requirements for graduation are general with very little indication of what PhD candidates should generally be capable of. (Horizons 19(2), June 2013, p.19)

Prof Ernest Aryeetey, Vice-Chancellor, University of Ghana



4.1: Introduction

The aim of this chapter is to present findings that provide a portrait of the doctoral landscape in terms of the organisation, structure, and practices of doctoral training across the seven countries and ten universities and more than 90 doctoral programs that are involved in this scoping study. The analysis and synthesis is organised using the conceptual framework drawn from systems theory as applied to doctoral training activities. The chapter will then present more in-depth findings from a sample of ten doctoral programs drawn from ten different universities for more detailed examination. The chapter will identify and examine a range of key patterns of practices, processes, and activities around doctoral training in the case study institutions and distil some best practices that can be considered for adoption and scale-up elsewhere.

4.2: Research and Training Environment: Institutional and Policy Frameworks

The analysis and synthesis in this section draws on the conceptual framework which views doctoral training from an open systems perspective as outlined earlier. The research and training environment is understood to entail doctoral training programs (in terms of their content, structure, processes, organisation, and pedagogical practices) as well as the regulatory and support structures (policy, services, professional development). These elements will be the focus of attention. The analysis cuts across the ten doctoral programs from ten institutions involved in this study: University of Botswana, University of Ghana, University of Ibadan, University of Maseno, University of Jos, University of Egerton, University of Dar es Salaam, and University of Lagos, University of Cape Town, University of Nairobi, and Consortium for Advanced Research Training in Africa (CARTA).

This subsection focuses on regulatory and policy frameworks as well as institutional related to doctoral education at the selected universities. A review of the universities involved in this study suggest convergences in terms of structural organisational units and regulatory frameworks connected to doctoral training. The phenomenon of a “school of postgraduate studies” or some slight variation of it was found to be a common feature across all the universities in this study. There are minor variations across universities but the fundamental functions and structure of graduate schools are similar. The most important structure within the SGS is the Board which is invested with sweeping powers over all technical, academic, and procedural matters pertaining to policy, practice, and decision-making in respect of postgraduate education at the universities. In all these varied functions, the Graduate Studies Board across all the universities works in partnership with other units such as academic departments and Senate in the decision-making process.

The establishment of doctoral training organised within Graduate Schools can be understood as part of the universities’ tendency towards increasingly more structured management of doctoral training; including aspects such as research infrastructure, recruitment of candidates, human resources, academic training and supervision, quality assurance, assessment, and award of advanced degrees.

The Graduate Schools in the selected universities can be described as generalist rather than specialist; since they are involved generally in coordination of all categories of postgraduate studies ranging from postgraduate diplomas through to doctoral degrees. This is in contrast

to the more specialist doctoral schools or Doctoral Training Centres that have emerged in parts of Europe. The Graduate Schools in this study are organised at the level of the whole university, catering for all disciplines, schools, and programs across the entire university. There were no Graduate schools organised at cross-institutional or cross-national levels.

In relation to policy and regulatory frameworks, all the case study universities had some form of publications or documents containing policies and guidelines governing postgraduate training, including prospectuses and handbooks outlining key details of available doctoral programs. Again, there were wide variations across the universities in this regard in terms of the content, coherence, comprehensiveness, presentation, and availability of these policy documents. Some were highly professionally constructed and packed with detailed policy guidance and regulations. Many of these are made available online on individual university websites. In other universities, such as Egerton, Maseno, and Lagos, the policy guidelines are less comprehensive; or are not available altogether in public spaces hence difficult to evaluate.

4.3: Doctoral Forms and Models

Recent literature has attempted to outline some main models or models of doctoral training and their basic characteristics. The most common and widely known doctoral form or model is the traditional “academic doctorate” that involves a candidate conducting an independent piece of research and writing a thesis under the guidance of a single supervisor (Kehm, 2006; ASSAf, 2010). Assessment is achieved through an oral defence of the thesis by the candidate before a panel of internal and external examiners. This model of doctoral training is viewed to be less costly, more efficient, less labour-intensive, and more suitable for institutions which might be lacking sufficient resources and teaching capacity (Szanton and Manyika 2002; ASSAf, 2010; Cross and Backhouse, 2014). The second model of doctorate is the industrial doctorate which involves a candidate conducting significant work in close collaboration with industry or any other kind of employment sector. It may include extended periods of actual work experience within industry as well as joint supervision of the candidate by industry-based and university-based experts (EUA, 2010; Kehm, 2006; Lee and Boud, 2009).

The third, most recent, and least widespread model is the professional doctorate which has emerged in parts of Europe and currently offered predominantly by universities in the United Kingdom. This type of doctorate is designed to enable practicing professionals to combine advanced research training with conceptual and theoretical depth within the context of their own professional practice in order to appreciate their professional competence and practice from an academic perspective. Drawing on this rough outline of doctoral models, it can be submitted that all doctoral programs at all the universities in this scoping study are based on the traditional academic doctorate

model. There is generally no evidence across all the universities in this study that either the professional the industrial doctorate models have been developed, offered, or even considered in any form anywhere.

4.4: Doctoral Structure and organisation

Doctoral training can be examined in terms of its structure. The structure and organisation of doctoral programs is one of the core components of a doctoral training environment within the systems approach (Technopolis 2012). The structure of a doctoral program can be understood as being concerned with the logical organisation of its content, learning resources, and pedagogical activities; including their form, sequencing, objectives, and scope. Based on this definition, doctoral programs can be structured in a range of different ways depending on various factors, including national and institutional capacities, priorities, policies, traditions, and cultures. There are two main models or types of doctoral degrees that are widely practiced in most international contexts. These are the “thesis-only” doctorate (unstructured) and the doctorate by “coursework and thesis” (structured doctorate).

4.4.1: Doctorate by Thesis only (non-structured)

The traditional form of the doctorate is commonly described as the “master-apprentice model” whereby a candidate followed an unstructured program of doctoral study in relative isolation often under the guidance of a singular supervisor (Nerad, 2004; Kehm, 2006). The training and assessment for this type of doctorate is focused entirely on conducting a piece of independent research and thereafter writing and defending a thesis. No other requirement or provision is associated with this doctorate (Lee and Boud, 2009).

Most doctorates around the world have traditionally assumed the thesis-only structure where the doctorate degree is awarded based entirely on the assessment of a candidate’s oral defence of their written thesis only (Nerad, 2008; Kehm, 2006). Another variation of this structure is the doctorate by publications; whereby a doctoral candidate submits a collection of their significant publications accompanied by a synthetic summary demonstrating their original and significant contribution to knowledge in the concerned discipline. A doctorate would then be awarded if a panel of internal and external examiners are satisfied as to the significance and substance of the submitted collection of publications. The thesis-only doctorate tends to assume the traditional “master-apprentice” form of doctoral training where a candidate works in isolation under the direction of a single supervisor for the entire period of studies (Lee and Boud, 2009; Jones, 2009).

The doctorate by thesis has come under criticism over the recent years for its weaknesses and inadequacies in meeting the current challenges and demands of high quality doctoral training; including its lack of clear structure, informality, and reliance on personalised relations between the candidate and their supervisor (Szanton and Manyika,

2002; EUA, 2010; EC, 2011; LERU, 2010; Boughey and McKenna, 2013; Jorgensen, 2012; Cross and Backhouse 2014; Molla and Cuthbert, 2016). Despite the well documented weaknesses associated with the traditional “thesis-only” structure of doctoral training, it remains the predominant structure in most countries (Kehm, 2006). This global concern against thesis-only PhD model is beginning to lead to a gradual paradigm shift toward a third structure of the doctorate, namely the doctorate by combined coursework and thesis—also known as the structured doctorate model (EUA, 2010).

4.4.2: Doctorate by Coursework and Thesis (structured)

The international literature on doctoral education, particularly in the more industrialised countries, continues to suggest a paradigm shift toward what is widely described as the “structured doctoral training” (UEA, 2010;). Yet there seems to be little agreement around a universal definition of what “structured doctoral training” is supposed to mean across a range of different contexts. The ERA Steering Group Human Resources and Mobility (SGHRM) suggests that “structured doctoral training” might be understood as “the organisation of additional disciplinary or transdisciplinary studies under-pinning the research of the candidate as well as possibilities for personal and career development (professional development) via transferable skills.” (ERA SGHRM, 2012, p.4). This definition emphasises the provision of coursework and training opportunities that are not only aimed at deepening conceptual rigour alongside



independent research training; but also providing doctoral candidates with opportunities for professional and personal development. A broader and slightly different definition is provided by the Salzburg II Recommendations (UEA 2010). Salzburg defined “structured doctoral education” in terms of the existence of institutional structures and processes and structures that allow universities to take responsibility for doctoral education. These might include procedures that provide transparency, promote accountability, enhance quality assurance, and ensure an inclusive and attractive research environment for doctoral candidates (EUA 2010).

In practice, the “structured doctorate” has assumed a more formal and coherent structure consisting of prescribed coursework to introduce doctoral students to more advanced conceptual, theoretical, and empirical knowledge in their chosen field in addition to the traditional component consisting of supervised research leading to the writing and defence of a substantial thesis (Lee and Boud, 2009; Kehm, 2006). Some doctoral programmes in this category may also incorporate seminars on transferable skills and professional development to increase the employability and competency of their doctoral graduates. The thesis component entails the candidate conducting a significant piece of independent research under supervision that culminates into the writing and oral defence of a doctoral thesis. The integrated coursework and thesis form of doctorate is beginning to spread rapidly across Europe and North America, but to a relatively very limited extent in the African context where the traditional unstructured master-apprentice model is clearly still dominant (Boughey and McKenna, 2013).

Notwithstanding the widely documented strengths of integrated doctorate, this study has found that the integrated thesis and coursework doctoral model remains patchy across African universities despite pockets of early adopters. Recent discussions on the continent and elsewhere have highlighted that incorporating mandatory and/or elective coursework components into the organisation of doctoral education may provide valuable opportunities for doctoral candidates to deepen their own conceptual, theoretical, and methodological knowledge and understanding within their own discipline as well as across cognate disciplinary areas (LERU, 2010; EUA, 2010; Aryeetey, 2013). Coursework is particularly critically important where doctoral candidates may be from diverse disciplinary backgrounds and possessing uneven academic capabilities and expectations (Boughey and McKenna, 2013).

Professional career development and transferable skills provision can also be delivered through a coherent program of coursework seminars integrated into the doctoral programme (Jorgensen, 2012). Nevertheless, based on the in-depth interviews conducted for this study, it appears that there is a strong and widespread consensus across African universities and among scholars in support of a paradigm shift toward a more structured model of doctoral training incorporating a

combination of advanced coursework teaching and independent supervised research leading to the writing of thesis. This finding extends the observations of numerous recent studies (Mouton, 2012; Aryeetey, 2013; Boughey and McKenna, 2013; Cross and Backhouse, 2014). In-depth interviews conducted for this study with senior academics from various countries and universities clearly demonstrated this overall view, even at institutions such as Maseno University, University of Lagos, and Egerton University where the traditional thesis-only doctorate model still remains dominant.

programmes, there are two tracks of enrolment such that candidates can choose to pursue either the PhD thesis track or the PhD by thesis and coursework. The table below provides an overview of the structure of doctorates in the various universities involved in this scoping study.

Figure 12: Summary of doctoral structure in the ten universities/ institutions

Thesis only” doctorate model	Coursework & Thesis doctorates	Both “thesis-only”& “coursework and thesis” doctorates
Jos University (except economics)	Botswana University	Dar es Salaam university
Maseno University	Ghana University	University of Nairobi
Egerton (except two programs)	University of Ibadan	Egerton University (2 programs)
University of Capetown	University of Lagos	Jos University (economics only)
	CARTA	

4.5: Convergence and Divergence in Doctoral Structure

The structuring of doctoral programmes varied considerably across the more than 100 PhD programmes in the social sciences across the ten universities that were reviewed as part of this scoping exercise. Some universities structured their doctoral programs based on the emergent thesis and coursework model (structured doctorate); whereas some universities and departments still relied on the traditional and well-known thesis-only doctorate. Universities that have adopted the structured thesis and coursework doctoral model (structured model) at least in some of their departments included the Botswana University, University of Ghana, University of Ibadan, and University of Lagos. Some universities featured a combination of the thesis-only model as well as thesis and coursework across different academic departments. This category includes University of Jos which offers thesis-only doctorates in all the social science departments apart from the PhD in economics which adopts the integrated thesis and course work doctorate model.

The University of Dar es Salaam and University of Nairobi have both “thesis only” and “coursework and thesis” doctoral models running in some departments. Predominantly, Maseno University and Egerton University are offering the traditional thesis-only doctorate across all their social science departments (except the department of Business at Egerton which offers both models). In some isolated cases, both models can be found running concurrently within the same PhD programme in some departments; such as in the case of PhD in political science at the University of Nairobi, or the PhD in Business Administration at Egerton University. In these PhD

4.6: Ten Doctoral Program Case Studies: Analysis

The Terms of Reference for this scoping study requires a detailed study of ten selected doctoral programmes in the social sciences across the different case study universities in order to highlight and interrogate some of their key characteristics. These attributes may include curriculum content, structure, organisation, supervision processes, and the capacity for teaching and supervision. Matters pertaining to the quantity and quality of research outputs, PhD enrolment, and graduation rates are not included in this analysis since they are beyond the provisions of this limited scoping study. Best practices will be identified across the ten programs and thereafter there will be a focus on mechanisms and interventions that are likely to strengthen these programs as well as being scalable to other doctoral program in diverse African contexts.

The selection of the ten (10) typical doctoral programs was guided by a number of rationales and criteria: Diversity across countries, institutions, and departments was considered to ensure a good mix of contexts, cultures, and experiences. Other criteria included, the relative importance and success of the program in terms of PhD enrolments and perceived reputation, the presence of detailed information, the presence of innovative practices or characteristics, university reputation and guidance received from interviews and consultations with academics in respective institutions. Based generally on these rationales, the following ten PhD programmes were selected for more detailed study to characterise their structure, practices, and organisation.

