Capacity building for research leadership:

The need, support and strategies for growing African research leaders

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A PASGR Commissioned Study
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Executive Summary

1. Introduction

A robust social science and policy research capacity in Africa is essential to rigorous basic and applied research in the quest for solutions to the region's development challenges. Building a strong research capacity means creating supportive institutional environments, and the availability of a cadre of competent researchers and experienced research leaders.

The role of good research leaders is pivotal – they lead and support research efforts; they manage other researchers and project staff; they are primarily responsible for acquiring project funding; they are often the vocal cheerleaders; and they help sustain an energy that cultivates a can-do team mentality. Good research leaders also contribute vision in the fast-changing research environment and motivate and guide staff through these changes, while stimulating innovation and creativity.

Recognising this value, many developed countries, including the United States, United Kingdom and Australia, have developed formal training programmes to specifically progress researchers into research leaders. Anecdotal evidence suggests Africa's persistent problems - such as lack of adequate funding and infrastructure – affect the availability and effectiveness of research leaders, not least in social science and policy research which operate under seriously under-resourced conditions.

That is why the Partnership for African Social and Governance Research (PASGR) commissioned this study to expand understanding of the state of research leadership in social science and policy research in Africa, and to help identify the capacity needs for such training. The specific objectives of this study are:

i) to help define what research leadership means in the African context;
ii) to identify the attributes and competencies of research leadership;
iii) to identify research leadership development opportunities available in Africa;
iv) to suggest guidelines for research leadership capacity-building efforts.

To achieve these objectives, we employed the following four-phased methodology:

i) a literature review on research leadership;
ii) focus-group discussions with a sample of research leaders and team members in Africa;
iii) case studies of four research leadership development institutions;
iv) surveys of research leaders and research team members.

2. Key findings

2.1 Leadership definition and styles

The literature review on leadership in general and research leadership in particular developed a framework for understanding the meaning, attributes and competencies of good social science and policy research leadership. It also offered lessons applicable to the African context, particularly as African institutions begin to address social science and policy-orientated research capacity needs. The review indicated a general lack of agreement on the definition of research leadership and the particular need for a definition in the African context. The review suggested that leadership studies in Africa, especially research leadership, are still in their infancy; that research leadership in Africa *might* be different in some ways, particularly in attention to the "human touch" or "ubuntu" philosophy which would require additional sets of attributes and competencies. The ubuntu philosophy can be

defined as the "the African ethic of community, unity, humanity and harmony" (Oppenheim 2012; Bateman 2012).

Survey results on ubuntu (compassion, humaneness, benevolence) were mixed. Although the findings on ubuntu were not very clear, the "paternalistic" style option – intended to connote fatherliness in terms of kindness and caring - ranked lowest in both style and research culture/environment. This anomaly may stem from interpretation of "paternalistic/fatherly" in its other senses of "patriarchal", "dominant", "male-led" or "master", which may have negative connotations for some, so African elites (among others) are likely to steer away from acknowledging its relevance although they accept people-centric leadership, which is ubuntu's intended meaning. Supporting the possibility of unintended bias, other ubuntu-related concepts implied in questions on leadership styles were rated very highly by respondents. For instance, when the research leaders were asked to rate preferred styles, people/relations-orientated leaderships were the most preferred.

The important question – whether the ubuntu style is prevalent in Africa's research institutions – warrants further study, and we recommend that future research devote more attention to whether and how ubuntu can play a meaningful role in building effective research leaders in African institutions.

2.2 Attributes and competencies

The survey indicated strong agreement on which attributes and competencies are important. Focus group interviews of a selected set of research leaders and team members concurred with the survey results on the top five qualities:

i) communication skills, which received an average of 98.5%;
ii) delivering outputs on time, 97.6%;
iii) time management skills, 97.1%;
iv) competency in leadership, 96.6%;
v) good vision and strategic thinking, 96.5%.

The focus group discussions revealed similar important attributes:

i) effective communication skills to present projects to external constituencies and to facilitate internal communication among research team members;
ii) research leaders should not see themselves as the boss, but as part of a team;
iii) team-building skills and social qualities to lead and manage a team socially and technically;
iv) financial competencies to deal with budget issues related to research projects.

Research leaders sometimes differed from team members on which attributes and competencies needed upgrade. Both agreed that getting research results into policy and raising international reputation needed improvement. Team members gave higher priority to communication and interpersonal skills, getting grants, delivering outputs, and knowing and interacting with research users. Research leaders gave higher rating to maverick individuality, embracing publicity and getting research results into policy. The leaders' list reflects pressures on leaders in the financing and management of programmes and institutions. High-profile mavericks are frequently mentioned in other "early knowledge sector development" countries in Asia, for example (see Spence, 2008).

2.3 Research environment/research support

The survey asked research leaders how much support and advice they offered to other researchers, personally and institutionally. Team members were asked whether the support