Figure 13: Selected ten PhD programs for detailed study

1:PhD in Economics (University of Botswana)	6:PhD in Gender & Development (Egerton)
2: PhD in Sociology (Maseno University)	7:PhD in Population Studies (Ghana University)
3: PhD in Economics (Jos University)	8:PhD in Geography (Dar es Salaam University)
4: PhD in Political studies (University Capetown)	9:PhD in Psychology (University of Ibadan)
5: PhD in Demography and Health (CARTA)	10: PhD in Political Science (University of Nairobi)

4.7: Doctoral Recruitment: Modes and Practices

Doctoral students are one of the core inputs in the doctoral training system (Technopolis, 2012). The organisation of doctoral programmes is concerned with how candidates get recruited and progressed through doctoral training programmes. Processes, practices, and structures for recruitment of doctoral candidates are critical ingredients that define the quality of a doctoral training system and can undoubtedly have significant implications for the quality of the output of the entire doctoral training process. Recruitment policies and practices must be transparent and accountable and should reflect the research, supervisory, and financial capacities of the institution. The Salzburg Principles formulated by the European Universities Association (EUA) emphasised that “recruitment strategies should be connected to explicit outcomes, identifying clear profiles of the candidates wanted” (EUA, 2010). It adds that these processes should further be based on “well-defined public set of criteria” as well as adequate information clearly setting out “a single, identifiable application place and process” (EUA, 2010).

The UK’s Quality Code emphasises that recruitment procedures for research degrees must be “clear, consistently applied, and demonstrate equality of opportunity” (QAA, 2014, p.29). Transparent, consistent, and robust recruitment processes and practices can promote accountability, clarity, and quality of doctoral training systems as well as the quality of doctoral candidates recruited. As outlined in the Salzburg Principles (EUA, 2010), the provision of complete and accurate information to prospective candidates before and after recruitment is also important in ensuring transparency and equal opportunities to all qualified students. The modes or pathways of doctoral recruitment can differ to various extents across and within countries, universities, and even departments in the same university. Three modes of recruitment were identified in this study as discussed below:

4.7.1: Step-wise or integrated mode

Some universities adopt what can be described as a “step-wise” or “integrated” model of recruitment. In this mode the MPhil and the PhD are fused together into a staged, progressive structure. The defining feature is that doctoral candidates are initially enrolled into the MPhil component of the programme for a specified period of time pending upgrade to the substantive PhD based on sufficient

performance related to some clearly established criteria which might vary across institutions and departments. Within this mode, at least in its purest form, there is no direct entry into a substantive PhD programme. This mode of tentative and progressive enrolment process has certain important strengths in terms of ensuring that candidates will have received some substantial initial grounding in research methodology and proposal development during the MPhil phase.

Candidates may in some cases also gain theoretical and conceptual depth in their chosen field through structured course work or supervised readings and seminars during the first year of provisional MPhil phase. Both of these experiences enhance the preparedness and success of the candidate when they eventually embark on full-fledged doctoral education. The managed step-wise enrolment process also serves an additional layer of gate-keeping mechanism to help the department in selecting candidates who can demonstrate higher academic achievement hence more likely to be successful in their doctorate.

4.7.2: The “Provisional” mode

As light variation of the step-wise recruitment model can be described as the “provisional mode”. This mode of recruitment describes where (all or some) qualified candidates are enrolled onto the full-fledged PhD programme but only “provisionally” or temporarily for the first six or 12 months of their enrolment. During this provisional period candidates are required to develop and successfully defend a substantial research proposal for their subsequent thesis work. In some universities or departments, candidates may be required to complete structured coursework and achieve specified high grades in comprehensive examination before being considered for substantive recruitment or upgrade into the PhD programme, often in the second year. Enrolment onto the substantive doctorate can only be confirmed and validated when all these requirements have been satisfied to the fullest extent. Like in the step wise mode, the provisional approach to recruitment also serves the very same purposes, including conceptual grounding, preparation, selectivity, and gate-keeping or quality assurance to ensure only candidates with sufficient preparedness are progressed into the full PhD.

4.7.3: Direct-entry mode

The third and final category of enrolment is the direct entry mode where all qualified candidates are enrolled directly and substantively into their chosen PhD programme and do not have to meet any other additional requirements. Candidates still go through the normal progression milestones and quality assurance measures of the programme itself. This third model of direct entry in its purest form does not seem to be commonly embraced in most universities in this study or elsewhere. Most universities in this scoping study tend to use the step-wise/integrated mode and the provisional model, or some combination of the two.

4.8: Doctoral Recruitment: Processes and Structures

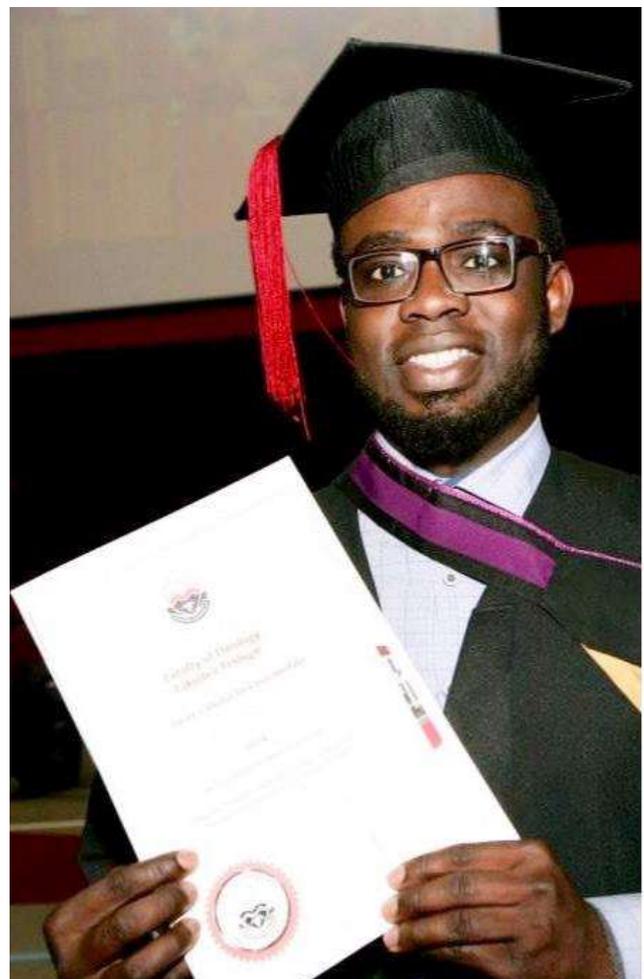
This study examined recruitment systems and practices in all the ten case study universities to gain further understanding of their key characteristics, strengths, and limitations. There was convergence across universities in terms of the role of Graduate School Boards, Departmental Graduate Boards, and university senates in the doctoral recruitment process. The structures and processes involved were generally similar or comparable across universities despite different names attached to these structures. Multiple levels of decision-making structures, stakeholders, and processes are involved in the doctoral recruitment process. Typically, an application for admission to doctoral candidacy is submitted to the School of Graduate Studies (SGS) who then transmits a copy of the application to the relevant Head of Department or faculty for assessment. The HoD makes a recommendation to the Department Graduate Studies Board who, if satisfied with the HoD's recommendation, may transmit the application to the SGS Board.

The SGS Board in turn will evaluate the application and may either reject or approve the application. The Senate will have the final word in making an approval of the SGS Board's decision either to reject or admit a doctoral candidate. This recruitment process is generally comparable across all the case study universities, with very minor variations. The only university that does not have an institution-wide School of Graduate Studies is the University of Capetown; which instead has a Doctoral Degree Board housed at the Departmental level. The University of Nairobi also does not currently have a Graduate School, instead it has what they call a Board of Graduate Studies – although documents examined by this study indicate that the university is in the process of establishing a substantive school of graduate studies (UoN, 2015).

The starting point for a robust doctoral recruitment process is the provision of adequate information, including publication of clear advertisements announcing the availability of doctoral places in various departments (EUA, 2010; QAAHE, 2014). Provision of detailed, accurate, and accessible information regarding doctoral opportunities and clear recruitment requirements are important element of best practice not least for purposes of assuring equity, accountability, and transparency in recruitment

of students. This can contribute to opportunities for recruiting high quality students who have better of doctoral success. Transparency arising from adequate information is also fundamental for quality assurance in doctoral training since it ensures that students and all stakeholders are fully aware of the products or service being offered (QAAHE, 2014; Cloete et al., 2015).

Course handbooks, marketing literature, policy guidelines, and advertisements can provide critical details about the availability, content, scope, depth, and aims of doctoral programs which are indispensable if students are to be assisted to make informed decisions and be successful in their studies. For example, the UK's Quality Code for Higher Education requires that "higher education providers ensure that students have the information to make sure that they are on a programme that is right for them" (QAAHE, 2016, p.13). Overall, these pieces of detailed information empower prospective students to be able to make informed decisions regarding the application process, the requirements, as well as the nature of the doctoral programs on offer at the university. Most critically, adequate information also contributes to ensuring that the university is able to attract the best quality candidates through a transparent, competitive, and equitable process.



4.9: Doctoral Recruitment: Requirements and Conditions

Recruitment structures, processes, and practices were examined across the ten doctoral programmes drawn from ten different universities. Graduate schools and departments in all the universities have a set of requirements and conditions that candidates are required to meet in order to gain admission into doctoral programmes. To a large extent, these entry requirements tend to be common across universities and departments; however, there are some important variations across universities. This study also identified a variety of peculiarities in terms of additional requirements and practices for entry into doctoral programmes. It can be suggested that recruitment conditions can be considered along a continuum consisting of high selectivity in one extreme and high inclusivity (egalitarianism) on the other. Unsurprisingly, some departments/universities had more rigorous and highly selective recruitment regimes than others. In the next section we examine and evaluate the key recruitment requirements across the ten programmes.

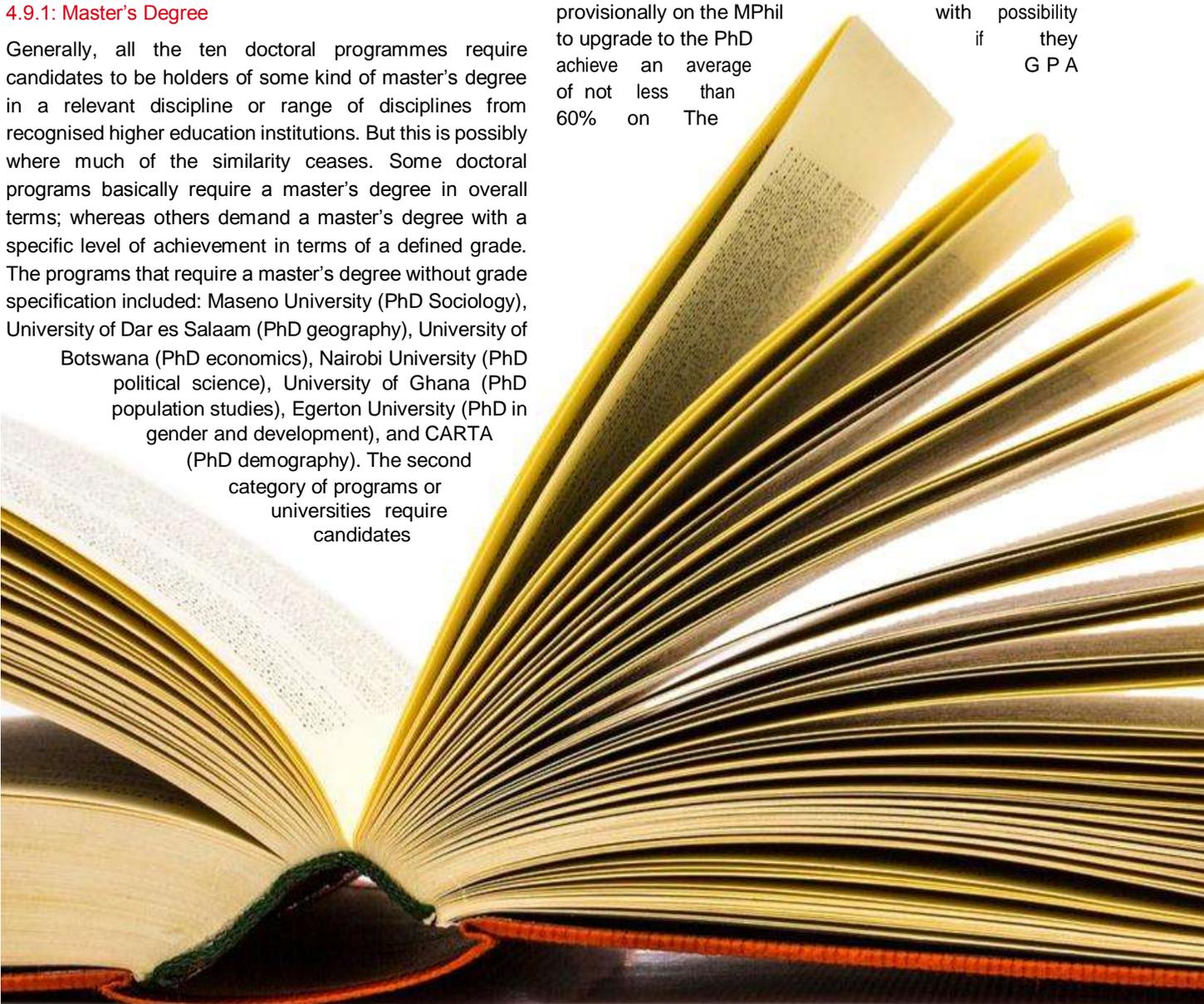
4.9.1: Master's Degree

Generally, all the ten doctoral programmes require candidates to be holders of some kind of master's degree in a relevant discipline or range of disciplines from recognised higher education institutions. But this is possibly where much of the similarity ceases. Some doctoral programs basically require a master's degree in overall terms; whereas others demand a master's degree with a specific level of achievement in terms of a defined grade. The programs that require a master's degree without grade specification included: Maseno University (PhD Sociology), University of Dar es Salaam (PhD geography), University of Botswana (PhD economics), Nairobi University (PhD political science), University of Ghana (PhD population studies), Egerton University (PhD in gender and development), and CARTA (PhD demography). The second category of programs or universities require candidates

to possess a masters' degree with substantial research component, preferably the MPhil degree. This group includes University of Botswana (PhD economics), University of Ibadan, and CARTA (PhD Demography). The others do not demand the research degree component. At the University of Ibadan, holders of research-based MPhil can be admitted directly into the full-fledged PhD programme.

A small set of doctoral programmes require candidates to possess a relevant masters' degree but coupled with achievement of a specified average grade. The entry regime can often be segmented based on the average grade of the candidate's master's degrees. The University of Ibadan (PhD Psychology) offers three pathways into the PhD. Holders of research-based MPhil with strong research training can be admitted directly into the full-fledged PhD programme. However, candidates who hold a taught master's degree must score a GPA of not less than 60% to be considered for admission to the PhD. The third category consists of holders of a taught master's degree with an average GPA below 60%. These candidates cannot enter the PhD—they must initially enroll

provisionally on the MPhil with possibility to upgrade to the PhD if they achieve an average GPA of not less than 60% on The



comprehensive examination at the end of year one of study. Candidates with a weighted score below 39.9% are expelled from the programme while those scoring 40 – 59% may be retained on the MPhil programme as a terminal degree. Ibadan, therefore, represents a rigorous and highly differentiated recruitment process which reflects their attention to high quality standards.

The University of Jos (PhD Economics) also demands candidates possessing a masters' degree with an average score of not less than 60% in both the comprehensive examination and the project component of the master's degree (or its equivalent for non-Jos candidates). In order to upgrade to the PhD programme, candidates must attain an average score of not less than 60% in the comprehensive examination as well as a score of at least 60% on the research proposal development component of the assessment. In a similar fashion, the PhD in political science at Capetown University requires a masters' degree with an average grade of at least 70%. In addition, all prospective applicants must make a "preliminary application" to the department in order to be "invited" to submit a substantive application to the Board of Graduate Studies. Only invited candidates can apply for PhD admission.

The University of Ghana offers a somewhat differentiated recruitment regime remotely similar to the one at University of Ibadan. Candidates with a master's degree can gain conditional or provisional admission to PhD programme but conversion to a fully-fledged PhD programme at second year of study can only be considered if the candidate passes a comprehensive examination based on level 700 courses. The second route is for students without a masters but with a strong first degree in a relevant field. These applicants can gain provisional admission to the PhD programme; however, they must undertake and pass comprehensive examinations based on level 600 courses during first year. Successful candidates are then offered another provisional admission to the PhD

and required to undertake and pass level 700 courses. Students who fail level 600 courses are considered for MPhil dissertation award; and those who fail MPhil requirements are considered for MA/MSc dissertation.

4.9.2: The Research Proposal

Many universities increasingly require candidates to submit draft research proposals meeting various criteria at the time of application for admission. This practice is promoted partly to help the department in determining whether or not the applicant's research concept is relevant and feasible. It also assists in considering the availability of supervision and teaching expertise in the chosen topical area. A draft research proposal can also be an indicator of the candidate's quality

as a potential researcher and their readiness for the rigours and challenges of extended doctoral work. ten doctoral programs in this study differed around practices in regard to the research proposal requirement. The University of Ghana (population studies), University of Nairobi (political science), and Botswana University (economics) require a substantive research proposal to be submitted at the time of application. Maseno University (sociology) asks for a research concept paper of 500 words, whereas the University of Capetown and CARTA demand a full research proposal to be discussed and submitted upon application.

In the other universities, such as Jos University (economics), University of Ibadan (psychology), and University of Dar es Salaam (geography), the candidates are typically required to develop a full and comprehensive research proposal during the first year of study which is assessed and is often utilised as a selection criteria for progression or conversion to substantive doctoral enrolment. In these programs the candidates are not required to submit proposals at the time of application or admission. In addition to this, some universities and programs also require candidates to discuss their research proposals with the prospective department prior to submitting application for doctoral study.

The University of Capetown leads this pack, with a requirement that all candidates must undergo full "preliminary assessment" of their credentials and research proposals before they are cleared and invited by the department to submit a doctoral application. Only invited candidates can apply to be considered for admission to PhD. Like the University of Cape Town to some extent, the University of Botswana (PhD economics) and CARTA (PhD demography) both demand prior discussion of the candidate's research proposal to determine the candidate's suitability and preparedness.

4.9.3: Additional Conditions

In some of the universities, the requirements for recruitment are far more rigorous and elaborate, and are not limited to the candidate's academic achievement in prior postgraduate studies alone. A wide range of rigorous and less common requirements were identified; including entrance interviews (University of Ghana and University of Capetown), Letters of motivation (Egerton University), entrance examination consisting of written test, presentation, and interview (University of Ghana), English language testing (University of Ibadan and University of Botswana), and Competency Tests and leadership potential (CARTA). At the University of Ghana, for example, the rigorous recruitment process requires candidates to undertake a comprehensive "entrance examination" which entails a written examination, an oral presentation, as well as an interview by the departmental Graduate Studies Committee (Handbook, 2016).

The University of Ibadan also evaluates a candidate's historical track record of academic performance in both high school examinations as well as bachelor's degree.

The candidate must have graduated with not less than second class honours bachelor's degree in a relevant discipline. For instance, in economics department the requirements state: "5 'O' Level Credits at ONE sitting; or 6 'O' Level Credits at TWO sittings including English Language, Mathematics, Economics, and any other two/ three of Arts, Social Sciences or Science subjects."The aim of examining historical academic records is to determine and satisfy the university whether the applicant has established a firm basis for graduate work in the proposed field of study. Ibadan is therefore at the tougher end of the selectivity continuum.

Collaborative doctoral programmes that are highly funded and highly regulated tend to practice more competitive and highly rigorous recruitment conditionalities. These programmes include the AERC PhD in Economics (Botswana), the University of Ghana-UNU collaborative PhD programme (economics), and the CARTA collaborative program (PhD demography). CARTA, for example, demands a plethora of additional requirements including:

being a member of teaching or research faculty in a partner university, being nominated by a partner university, a two-stage application process at the university level and at the CARTA secretariat, having gained admission to PhD in a partner university, being committed to capacity building and leadership in the current employing university, written prior commitment to participate in all CARTA activities, passing a standardised competency test, and being below the age of 40. The AERC doctoral programme in economics (such as in Botswana) share some of these tough conditionalities; including being nominated by a recognised organisation, and being a member of the academic staff of a partner university. The University of Ibadan's Research and Teaching Fellowships also tend to be more prestigious and competitive hence tougher in their recruitment procedures. Overall, doctoral programs that are donor-funded tend to deploy more rigorous and elaborate recruitment procedures, with the unsurprising outcome that higher calibre and more committed candidates are attracted and recruited.

Figure 14: Profile of enrolment criteria in various universities

Recruitment Criteria	IBA	MAS	JOS	BOT	LAG	GHA	EGT	DAR	CAPE	NBI	CART
Taught Master's		Green		Green		Green					
Taught Master's Graded 60%/ 70%	Blue		Blue		Blue				Blue		
MPhil degree	Orange				Orange				Orange	Orange	
First degree (at least upper)	Purple			Purple				Purple			
High school track record	Pink										
Draft proposal/concept outline		Green				Green			Green	Green	Green
Statement of Motivation							Purple				Purple
Comprehensive assessments/ tests	Dark Blue		Dark Blue	Dark Blue	Dark Blue	Dark Blue					Dark Blue
Oral interviews						Light Blue			Light Blue		
Initial MPhil/ Provisional	Yellow	Yellow				Yellow					
English Language tests	Purple			Purple							
Sponsorship/affiliations											Pink
Prior consultation/ assessment with department				Green					Green		
Referee Reports	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue

4.10: Best Practices on Recruitment

Some good practices in relation to recruitment can be skimmed off from wide range of different recruitment processes across the ten case study academic programs. These include:

- Provision of adequate and complete information
- Prior consultations or interviews to discuss candidates' research proposals;
- highly regulated and selective recruitment mechanisms, as opposed to egalitarian approach;
- Transparent, accountable, and equitable recruitment processes and practices;
- Gate-keeping and selection mechanisms in selection and progression
- Policies that encourage full-time doctoral study rather than part-time enrolment.

As discussed earlier, a more rigorous and selective recruitment framework is critically important in ensuring that the university recruits candidates of the highest academic calibre who have higher potential for success on the doctoral program. As such a recruitment mechanism should be equitable, transparent, and clearly anticipate and define the kinds of candidates that are required on the program in terms of their profiles and capabilities (EUA, 2010; QAAHE, 2014). In order to ensure higher standards of quality and successful completion rates, doctoral recruitment mechanisms need to be adequately equitable but also selective in order to attract the most appropriate calibre of candidates. Trying to deploy an egalitarian or inclusive approach to doctoral recruitment defeats the most basic purposes of maintaining high standards of quality of doctoral training and doctoral outputs.

Prior discussion of prospective candidate's research proposal with the relevant Departmental faculty helps to establish in general tentative terms if the intended research plan is feasible, significant, and coherent with the expertise and priorities in the prospective department. This initial informal or formal consultative process might serve various purposes. First, it might demonstrate the candidate's overall preparedness for doctoral education and their potential academic calibre. Recent studies have shown that lack of preparedness is one the leading causes of poor quality PhD education and delays or non-completion (Bates et al., 2011; Boughey and McKenna, 2013). Secondly, congruence

between the candidate's research ideas and existing departmental research themes, capacities, and can play a key role in promoting coherence, synergy, rigour in doctoral training as well as contributing toward the development of a sustained research capacity. The emergence of a critical mass of researchers within a department and the wider university can also be a long-term outcome of this prior consultative engagement.

Thirdly, the preliminary informal consultative process is also important in determining the allocation of potential supervisors for the candidate's research. In practical terms, early identification and allocation of appropriate supervision capacity is critical in assuring that a doctoral candidate experiences high quality and rigorous training and supervision, makes adequate progress towards completing their degree on time, and produces higher quality outputs. Poor or inadequate supervision capacity, on the other hand, is widely linked to poorer quality doctoral outcomes, significant delays in completing studies, and less adequately trained graduates (Boughey and McKenna, 2013; EUA, 2010).



Regulations that promote full-time enrolment and discourage part-time study can be helpful in ensuring that candidates accord sufficient attention to their doctoral work. Doctoral training in Africa has been widely associated with the problems of high dropout rates, excessive delays in completion particularly in the social sciences and humanities, and casualisation (Mouton, 2012). Casualisation is the phenomenon where PhD training is viewed by candidates as a casual partial engagement that is merely an appendage to their mainstream pre-occupation with gainful employment.

The PhD is rarely seen as full-time undertaking equivalent to a full-time job. Some universities, notably Botswana, have introduced policy regulations aimed at controlling part-time doctoral enrolments in order to encourage full-time registrations. The regulations specify that “permission to pursue a graduate degree programme as a part-time student shall be granted only to persons who can show that they are able to devote a reasonable proportion of their time to the work prescribed” (University of Botswana Regulations, p.6). The university regulations also provide strong restrictions on how much part-time employment may be permitted for doctoral candidates enrolled on a full-time study mode.

4.11: Doctorate Structure and Organisation: The 10 Doctoral Programs

According to the systems approach to doctoral training, the research and training environment is one of the three key components of the doctoral system. This component consists of elements such as doctoral programs (structure, content, supervision, pedagogical practices), regulatory arrangements (policy, support, services), as well as the research infrastructure. This section will focus on the structure and organisation of doctoral programs as well as supervision practices. Matters pertaining to support, infrastructure, and services are beyond the scope of this study. The 10 doctoral programs were examined in more detail in terms of their structure. The structure of a doctoral program can be understood in this study as being concerned with the logical organisation of its content, provision, learning resources, and pedagogical arrangements; including their form, sequencing, aims, scope, and prescribed duration. The most important dimension in this regard is concerned with whether a doctoral program is organised as thesis only, integrated coursework and thesis, or a combination of both models. The internal structuring of content as well as pedagogical and assessment practices are also examined.

4.12: Thesis-only Doctorates (unstructured)

In the set of ten programs in this case study, three programs across three universities are organised in the traditional unstructured “thesis only” model. This type of doctorate is also frequently referred to as the “master-apprentice model” (Boud and Lee 2009; Kehm 2006). The doctoral programs in this category include the PhD in Political studies (Capetown University), PhD in sociology (Maseno University), and PhD in political science and

public administration (University of Nairobi). The remaining seven (7) programmes embrace the structured doctoral model consisting of coursework and supervised research leading to thesis. The thesis-only doctorates tend to lack coherent structure and there is no indication of any major components of the programmes, key progression milestones, or relevant credit weightings. Partly as a result of the absence of defined cohorts or academic communities, candidates in these programs were likely to be pursuing relatively individualised and isolated programs of research stretching through a number of years without any structured sets of learning activities or formalised formative assessments and feedback (Nerad, 2004; Boughey and McKenna, 2013).

Similarly, advanced coursework, generic skills, and professional development competencies are generally unlikely to be provided as part of these unstructured thesis-only doctorates, suggesting that students are likely to graduate with potential weaknesses in these areas (Aryeteey, 2013). Curiously, the thesis-only doctoral programs tended not to specify exact durations of studies from start to completion. Instead the programs tended to refer to minimum and maximum durations; for instance university of Nairobi’s PhD in Political Science is indicated as lasting 4-5 years whereas Capetown’s PhD in political science and the PhD in Sociology at Maseno both last 3-5 years. This contrasts sharply with structured combined coursework and thesis doctorates which generally tend to indicate specific and nearly standardised durations for completion, often 4 years.

4.13: Thesis and coursework Doctorates (structured)

The idea of a “structured” doctorate can be understood in different ways. The ERA Steering Group Human Resources and Mobility (SGHRM) suggests that “structured doctoral training” might be understood as “the organisation of additional disciplinary or transdisciplinary studies underpinning the research of the candidate as well as possibilities for personal and career development (professional development) via transferable skills.” (SGHRM 2012, p.4). This definition emphasizes the provision of coursework and professional development opportunities for doctoral candidates (Louw and Muller, 2014). Mouton (2012) describes this phenomenon in terms of a paradigm shift in doctoral training from the traditional “thin” approach toward a “thicker” model; which represents a more elaborate and highly formalised approach to organizing doctoral training programs. These conceptualisations represent the preferred sense in which “structured doctoral training” is used in this study; while acknowledging alternative definitions that emphasize the establishment of more coherent management and regulatory frameworks for doctoral training (EAU 2010; Mouton 2012; Louw and Muller, 2014). In this study, a total of seven (7) doctoral programmes (out of ten) already embraced the structured doctoral model consisting of coursework and supervised thesis.

4.13.1: Programme Structuring

Among the universities that already incorporate structured coursework and thesis into their doctoral programmes, there is general similarity regarding the sequencing, purposes, and overall structuring of the coursework. There are some variations with respect to the depth of the coursework, level of detailed description, number of credits attached, and how the coursework is assessed. In most of these universities, the first part of the structured doctorate consists of structured coursework component which entails a mixed portfolio of core and elective courses.

All the universities provide core courses alongside a portfolio of elective courses that candidates can choose from based on their abilities, interests, and preferred areas of future specialisation. The coursework component is often covered within semester one of study while semester two tends to be dedicated to research proposal development. The prescribed coursework in many of the universities consisted of advanced modules and summatively assessed through some kind of comprehensive examinations undertaken mostly at the end of the Year one of study. The only exception is the PhD in economics at Botswana University where structured coursework consisted only of prescribed “guided readings” in specified advanced course topics which are then assessed through mandatory seminar presentations by the doctoral candidate at departmental seminars.

The universities differed with respect to the organisation, depth, and scope of their coursework; as well as the level of detail to which these courses are described and explained in the formal documents. This ranged from total lack of detailed course descriptions (Dar es Salaam University and Egerton University) through to the University of Ghana and University of Ibadan which displayed the most detailed description and articulation of their coursework components. CARTA’s PhD in demography, on the other hand, offered descriptions of generic competencies but did not provide any mention or description of its key disciplinary courses. Provision of detailed and accurate course information is widely considered as a key part of best practice in doctoral training across international contexts (EAU, 2010), including in the UK (QAAHE, 2014).

4.13.2: Coursework Aims and Purposes

The aims and purposes of the structured coursework appear to be similar across universities that use the integrated coursework and thesis doctorate model. Basically, in all cases the coursework teaching or guided readings are designed to encourage students to critically engage with and achieve adequate levels of understanding of the key theoretical, conceptual, and discursive issues within the relevant discipline. In addition, the student will be required to undertake readings specifically related to their own proposed theme of research. Universities and departments that follow the coursework and thesis model tended to manifest the integrated PhD structure where MPhil and PhD components are fused together

into a single continuous progressive program of study. Candidates are initially enrolled into a tentative program or into some kind of provisional PhD enrolment status for a fixed period of time pending conversion. Hence another common purpose of the coursework summative assessment is that it is used as the choice selection tool for determining a candidate’s eligibility for conversion or upgrade from provisional to substantive PhD studies which often takes place at the end of year one of study. Most universities have specified a level of performance required for a candidate to upgrade to PhD study.

Compared to thesis-only doctorates, the new integrated coursework and thesis doctoral programmes appeared to possess stronger and more reliable internal mechanisms for quality assurance and progress monitoring; both of which are critical factors in ensuring high quality doctoral training and completions rates. First, the advanced coursework provides sufficient grounding in key theoretical, conceptual, and methodological knowledge that prepares the candidate for full-fledged doctoral research. On the other hand, thesis-only programs seem to operate on the assumption that all PhD candidates already possess sufficient and uniform grounding in these areas and are prepared for research at the doctoral level. The summative assessment of coursework and seminar participation as well as the high achievement levels required before a candidate can upgrade to PhD programme helps to give greater confidence that only the most promising and highly committed candidates are progressed into substantive doctoral research.

For example, at the University of Ibadan only candidates who score an average of 60% on both the written examinations and research proposal can upgrade to PhD in Psychology. Those scoring 40 -59% remain on MPhil programme whereas a score of below 40% means that the candidate is dismissed from the program altogether. Similar gate-keeping and formative assessment and feedback mechanisms are found in the other doctoral programs with structured coursework and thesis; while these practices are completely absent in the thesis-only doctoral programs. In the thesis-only model, the preparation of an appropriate research proposal is the only requirement for conversion from MPhil to PhD study; which does not necessarily mean that the candidate is already sufficiently grounded in the disciplinary, conceptual, and theoretical areas.

4.13.3: Coursework Content

The actual content of the coursework can vary widely across programs and disciplines but remains an important component of the integrated doctoral programme model. It is difficult to gain sufficiently detailed assessment of the depth and scope of the content of a programme in a limited scoping study like this one that relied predominantly on secondary sources and university websites. However, some good practices in terms of course content and organisation could be identified in some universities and programmes. The idea of providing transversal courses or

capstone courses that cut across all PhD programmes in a School or academic unit represented good practice in some universities. Leading examples include University of Ghana's course on Theory of Social Science and Botswana's Advanced Social Science Research which are taken by all PhD students across the respective schools. Some programs organise their coursework into a set of core courses that are considered fundamental for successful completion of the PhD program. For example, PhD programs in economics in most of the universities provided core courses around advanced microeconomic theory, macroeconomic theory, and quantitative methods and econometrics.

4.13.4: Generic Skills Development

Development of generic skill and professional competencies can also form a key part of coursework portfolio available to PhD candidates in some of the universities, such as University of Ghana, CARTA, University of Jos, and other universities that participate in collaborative doctoral programs such as the University of Ibadan and University of Dar es Salaam. CARTA doctoral program, for example, offers training on generic skills including critical thinking, academic writing, data analysis software, collaboration, research proposal writing, project management, and so on. The University of Ibadan provides generic training workshops for doctoral students on research methods and academic development; covering critical competencies such as research methodology, grant proposal writing, use of conceptual frameworks in research, statistical applications and ICT, writing skills for PhD thesis, research ethics, and drafting academic papers (University of Ibadan, 2016).

Providing internships and professional experience to doctoral candidates is also emerging gradually as a feature of a very small set of degree programs examined in this study. The handful of doctoral programs that provide experiential learning although in a less structured and less intensive manner include the collaborative PhD in economics programs facilitated by the African Economic Research Consortium (AERC). The collaborative PhD in economics between University of Ghana and the UN University represents another good example of a doctoral program with workplace engagement as a component.

However, by far the most ground-breaking and innovative initiative in terms of workplace and research experiential learning can be observed at the University of Ghana. Since 2008, all PhD programs at University of Ghana must incorporate what is known as "experiential research learning" module (Aryeetey, 2013; University of Ghana 2014). This entails each PhD candidate being attached to an actual research project or work-related organisational context for a period of between 6 and 12 months to participate in research activity or professional practice. A candidate must then write and submit a report evidencing their learning and present a seminar paper which is assessed and graded toward the PhD degree. The Postgraduate Handbook emphasizes that "each academic unit in consultation with the candidate shall

provide details of what the candidate will do within the internship year" (University of Ghana, 2014, p.15). This element of experiential learning in research or workplace setting is completely lacking in all other universities and doctoral programmes in this study.

4.13.5: Scale of organisation

Doctoral programs can be organised at departmental, institutional, national, or cross-national levels (Kehm 2006). The large majority of the social science doctoral programs in this scoping study are predominantly locally organised within the home departments with no evidence of cross-institutional or cross-national collaborative organisation. Some of the few exceptions to this local characterisation are the departments of economics at the universities of Ibadan, Dar es Salaam, and Botswana that are participating in the collaborative AERC (African Economic Research Consortium) PhD programme. These universities are offering the collaborative PhD program in economics which involves cross-national mobility and collaborative programme delivery across a consortium of universities.

Another collaborative programme is the PhD in Economics hosted between the University of Ghana (UG) and UN University-World Institute for Development Economics Research (UNU-WIDER). Similar to AERC doctoral programs, the UNU-WIDER- Ghana programme consists of mobility activities and internships. CARTA's PhD program on demography and health is also organised in a collaborative architecture in incorporating mobility across the consortium. The emerging scenario suggests that mobility and collaborative doctoral programs are predominantly located in the department of economics and are largely donor-funded. All other departments do not manifest internationalisation and collaborative activity, apart from the CARTA initiative which drawn on departments of health and demography.

4.14: Best Practices on Doctoral Structure

Following the detailed study of the ten selected doctoral programs as captured in the previous section, some aspects of best practice have been identified that are worth highlighting for the purpose of further strengthening and transfer to other suitable contexts. Reference is made repeatedly to the Salzburg Principles of Innovative Doctoral Training (UEA, 2010) as well as national-level documents focusing on quality assurance and doctoral training excellence, particularly the UK Quality Code for Higher Education (QAAHE, 2014). This is the overall aim of the next section.

4.14.1: Structured Coursework and thesis

This study found widespread evidence and consensus across universities that a structured model of doctoral education consisting on integrated advanced coursework and supervised research leading to thesis is undoubtedly the optimal form of doctoral education for Africa. Many of the universities involved in this scoping study have already adopted the integrated structured



doctoral model to varying extents. Some institutions have adopted coursework and thesis across all their PhD programmes; such as University of Ghana and University of Ibadan. Other institutions such as, Dar es Salaam and University of Jos have adopted it in some of their PhD programmes. Significantly, even universities that do not currently use the structured doctorate model expressed strong views during interviews in support of adequately structured coursework and thesis to ensure more rounded and rigorous doctoral training experience.

4.14.2: Depth of Coursework

Some best practices can be identified regarding the organisation, depth, and scope of the coursework where a structured doctorate consisting of coursework and thesis is being delivered. Analysis of documents across universities showed clearly that structured coursework should provide sufficient depth and breadth in terms of building the candidate's advanced theoretical, conceptual, empirical, and philosophical understanding of their own discipline; including an appreciation of interdisciplinary connections. Interviews conducted for this study demonstrated that many academics want to see coursework that is sufficiently advanced in rigour, coherently organised, and delivered using high quality pedagogical practices in order to meet the needs of doctoral level students. The capacity of departments to develop and adequately teach the advanced theoretical

coursework at the doctoral level emerged as matter of significant concern for some of the academics interviewed for this study. The major issue seemed to be concerned with the reality that a large majority of academics were themselves trained under the unstructured thesis-only doctoral model and may not necessarily be strong in the conceptual and theoretical foundations of their areas of specialisation. Some of the universities, particularly the older ones like universities of Ibadan, Jos, Lagos, Botswana, Dar es Salaam and others seemed to provide coursework of sufficiently high level of rigour and scope based on a careful analysis of their course content and program description documents.

4.14.3: Transferable skills

The evidence from some of the programmes and departments suggest strongly that the development of transferable skills, interdisciplinary perspectives, and professional competencies should become a key part of a coherent portfolio of advanced coursework and generic career development. These features are clearly demonstrated in a number of the selected programmes; including CARTA and AERC collaborative doctoral programmes, University of Ghana, Jos University, and University of Ibadan. The provision of generic transferable skills and professional development competencies is widely emphasised in other international contexts. The Salzburg Principles of Innovative Doctoral Training clearly identifies development

of “transferable skills” as one of the seven cornerstone ingredients of effective doctoral training for the complex knowledge economy (EAU, 2010; European Commission 2011). The UK Quality Code for Higher Education also identifies delivery of transferable skills and professional development as one of its indicators of excellence in doctoral training. The code notes that “research students have appropriate opportunities for developing research, personal, and professional skills”; adding further that “each student’s needs are identified and agreed jointly by the student and the appropriate staff at the start of the degree; and these are regularly reviewed and updated as appropriate” (QAAHE, 2014, p.30).

The University of Ibadan showed one of the most innovative practices in enhancing generic skills and professional development among its doctoral candidates. The university has put in place a range of interventions aimed at strengthening academic excellence, enriching the research environment, and generally promoting doctoral training success. The first distinctive intervention is the introduction of research methods and academic development workshops covering a wide range of critical matters such as research methodology, grant proposal writing, use of conceptual frameworks in research, statistical applications and ICT, writing skills for PhD thesis, and drafting academic papers. These interventions are critical for developing transferable skills and professional competencies that cannot be found within traditional disciplinary coursework. The university also maintains a vibrant academic research environment through Interdisciplinary Research Discourse Series where doctoral students find opportunities to listen to academic debates and interact with senior university faculty. The African Economic Research Consortium (AERC) also provides integrated and formal transferable skills training and professional development as part of its collaborative PhD programme in economics.

4.14.4: Capstone Modules

Another good practice identified in some universities is the provision of a premier capstone module that traverses all departments and all doctoral programs across the social sciences. For example, the University of Botswana offers a module Advanced Social Science Research Methods (FSS800) that is mandatory for all doctoral students in all social science departments. Likewise, at the University of Ghana, a similar capstone module known as Theory of Social Science is offered across all social science PhD programs. Such a capstone modules might take a more interdisciplinary and transdisciplinary character, focusing on introducing some core theories, concepts, methodologies, and perspectives that are fundamental and transcendental across different disciplinary boundaries.

4.14.5: Detailed Information

Provision of detailed, accurate, and easily accessible information and descriptions of coursework components represents an important element of best practice not least

for purposes of assuring accountability and transparency about courses and programs. Transparency arising from adequate information is a critical component of quality assurance in doctoral training since it ensures that students and all stakeholders are fully aware of the products (QAAHE 2014; Cloete et al., 2015). Course handbooks and other literature can provide critical details about the content, scope, depth, and aims of a program or a portfolio of modules on a program which are indispensable if students are to be assisted to make informed decisions. For example, the UK’s Quality Code for Higher Education requires that “higher education providers ensure that students have the information to make sure that they are on a programme that is right for them” (QAAHE, 2016, p.13). To emphasize this further, indicator 8 of the UK Quality Code states that “research students are provided with sufficient information to enable them to begin their studies with an understanding of the environment in which they will be working” (ibid. p. 16). These statements, among others, suggest the importance of providing detailed course information; including clearly articulated outline of content, scope, aims, and potential outcomes of taking the course.

Some universities in this study excelled in this regard more than others. Some universities including Botswana, Ibadan, Jos, and Dar es Salaam demonstrate best practice in terms of providing detailed information that is readily publicly accessible on the universities’ websites. They publish professionally designed handbooks, postgraduate guidelines, and prospectuses to support their corporate marketing and informational objectives. Each module included in the coursework portfolio is accompanied with detailed description and information in a handbook, covering core elements such as the module aims, scope, content, credit weighting, sequencing and duration, teaching capacity, and assessment strategies. The course descriptions also reflect sufficient depth and rigor in course development and specification, suggesting the presence of adequate teaching and research capacity within the department in the relevant disciplinary areas. In some universities, the departments also clearly identify areas of specialisation in each department in order to guide prospective candidates about potential areas of research for doctoral studies. In contrast, some of the universities had limited detail about their programs and even far less was available on the university websites. For instance, Egerton University and University of Lagos do not make available key documents on their websites.

4.14.6: Experiential learning and External engagement

The Salzburg Principles drew attention to “exposure to industry” as one of the seven key ingredients for effective doctoral training for the 21st century (EUA, 2010). In its Report of Mapping Exercise on Doctoral Training in Europe (EC 2011), the European Commission also elaborates this principle and emphasises the importance of “promoting exposure to industry and other relevant employment sectors”. At the national level, the UK Quality Code for Higher Education also alludes to the value of doctoral candidates gaining professional exposure (QAAHE, 2014).

The current scoping study of ten doctoral programmes has identified a gradual but steady incorporation of some kind of experiential learning or internships into doctoral programs. The AERC collaborative PhD in economics, the CARTA doctoral program on demography, and the University of Ghana-UNU WIDER collaborative doctorate in economics are the flagship examples of doctoral programs that incorporate experiential learning or mobility internships. However, the most ground-breaking initiative is University of Ghana's Research Experiential Learning Programme that is mandatory across all PhD programmes at the University of Ghana since 2008 (Aryeetey, 2013; University of Ghana, 2016).

4.14.7: Collaboration, networking, and mobility

The importance of collaborative and international approach to doctoral organisation is increasingly and widely emphasised as part of the discourse of globalisation and knowledge economies. The Salzburg Principles consider "networking, collaboration and mobility" as being central to organizing more innovative doctoral training programs and systems (EUA, 2010). The scoping study found that doctoral programmes in the social sciences across all the universities studied were predominantly local and isolated in terms of their organisation and structure. There was little evidence of collaboration or international activity associated with most programmes. The only best practices identified in this regard include the collaborative doctoral programmes facilitated by African Economic Research Consortium; Consortium for Advanced Research Training in Africa (CARTA), and University of Ghana- UNU WIDER collaborative doctoral program in economics. These three clusters of programmes are collaborative, international, and entail cross-national and cross-institutional mobility and exchange activities.

3:Supervision Practices

Supervision is a critical factor for the achievement of high quality doctoral education and graduate outcomes as well as future prospects (EAU 2010; LERU 2010). Effective and robust supervision also has important implications for timely completion of doctoral studies and avoidance of wastage of time and resources. It is widely suggested that a large part of the long delays and poor quality outcomes in doctoral training can be directly attributed to lack of supervision and insufficient quality assurance mechanisms (Kehm 2006; Nerad 2004).

The Salzburg Principles of innovative doctoral training emphasize that "arrangements for supervision and assessment should be based on a transparent contractual framework of shared responsibilities between PhD candidates, supervisors, and the entire institution" (EUA, 2010, p.3). Existing capacity for doctoral supervision and teaching within an academic unit should be carefully considered in the context of making decisions about recruitment of doctoral candidates, including with regard to numbers and profiles of candidates. The knowledge, experience, and competencies of supervisors cannot be assumed or taken for granted; hence the importance

of providing adequate opportunities for continuing professional development and support for supervisors and administrative staff (Boughey McKenna, 2013).

Supervision of doctoral candidates can be organised according to two basic patterns depending on disciplinary, institutional, and national traditions and preferences. First, doctoral supervision can take the traditional "master-apprentice" model; whereby a doctoral student is supervised by a single supervisor who is responsible for managing the student's program of research and learning from enrolment through to graduation. The second model is the one described as team or joint supervision approach whereby a student's research program and learning experience is supervised by a team of at least two or more supervisors drawn from the same or different departments or universities.

Team supervision is increasingly becoming the preferred model and is more widely practised in all the universities involved in this scoping study, although there were variations in terms adherence to this requirement as well whether it is mandatory or discretionary. In other terms, the pronouncement of joint supervision on paper does not necessarily suggest that this requirement is being implemented in practice. In some institutions, such as Egerton University and Maseno University, members of faculty who were interviewed disclosed that most departments lack adequate capacity to provide two supervisors for each doctoral candidate despite the rule being in place.

Supervision practices and structures across the ten doctoral programmes were examined in more detail to evaluate any significant common characteristics or peculiarities. The key themes or issues covered include the manner of appointment of supervisors, the regulations and guidelines for supervision, the qualifications of eligible supervisors, supervision process and activities, and the management of supervision generally. The quality of doctoral supervision is directly correlated with the qualifications, expertise, and experience of the supervisors and is therefore a key factor determining their nomination and appointment as doctoral supervisors. There was convergence in this area across all the selected doctoral programme in terms of the requirement that doctoral supervisors must demonstrate that they possess a specific high level of qualifications (normally a PhD) and experience in order to become supervisors for doctoral students. This seemed to be an important matter in all the universities and formed a major part of the postgraduate regulations and guidelines in many of the selected institutions and doctoral programs.

There was overall convergence across the ten doctoral programs regarding the process of appointing supervisors as well as requirements for their qualifications. Supervisors are typically proposed by respective academic departments and appointed by the board of the schools of postgraduate studies. Many of the ten departments had clearly defined sets of qualifications, experience, and

expertise that an academic must satisfy in order to be appointment as supervisor. The University of Jos, Maseno University, University of Botswana, University of Dar es Salaam, University of Ghana, and University of Ibadan all have specifications in their postgraduate handbooks regarding the required qualifications. At Ibadan University, for example, the regulations state that: "lecturers who have a minimum of 3 years post-doctoral research/teaching experience can supervise candidates for MPhil, MPH, MD and PhD" (University of Ibadan, 2014). University of Botswana regulations outline that before appointment of a supervisor, the SGS Board "will examine the respective CV's for evidence of an appropriate level of experience and/or current scholarly work." (UB Regulations, p.10). On the other hand, other institutions such as Egerton University, Nairobi University, and University of Capetown do not provide specifications on qualifications; however it can generally be assumed that supervisors must be PhD holders.

4.15. 1: Organisation of Supervision

Doctoral supervision in Africa is gradually adopting the practice of joint or team supervision of doctoral candidates as part of their shift away from traditional singular supervisor model (also known as 'master-apprentice' model). Practically all the ten programs/universities in this scoping study have adopted the practice whereby at least two co-supervisors join together to supervise a doctoral candidate. Joint supervision is mandatory in some universities such as Ibadan, Ghana, Nairobi, Jos, Dar es Salaam, Cape Town, and Botswana while it appears relatively ad hoc and discretionary in other universities, including Maseno University for example. This practice is increasingly embedded in the codes of practice and regulations of most of the universities, although many universities are still not fully able to implement this requirement strictly due to a range of different factors including shortage of qualified faculty and spiralling PhD student enrolment numbers.

Some departments had regulations and guidelines which specify limits on the number of candidates an academic member can supervise during a given year. The limits on number of supervisees varied across universities. At Dar es Salaam University, the limit is 10 candidates per academic year, University of Ibadan has set its limits at 6 candidates in any academic year, University of Botswana allows for only 3 PhD candidates per year, whereas the University of Jos stipulates that a member of faculty can only supervise candidates in the ratio of 3 master's and 2 doctoral students during any academic year.

These pieces of regulation are important in ensuring higher quality supervision and timely completion by avoiding scenarios where members of faculty take up too many postgraduate students that they cannot effectively supervise. Maseno University, on the other hand, does not seem to adhere to any specific limits on the number of supervisees. Interviews with senior academics involved with PhD training at the university revealed that members of faculty can take on supervision of as many

postgraduate students as they wished; and a number of supervisors had no knowledge of the whereabouts or current status of some of their own doctoral candidates.

4.15.2: Progress Reporting

Some departments in this study provide detailed guidelines on the manner in which supervision is to be conducted, including the number of times that the candidate needs to meet with supervisors as well as the manner of periodic reporting of progress. Nearly all the ten selected doctoral programs/ departments had a specific requirement for supervisors and/or doctoral candidates to submit reports of their progress at particular intervals which varied across universities. The University of Jos and the University of Nairobi both require the candidate to individually submit a progress report to the School of Graduate Studies by the end of each semester.

The University of Ghana, however, requires the supervisory committee to submit a progress report each semester. At Maseno University, University of Botswana, and University of Dar es Salaam, it is the supervisor who submits the progress report on each candidate to the School of Graduate studies every six months. Some universities such as Cape Town, Ibadan, and Egerton do not provide clear detail about the reporting of progress. The submission of periodic progress, whether by candidate or the supervisor, represents a key monitoring tool for ensuring that candidates are making adequate progress in their studies towards completion. The shorter the interval of progress reporting the higher the chances that any difficulties or potential challenges can be identified sooner and resolved more quickly. Longer intervals of progress reporting can have the effect of allowing serious problems to linger on until too late.

4.15.3: Codes of Practice and Regulations

As the Salzburg Principles for doctoral training have emphasised, supervisory arrangements should be organised as part of transparent, binding, and mutually shared and agreed set of duties and responsibilities on the part of all the stakeholders involved, including the candidate, supervisors, and the university represented by the department (EUA, 2010). Good practice in this regard increasingly require departments or graduate schools to formulate and make available clear codes of practice and guidelines governing doctoral supervision. Most of the ten universities in this study had in place some form of guidelines or codes of practice but of varying quality in terms of coherence, rigour, and level of adherence.

The universities of Botswana, Ibadan, Ghana, Dar es Salaam, Maseno, Jos, and Nairobi all had handbooks of varying kinds, containing regulations on doctoral supervision. These handbooks outline key regulations, requirements, and guidelines aimed at steering and managing supervision of doctoral students. However, there was wide variation in the scope, detail, and quality of the handbooks, with some universities having highly detailed and elaborate handbooks whereas others were relatively scanty. Egerton University, for example, does

not display any documents on their website hence it was difficult to conclude whether or not they do have some codes of practice.

The codes of conduct and guidelines for supervision can help promote transparency, clarity, and mutual responsibility between the supervisor and the PhD candidate. In Botswana, for example, the regulations state that “at the beginning of the student’s programme of study, there shall be a written statement prepared which identifies the expectations the Supervisor has of the student and which the student has of the Supervisor”. (UB, p. 10). The Code of Regulations the University of Dar es Salaam goes further to define the roles and responsibilities of the doctoral candidate as well that of the supervisors and the Graduate School, hence making it significantly easier for consensus and expectations to be managed since all parties clearly understand their obligations in relation to the doctoral project.

4.15.4: Professional development of supervisors

Continuous professional development of supervisors is widely considered to be an important component in ensuring consistently high quality doctoral supervision. Boughey and McKenna (2013) have suggested that it cannot be assumed that the majority of supervisors necessarily possess the required knowledge, skills, and experience to discharge supervisory duties effectively without the need for further training and development. The ten selected departments offering doctoral degrees were examined to find out whether they provided any form of professional development for doctoral supervisors. The findings suggest that there was generally limited provision in this regard. The only institutions that reported provision of professional development were CARTA, University of Ghana, and University of Dar es Salaam. CARTA’s Research Governance Initiative provides advanced training and professional development around supervision and mentorship of doctoral students. This holistic initiative also entails provision of training to other faculty as well as administrative staff who may be involved in supporting or mentoring doctoral candidates.

The University of Dar es Salaam provides tailored training and continuing professional development for supervisors across a wide range of knowledge and skills to strengthen their supervision capacities and develop their practice. The university’s internal documents explain that the training includes the “soft skills” (effective communication, relationship management, time management, life skills and conflict resolution), research philosophy and management, and university policies and practices with respect to postgraduate supervision. The rest of the universities in this scoping study do not report having any formal program for professional development of doctoral supervisors. At Maseno University, for example, the academics that were interviewed recognised that training is vital but the University does not have a formal supervision training initiative, apart from isolated one-off events sponsored mostly by donors.

4.16: Best Practices on Supervision

A set of good practices that are likely to contribute effective supervision and high quality doctoral experience can be identified across some of the ten selected programs/departments.

Progress reporting: One of the common requirements that contribute to quality assurance, timely completion, and efficiency include the duty of supervisors and/or candidates to submit periodic progress reports at regular intervals to the postgraduate school to demonstrate the amount of progress made over a period of time and highlight any issues. The period of reporting varied across departments. Some departments required monthly reports whereas others demanded progress reports once a semester or once every six months. Overall, it can be suggested that the shorter the reporting period the more robust the progress monitoring regime and the higher the likelihood that the candidate might make adequate progress and emerging problems can be identified and resolved much earlier. The conduct of supervisory contact and reporting could also be stipulated in policy.

Early allocation of Supervisors: Another significant good practice found in some of the universities is the requirement that supervisors must be allocated and confirmed at the time of recommendation for admission of a candidate. In these cases, a candidate cannot be admitted if the department cannot demonstrate the presence of adequate teaching and supervision capacity. This practice can help eradicate scenarios where some departments admit larger numbers of fee-paying doctoral students for commercial reasons without regard to the lack of supervision capacity. Prior discussion of a candidate’s research proposal with members of the prospective department ahead of application can also contribute to ensuring that supervision is available before a candidate is recruited. More importantly, prior consultation also helps to establish whether there is synergy and coherence between the candidate’s research and the departmental research strengths and priorities- which leads to the growth of cumulative research capacity and agenda as well as the development of a critical mass of researchers within a department (Mouton, 2012).

Codes of Practice: The Salzburg Principles of innovative doctoral training emphasise that “arrangements for supervision and assessment should be based on a transparent contractual framework of shared responsibilities between PhD candidates, supervisors, and the entire institution” (EUA, 2010, p.3). The UK’s Quality Code also underscores the importance of a code of practice. One of the core indicators in the Quality Code emphasizes that “higher education providers develop, implement, and keep under review codes of practice for research degrees, which are widely applicable... the codes are readily available to all students and staff involved in research degrees, and are written in clear language understood by all users” (QAA, 2014, p.2). A Code of Practice put in place to shape supervision processes and practice can be instrumental in ensuring

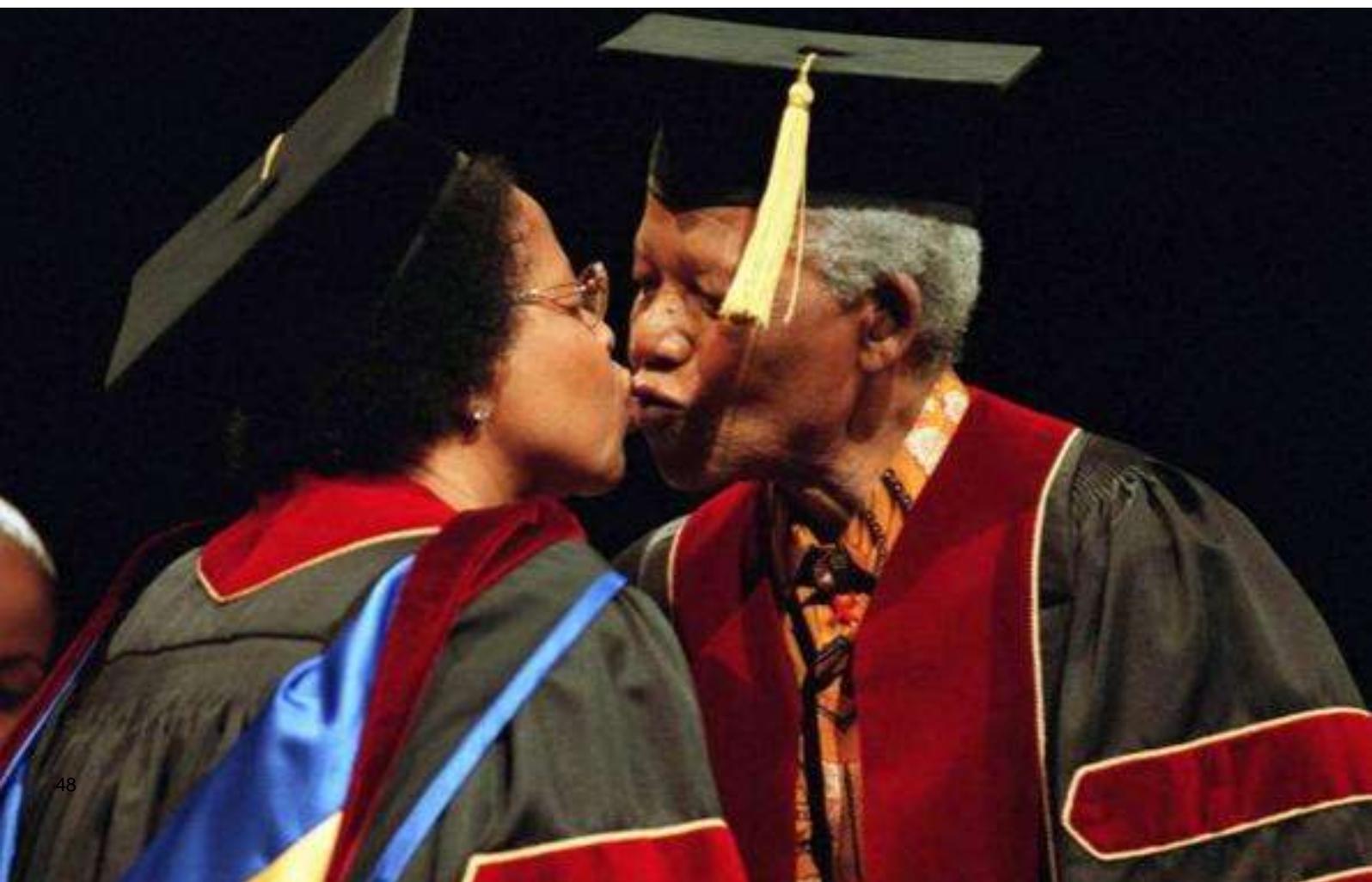
transparency, accountability, and consistency in the conduct of doctoral supervision. This can also be a key ingredient in developing good practice and quality assurance in doctoral training and supervision. Most of the departments in this study already had developed some form of “postgraduate handbooks” containing wide ranging regulations and guidelines pertaining to various aspects of doctoral training. Although the existing postgraduate regulations varied in scope and rigour, they represent a good start towards developing more coherent and comprehensive codes of practices to steer doctoral training. However, well-established codes of practice on doctoral education or supervision are still widely lacking and nearly all the ten selected departments did not have a code of practice. This can be an area for future capacity strengthening.

Professional Development for supervisors: Continuous professional development of supervisors is considered to be an important component in ensuring good practice and promoting consistently high quality standards in doctoral supervision. It cannot be assumed that the supervisors necessarily possess the required knowledge, skills, and experience to discharge supervisory duties effectively without the need for further training and development Boughey and McKenna (2013). Provision of professional development opportunities for supervisors is therefore an important element in promoting quality assurance in doctoral education and developing best practice in doctoral supervision. However, most of the selected departments reported no formal opportunities for supervisor development. The only exemptions were the University of Dar es Salaam, CARTA, and University

of Ghana which had formal opportunities for supervisory professional development.

Incentives for supervisors: Providing various kinds of material and reputational incentives to supervisors can function as a powerful motivating factor that might drive academics to participate in and remain committed to supervision as well as to aspire for excellence in doctoral supervision. The University of Dar es Salaam provides some remuneration and allowances for supervisors to serve as motivation and incentives. Recognition and promotion can also be use as reputational incentives to encourage excellent practice and commitment to supervision.

E-Supervision: Electronic or virtual supervision (e-supervision) is an innovative practice implemented at Kenyatta University (Kenya) as part of the IAU-funded LEADHER Program. The e-supervision strategy can enable universities to tap into and utilise high quality supervisory capacities that exist outside the university’s or the country’s boundaries in order to strengthen its own capacity to deliver high quality supervision for doctoral candidates. E-supervision can be a cost-effective, innovative, and efficient strategy for accessing and utilising external expertise in supervision in a way that surmounts most geographical and administrative barriers to movement. Establishing e-supervision framework involves reaching out to regional and international partner universities as well international organisations to create networks and databases of local and international experts in various fields who can serve as electronic supervisors for local PhD candidates.



05

Recommendations: Pathways to Joint Initiatives

The terms of reference requires this scoping study to identify and re-imagine new opportunities and strategies for PASGR intervention in innovative and high quality doctoral initiative as well as potential collaborators. The over-arching strategic aim is to identify opportunities, best practices, and gaps across the ten selected doctoral programmes and institutions that can potentially become the focus for PASGR to get involved in coherent and sustainable collaborative activities aimed at strengthening existing doctoral programmes or developing higher quality doctoral training initiatives. The study drew on evidence of best practices from the ten selected doctoral programmes in order to outline some recommendations regarding the structures, content, organisation, and practices that are most likely to result in high quality doctoral programmes. The study also examined a number of key collaborative doctoral training initiatives currently in operation in Africa in order to draw lessons for strengthening and developing doctoral training.

This enabled the study to examine emerging global trends in doctoral training such collaboration, internationalisation, interdisciplinarity, mobility, and industry linkages and how to embed these into the development, organisation, and delivery of doctoral training systems in African universities. In doing this, the study drew on a range of successful doctoral training frameworks and standards that are well established in international context, particularly in Europe. These particularly include the ten Salzburg Principles (EUA, 2005), the Salzburg II Recommendations (EAU, 2010), and the European Commission's seven principles for innovative doctoral training (EC, 2011) - which are essentially refinements of the Salzburg principles.

The UK's Quality Assurance Agency (QAA) has also published a rich portfolio of documents relevant to doctoral education; including the Quality Code for Higher Education Research (QAAHE, 2014) and Characteristics of the Doctorate (QAA, 2013), among others. The EC's seven Principles of Innovative Doctoral Training are particularly useful for providing an overall framework of key elements that might result in higher quality doctoral programs for the knowledge society. The seven principle are as follows:

- promoting research excellence;
- developing an attractive institutional environment;

- encouraging interdisciplinary research options;
- promoting exposure to industry and other relevant employment sectors;
- incorporating international networking and mobility;
- developing transferable skills training;
- Maintain a focus on quality assurance

The ten doctoral programmes and the various collaborative postgraduate initiatives in Africa were unpacked and examined to explore the extent to which their organisation, structure, and practices measure up to the above seven principles. The aim of this was to determine areas of weakness that might need strengthening through PASGR collaborative initiatives involving possibly other partners. The analysis of the ten doctoral programs and the various cross-national collaborative initiatives in the previous sections had also identified some best practices across a range of elements, including recruitment, program organisation, and supervision. The best practices and areas of weakness identified from these analyses are incorporated into a coherent framework that can inform PASGR's strategy for the development of more relevant and higher quality doctoral training programs.

5.1: Pathways to robust recruitment

Some good practices in relation to student recruitment can be identified from wide range of different recruitment processes and structures across the ten case study academic programs as well as the key examples of active collaborative doctoral programs. These features are therefore recommended to form part of a coherent PASGR doctoral initiative:

5.1.1: Prior consultation on draft research proposals

Prior discussion of prospective candidate's research proposal with the relevant Department helps to establish in general tentative terms if the intended research plan is feasible, significant, and coherent with the expertise and priorities of the prospective department. It might demonstrate the candidate's overall preparedness for doctoral education and their potential academic calibre. It also provides vital guidance on supervisor choices and whether or not sufficient supervisory capacity is available..

5.1.2: Robust, accountable, and equitable recruitment:

A rigorous and selective recruitment framework is critically essential in ensuring that the university attracts candidates of the highest academic calibre who have higher chances for success on the doctoral programme. Recruitment mechanisms should be equitable, transparent, and clearly anticipate and define the characteristics of candidates that are required on the program (EUA, 2010; QAAHE, 2014). The quality, reputation, and success of a doctoral program is directly proportional to the quality of the candidates it attracts.

5.1.3: Adequate and accurate Information:

Prospective doctoral candidates are entitled to detailed, accurate, and accessible information about the availability of opportunities for doctoral training in order to make informed and most appropriate decisions. This includes clearly defined admission requirements, program descriptions, application procedures, where to submit applications, and the deadlines for submission. University departments need to provide adequate information to ensure transparent, competitive, and equitable recruitment processes which are likely to create appropriate opportunities for attracting high quality doctoral candidates.

5.1.4: Quality assurance and gate-keeping:

Establishing rigorous, equitable, and transparent recruitment mechanisms is vital for attracting high quality candidates. However, departments also need to devise effective gate-keeping practices which serve as quality assurance and monitoring mechanisms for regulating progression through the doctoral process. This can include practices such as provisional admission until the candidate passes a major progression milestone before conversion into PhD studies. Similar milestones can be introduced at other subsequent points along the doctoral journey; to be monitored through shorter periods of progress reporting, preferably monthly.

5.1.5: Promoting full-time rather than part-time study:

Regulations and policies that promote full-time enrolment and discourage part-time study can be helpful in ensuring that candidates accord sufficient attention to doctoral research. This commitment can contribute towards reducing the persistent structural problem of casualization (Mouton 2012) and poor completion rates (Boughey and McKenna 2013). However, a key element would be to develop adequate funding opportunities to support doctoral studies so that students are not forced to pay privately for their doctoral education.

5.2: Pathways to effective supervision

The following good practices that are likely to contribute to high quality doctoral supervision and are recommended for PASGR doctoral initiatives:

5.2.1: Codes of practice:

A Code of Practice put in place to shape supervision processes and practice can be instrumental in promoting transparency, accountability, and consistency in the conduct of doctoral supervision and other core aspects of doctoral education more broadly. UK's Quality Code emphasizes that "higher education providers develop, implement, and keep under review codes of practice for research degrees, which are widely applicable" (QAA, 2014, p.2; EUA, 2010, p.3). All the 10 selected departments/doctoral programs lacked a coherent and distinct code of practice hence this element represents an area for capacity strengthening and cooperation. Codes of Practice provide clarity on the expectation, procedures, and standards required from all doctoral stakeholders.

5.2.2: Joint supervision model:

Effective supervision is without doubt one of the most fundamental factors in assuring the quality and efficiency of doctoral education in any context (Mouton and Cloete, 2013). The organisation and development of supervision is therefore important for high quality doctoral training. Traditional models of supervision followed the "master-apprentice" approach where a doctoral candidate studied under the guidance of a single professor throughout the doctoral journey (Kehm, 2006). However, recent trends and evidence from this scoping study have revealed a clear shift towards joint supervision of doctoral candidates. Joint supervision model has numerous strengths over the traditional master-apprentice model. Among other strengths, joint supervision provides opportunities for multiple perspectives from a range of disciplinary, professional, and theoretical traditions to be incorporated into shaping and enriching the overall character of doctoral study. It also allows the candidate to benefit from a diverse portfolio of expertise, knowledge, and experience at the same time; which cannot be reasonably achieved through a single supervisor (Boughey and McKenna, 2013).

5.2.3: E-Supervision:

The e-supervision strategy can enable universities to tap into and utilise high quality supervisory capacities that exist outside national boundaries in order to strengthen local capacity to deliver high quality PhD supervision. E-supervision can be a cost-effective, innovative, and efficient since it surmounts barriers. Establishing e-supervision framework involves reaching out to regional and international partner universities as well as international organisations to create networks and database of local and international experts who can serve as electronic supervisors for PhD students.

5.2.4: Progress reporting:

Periodic reporting is a tool for monitoring progress made over a specified period of time during doctoral studies. It can be suggested that the shorter the reporting period the more robust the progress monitoring regime and the higher the likelihood that the candidate might make adequate progress and emerging problems can be identified and resolved much earlier.

5.2.5: Linking recruitment to supervision capacity:

Enrolment of doctoral candidates should be on the basis that adequate capacity exists for effective supervision and teaching. Prior discussion of a candidate's research proposal with faculty members can help promote research coherence and synergy while also contributing to ensuring that adequate supervision expertise is available before recruitment.

5.2.5: Continuing professional development:

Doctoral supervision is widely viewed as a highly delicate and complex undertaking which combines a wide range of interlocking strands of intellectual, personal, professional, disciplinary, and ideological factors. Supervision is central to doctoral education. Mouton and Cloete (2013) have emphasized that the quality and effectiveness of doctoral training "comes down to the individual who has to supervise and graduate the student". It cannot be assumed however, that all supervisors necessarily possess the required knowledge, skills, and experience to navigate the complexities of supervision and discharge their supervisory duties effectively without the need for further training and development (Boughey and McKenna, 2013). Providing professional development opportunities for supervisors is therefore an important element in promoting quality assurance in doctoral education and developing best practice in doctoral supervision. Yet most of the selected departments/universities reported no formal opportunities for supervisor development. The only exemptions were the University of Dar es Salaam, CARTA, and University of Ghana which reported professional development opportunities for supervisors.

5.2.6: Incentives for supervisors:

Providing various kinds of material and reputational incentives to supervisors can function as a powerful motivating factor that might drive academics to participate in and remain committed to supervision as well as to aspire for excellence in doctoral supervision. Recognition and promotion can also be used as reputational incentives to encourage excellent practice and commitment to supervision.

5.3: Pathways to innovative doctoral structure

The following aspects of best practice have been identified and recommended to PASGR in relation to doctoral structure and organisation and are worth highlighting for the purpose of further strengthening and transfer to other suitable contexts.

5.3.1: Structured coursework and thesis model:

This study found significant evidence and consensus across different universities indicating that a more structured model of doctoral education consisting of integrated advanced coursework and supervised research represent a more robust form of doctoral education for Africa compared to the unstructured thesis-only doctoral model. Interviews with academics from departments that currently offer thesis-only doctorates demonstrated

clear support and preference for structured doctorate incorporating thesis and coursework.

5.3.2: Coursework depth and quality:

where the structured doctorate is already being provided, it is still critical to carefully consider the quality, depth, and scope of the coursework component. Interviews and analysis of documents across universities showed that structured coursework should provide sufficient depth and breadth in terms of building the candidate's advanced theoretical, conceptual, empirical, and philosophical understanding of their own discipline; including an appreciation of interdisciplinary connections. Academics interviewed suggested that the capacity to teach courses at this advanced level needed to be considered and strengthened where required.

5.3.3: Transferable skills development:

The evidence from some of the ten doctoral programs suggest strongly that the development of transferable skills, interdisciplinary perspectives, and professional competencies can become a key part of a rich and coherent portfolio of advanced coursework and career development. Development of transferable skills and generic professional competencies is also widely considered as one of the central indicators of excellence in doctoral training by both the Salzburg Principles of Innovative Doctoral Training (European Commission, 2011) and the UK Quality Code for Higher Education (QAAHE, 2014, p.30).

5.3.4: Capstone modules:

Another good practice in delivering integrated coursework design is the provision of an over-arching and mandatory capstone module that traverses all doctoral programs across the social sciences within a university. This core module can be used to introduce all doctoral candidates to a uniform and coherent range of key concepts, methodologies, and perspective that transcend disciplinary boundaries and are fundamental to a developing a coherent background in the social sciences. Good examples include University of Botswana's Advanced Social Science Research Methods (FSS800) and Theory of Social Science module offered at the University of Ghana. Both are mandatory modules across all social science doctoral programs.

5.3.5: Course information:

Provision of detailed, accurate, and easily accessible information and descriptions of coursework components represents an important element of best practice not least for purposes of assuring accountability, equity, and transparency. Adequate information is also critical for quality assurance. Course handbooks and other literature can provide critical course details including module content, scope, objectives, assessment, credit weightings, sequencing, duration, as well as details pertaining to evidence of the availability of teaching capacity and expertise within the department. The course descriptions also should reflect sufficient confidence

in terms of depth and rigor in course development, suggesting the presence of adequate and relevant expertise within the department. These details are all critical if students are to be assisted to make informed decisions and achieve optimum benefit from available coursework or learning opportunities. The ten universities showed wide variations in the availability, quality, and scope of course information.

5.3.6: Experiential learning and external engagement:

In its Report of Mapping Exercise on Doctoral Training in Europe (EC, 2011), the European Commission emphasizes the importance of “promoting exposure to industry and other relevant employment sectors”. Creating opportunities for doctoral candidates in African universities to gain practical experience within external non-academic and employment settings can be critical for developing transferable professional skills and consolidating useful professional networks. A good example is the University of Ghana’s Research Experiential Learning Programme that is mandatory across all PhD programmes. The AERC collaborative PhD in economics, CARTA PhD on demography, and the University of Ghana-WIDER collaborative PhD in economics are good examples of doctoral programmes that incorporate experiential learning. Integrated experiential learning and internships are aspects of innovative practice that can be developed and strengthened in doctoral programs.

5.3.7: Collaboration, mobility, and internationalisation:

The importance of adopting a collaborative and international approach to doctoral organisation and research training is increasingly emphasised. The Salzburg Principles consider “networking, collaboration and mobility” as central to organising more innovative doctoral training programmes (EUA, 2010). Yet this study found that the majority of the ten social science doctoral programs across all the selected universities were predominantly organised in a localised and non-collaborative structure. The few collaborative PhD programs were in economics alone and funded by donors. Collaboration, mobility and international orientation need to be core principles in the design and delivery of new doctoral programs in African universities.

5.3.8: Networked cluster model (“MRPP Pathway”):

This refers to a framework for organising doctoral training whereby a consortium of selected universities come together to deliver a specific doctoral program or set of programmes through a formal or informal collaborative network. In the best instances, participating universities are selected to host a specific doctoral program on the basis of possessing demonstrable academic capacity in a particular area of focus, such that all recruited students are required to attend this particular institution on a periodic or rotational pattern. The network typically seeks funding from a range of external sources for developing and implementing the collaborative doctoral program, including funding to support high quality students recruited into the doctoral programme. This approach to

doctoral organisation provides for mobility, collaboration, and international orientation in doctoral training while also promoting efficiency and economies of scale.

Financial, human, and technical resources are concentrated within particular institutions (nodes) to ensure adequate capacity development, synergy, and sharing by program participants across the network. This model reduces or eliminates some of the serious weaknesses such as duplication of efforts, wastage of resources, and overstretched distribution of investments leading to negligible impact. The networked model is already evident in Africa but largely confined within programs in the natural sciences, applied sciences, and medicine. Some examples include RISE (Regional Initiative on Science and Education), African Centers of Excellence (ACE I and ACE II), CARTA (Consortium for Advanced Research Training in Africa), and RUFORUM.

The social sciences in general are currently not adequately represented in this model of doctoral training, apart from the African Economic Research Consortium (AERC) and USHEPiA. The recommendation is that PASGR can seek external funding and collaborators in order to develop an innovative interdisciplinary doctoral program in the field of public policy that is then delivered across a network of universities with specific strengths in identified areas. In the PASGR context in particular, this networked doctoral model can provide a coherent pathway of progression for students who are currently pursuing the collaborative multi-country Masters of Research Public Policy (MRPP). PASGR already has excellent record and rich experience in developing and managing joint degree initiatives across national borders.

5.4: Potential Prospects for collaboration

The terms of reference require the scoping study to identify institutions and organisations that can become PASGR’s potential collaborators in re-imagining, strengthening, developing, and delivering more innovative doctoral programs in social science. This is a difficult and uncertain task to undertake through the limited data available to the scoping study. The suggested recommendations are indicative rather than definitive or exhaustive and based entirely on the data obtained about the various programs and initiatives that were examined as part of this scoping study. In other terms, the organisations were not directly interviewed to confirm whether or not they might harbour potential interest in any form of collaborative venture with PASGR.

Inter-Universities Council for East Africa (IUCEA):

The IUCEA is the implementing agency for the African Centers of Excellence (ACE II) Initiative. The second phase of the ACE initiative (ACEII) provides opportunities for non-STEM sciences to participate as centers of excellence. In particular, the area of public policy management is directly mentioned as a priority. This provides a potential

opportunity for PASGR to compete for participation as a Centre of Excellence in public policy analysis and research within the ACE initiative. This will require a strong and rigorously designed doctoral program that is interdisciplinary, collaborative, cross-national, multi-sectorally engaged, and coherently linked to local or national socioeconomic development problems or issues. PASGR can seek discussion and partnership with the Inter-Universities Council for East Africa (IUCEA), which is the local implementing agency on behalf of World Bank. PASGR can develop a coherent interdisciplinary PhD program in the area of public policy in partnership with a leading regional university and submit a bid to become a Centre of Excellence under the ACEII.

University of Ghana (PhD Population Studies):

The University of Ghana has the profile, reputation and capacity to host a doctoral hub and is already collaborating with PASGR on the collaborative MRPP degree program. The PhD program in population studies is suitable for selection as a potential doctoral program for collaboration. The program has a structured doctoral model incorporating advanced coursework, comprehensive progression examinations, and supervised independent research and thesis. The program is also multidisciplinary and integrates a coherent and innovative program of experiential learning across academic and non-academic contexts outside the university as part of degree program. Supervision practice looks strong and there is adequate local capacity for teaching and supervision

of doctoral candidates. All these attributes make the PhD in Population Studies a suitable programme for establishment of a doctoral training hub at University Ghana (other programmes such as PhD political science or PhD economics are also potential choices).

University of Nairobi (PhD Political Science):

University of Nairobi is one of the most highly ranked universities in Africa and the highest in Kenya according to the latest global ranking of universities in 2016. The University of Nairobi has significant technical and academic capacity across a wide range of disciplines within and outside the social sciences. In particular, the university has substantial academic programs and critical mass of expertise in the fields of political science, policy analysis, and development studies. The University of Nairobi can therefore be a premium collaborator for PASGR both for the MRPP and for an innovative doctoral programme.

The PhD in political science program currently offered at the University of Nairobi is a thesis-only, non-structured doctoral program. The current framework for supervision is generally less robust and the guidelines for supervision lack depth, coherence, and rigor (written on a short two-page document). The absence of advanced coursework component means that doctoral candidates on this programme are less likely to gain firm grounding in key conceptual and theoretical areas of their fields. These are strategic opportunities. PASGR can consider collaborating with the Department of Political Science to re-engineer and



strengthen doctoral training in political science by creating a fresh collaborative doctoral programme that incorporates structured coursework, external engagement, stronger supervision framework, academic mobility, and integrated supervisor development initiatives.

University of Ibadan (PhD in Political Science/ Economics):

The University of Ibadan is one of the leading universities in Nigeria and on the African continent. Drawing on its distinguished profile, reputation and academic capacity, Ibadan represents an exciting doctoral training hub. Ibadan is already collaborating with PASGR on the MRPP degree programme hence making it easier to establish a hub at the university. The PhD programme in economics has a structured doctoral model incorporating advanced coursework, comprehensive examinations, and supervised independent research and thesis. Based on the findings of this study, this PhD political science programme is of the highest quality among existing programmes across universities, with detailed description of advanced coursework, strong policy framework, and comprehensive coverage of the discipline. PASGR will need minimal interventions to make this an excellent doctoral hub for political science or economics.

University of Botswana (PhD in Public Administration/ PhD in Political Science):

The University of Botswana has a distinguished reputation in research and teaching capacity and is one of the leading institutions on the African continent. It maintains high standards of quality in its academic programmes and provides a range of financial support opportunities for postgraduate studies and research. This profile makes Botswana an exciting doctoral training hub since the university is already a partner to PASGR in the MRPP program. The PhD in Public Administration or the PhD in Political Science are both suitable for selection as the focal program for a doctoral training hub. Like the other programs outlined above as potential hubs, these PhD programs at Botswana are structured and consist of a strong coursework component and independent research, together with an elaborate and well established doctoral supervisory framework. The PhD in economics is also of excellent quality but we do not recommended it here since it is already a collaborative program under the African Economic Research Consortium (AERC).

Next Einstein Forum (www.nef.org):

The Next Einstein Forum (NEF) was established in 2013 as a collaborative initiative between African Institute for Mathematical Sciences (AIMS) and Robert Bosch Stiftung. NEF is a platform that brings together leading thinkers in science, policy, industry and civil society in Africa in order to leverage science towards solving global challenges facing Africa. NEF commands substantial support and recognition by Heads of Government and States across Africa. The NEF Global Forum held in Dakar in 2016 was organised by the Government of Senegal and attracted representatives or Heads of Governments from 80

countries, including delegates from each African country. The most important development for our purposes, however, is that NEF Ministerial Forum held in Kigali in November 2016 resolved to establish an ambitious initiative to strengthen and expand doctoral education in Africa. This will include diversification and redesign of PhD programmes, national evaluation and mapping of doctoral activity and outputs, promoting intra-Africa doctoral student academic mobility, and establishment of African research Chair Initiative (NEF 2016). These initiatives indicate tremendous potential opportunities for PASGR in terms of developing strategic partnerships for doctoral training in public policy and governance in Africa as well as for mobilisation of funding and technical assistance to support the doctoral training initiative.

5.5: Conclusions: Pathways for PASGR Doctoral Initiative

PASGR has built a substantial record of accomplishment in developing and delivering a highly successful collaborative postgraduate programme across several African countries. PASGR therefore commands significant institutional memory, capacities, and connections that are instrumental if it chooses to venture into collaborative PhD provision in selected areas. Drawing on the findings of this scoping study, we identify the following three specific strategic options as having the highest likelihood of delivering success and impact for the PASGR doctoral initiative:

Option 1: PASGR develops a new collaborative PhD programme:

This option will require PASGR and its partners to configure a rigorously designed doctoral programme that is inter-disciplinary, collaborative, cross-national, externally engaged, and coherently linked to local or national socioeconomic development issues. The proposed PhD programme would be designed to meet many of the key elements suggested in the Seven Salzburg Principles of Innovative Doctoral Training (EC, 2011), including mobility, international orientation, engagement with external non-academic sectors, and interdisciplinarity. The new programme will also embrace the features articulated above with respect to effective doctoral recruitment, organisation, and supervision. In terms of collaboration and mobility, PASGR can create a partnership with a cluster of selected universities who can deliver the collaborative doctoral program in a framework that incorporates academic mobility for students and faculty across the partner universities.

Interdisciplinarity will be a critical feature of the new PhD programme. Drawing on international practice and trends reviewed as part of this scoping study, we suggest that the ideal doctoral program should integrate content from the following disciplinary areas: political science, economics, public policy, development studies, and

sociology. These disciplines can form “clusters” or areas of specialisation for candidates while taking modules across all the clusters. The suggested modules for each cluster are outline below but this should be viewed as a guide rather than an exhaustive template of courses. PASGR can work with a consortium of universities to develop and put together selected content from these diverse fields into a coherent and innovative program of

doctoral study that complements a rigorous research and thesis component of the PhD programme. Candidates enrolled for this premier joint doctoral program will engage with the partner universities on a periodic and rotational pattern, to participate in a range of advanced coursework teaching, residential seminars, professional development events, and researcher development programmes.

Figure: Proposed clusters of a multidisciplinary PASGR doctoral programme

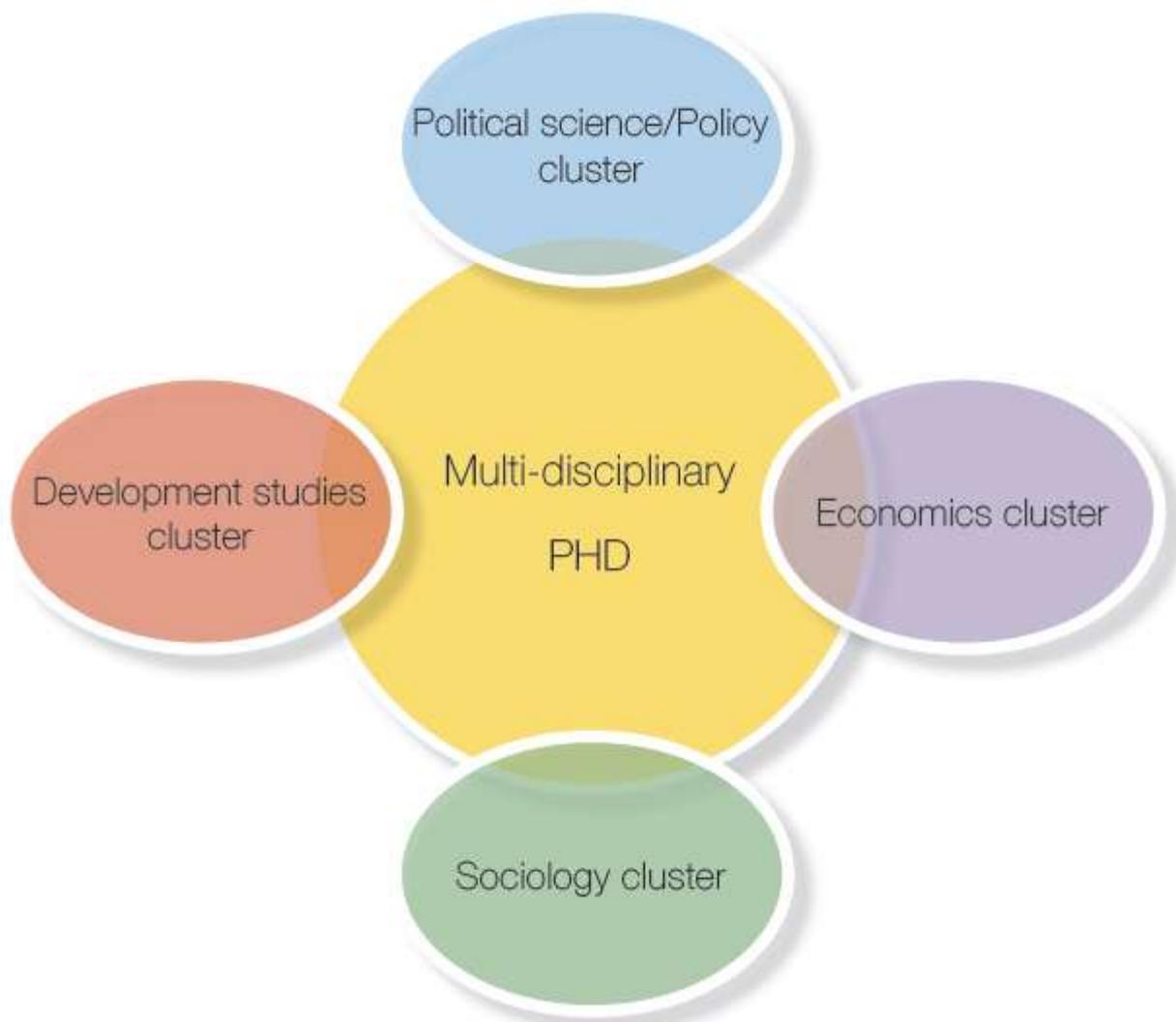
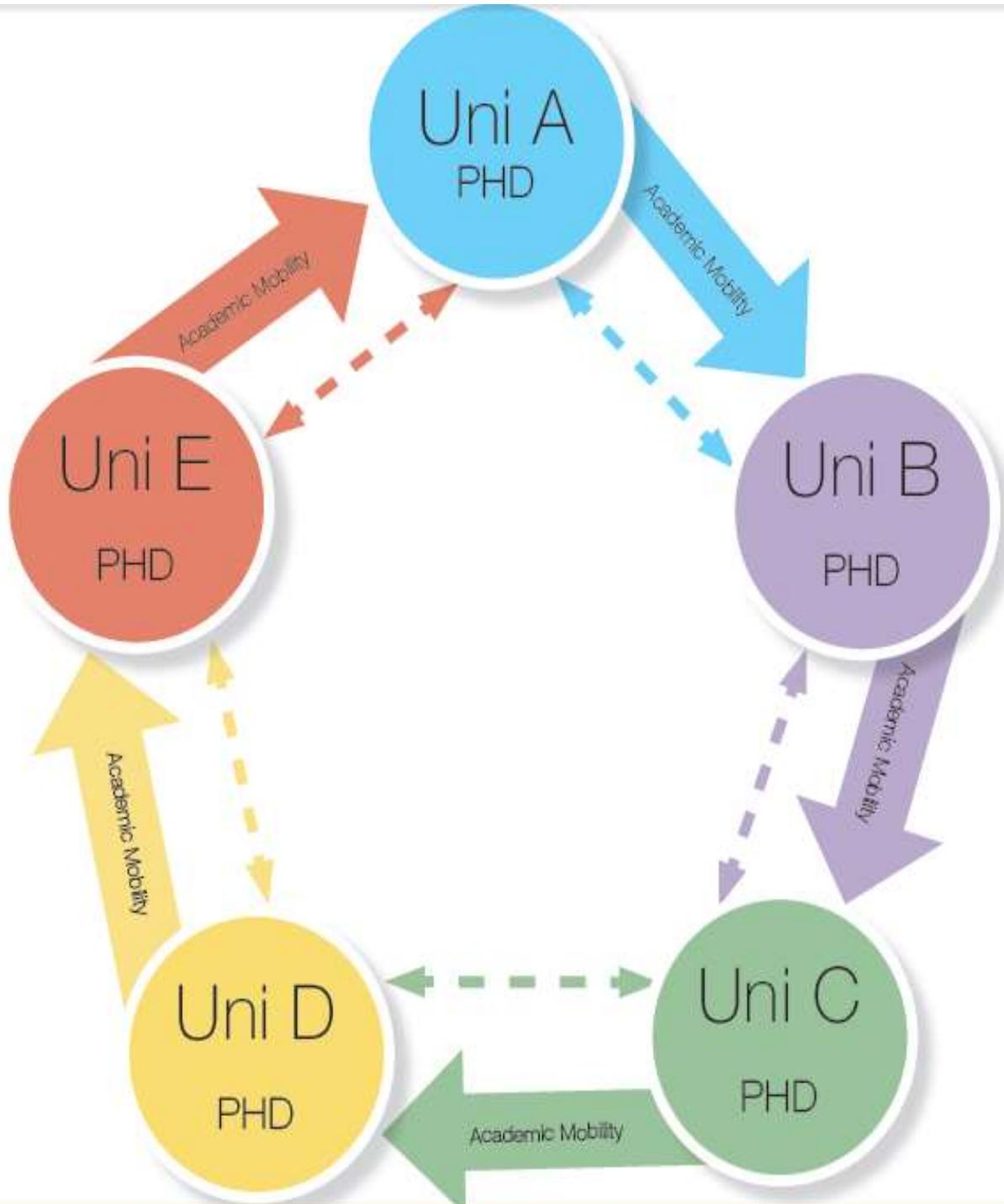




Figure: Proposed arrangement for delivery of the collaborative PASGR doctoral program. (Student mobility between institutions is shown with the arrows)

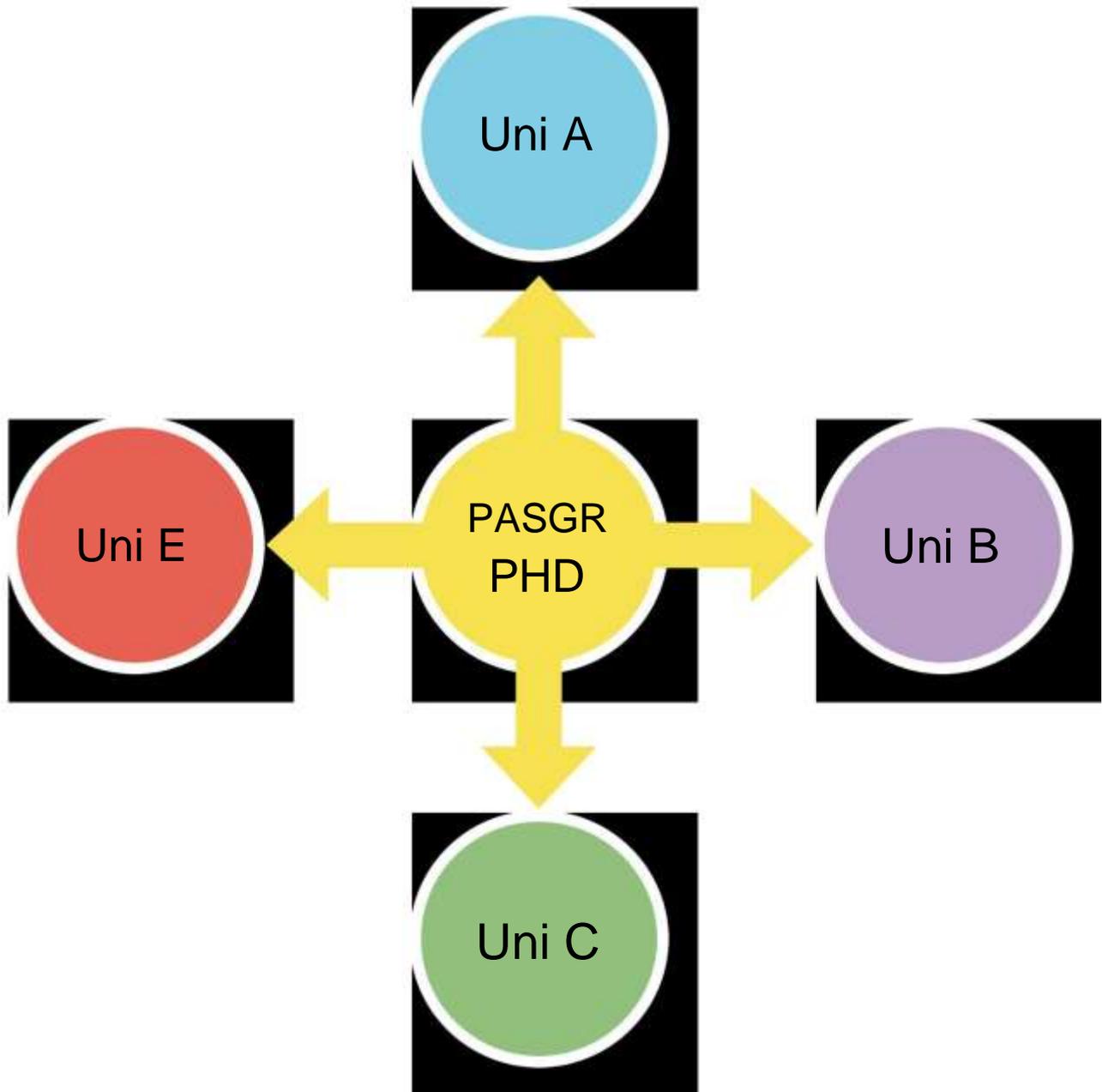


Option 2: PASGR adopts a Distributed Doctoral Model

This is similar to the MRPP structure and it is a variation of option one. Under this model, PASGR develops a new collaborative doctoral programme featuring the key characteristics of innovative doctoral training as articulated in this report. A network or consortium of universities together with PASGR and its technical partners will be involved in developing the structure and content of this new doctoral programme as explained under option one. With respect to delivery, the programme will be hosted at each of the selected partner universities; where each participating university will recruit, train, examine, and

award PhD degrees to their own cohorts of students. The difference with option one above is that in this model, the students are fully hosted locally at their home institutions and mobility to other partner universities is not necessarily provided. Nevertheless, candidates can still attend joint academic events or programs at any partner universities. The role of PASGR is concerned with programme content development, strengthening management processes, contributing to evaluation and quality assurance, creating and extending external linkages, and generally establishing mechanisms for effective coordination and governance of the programme in all universities.

Figure: Proposed arrangement for cluster doctoral model



Option 3: Regional “Hub-and-Spoke” Model

The hub-and-spoke model refers to an approach for organizing doctoral training where selected universities become part of a network of institutions each hosting a specific doctoral programme based on the presence of demonstrable academic capacity in a particular disciplinary area of focus. In practical terms, each university then becomes the “hub” or “center of excellence” for a particular PhD programme. Under this approach, PASGR will identify a set of three or four highly relevant and reputable PhD programmes that are already established across the participating universities to become the focus of collaborative doctoral training and integrated capacity development. PASGR’s broader strategy will be to expand and strengthen the selected doctoral programmes in the respective “hub” universities by formulating and providing targeted interventions depending on specific areas where PASGR has identified inadequacies and gaps. Interventions can include programme structure, supervision, teaching capacity, student recruitment, pedagogical practices, strategic management and monitoring, quality assurance, as well as policy framework development and embedding.

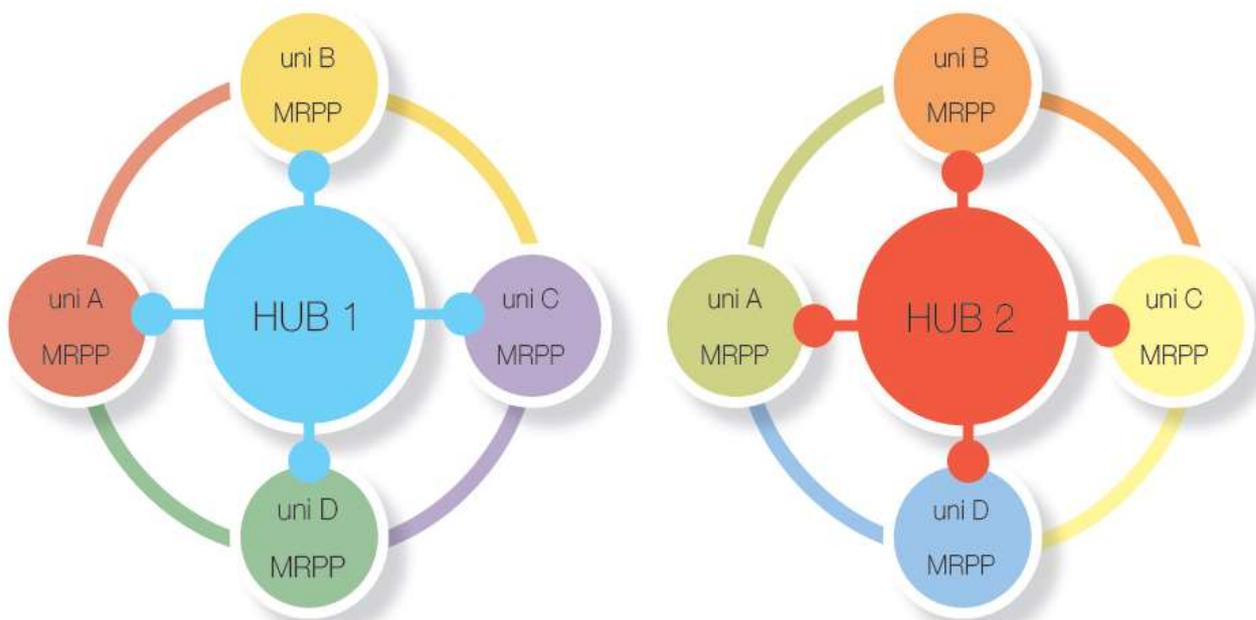
Drawing on established international best practices and frameworks for doctoral training, this report has articulated a clear and comprehensive set of interventions and measures that will be required to build more robust and effective doctoral programs for African universities. These guidelines can be readily applied as part of coherent efforts to strengthen the selected doctoral programs that will participate in the PASGR collaborate initiative. In implementing this approach, either PASGR can work with existing partners currently involved in the

MRPP programme, or it can choose to expand to incorporate new universities into the partnership based on specific parameters to be determined. This study can propose the following four PhD programmes currently established across three universities in three different African regions.

- Hub 1: University of Nairobi (PhD Political Science)– Eastern Africa
- Hub 2: University of Ghana: PhD Population studies - West Africa
- Hub 3: University of Ibadan: PhD Political Science/ PhD Economics - West Africa
- Hub 4: University of Botswana: PhD Public Administration/ Political Science – Southern Africa

This approach to doctoral organisation provides opportunities for mobility, collaboration, and international orientation in doctoral training while also promoting efficiency and economies of scale. Financial, human, and technical resources are concentrated within particular institutions (nodes) to ensure adequate capacity development, synergy, and sharing by programme participants across the network. This model reduces or eliminates some of the serious weaknesses such as duplication of efforts, wastage of resources, and overstretched distribution of investments leading to negligible impact. The hub-and-spoke model is particularly suitable as a complementary initiative to the MRPP program, such that students completing the MRPP can be referred to proceed to any of the four approved hubs for doctoral training based on their preferences.

Figure: Generalised view of the Hub-and-Spoke doctoral model



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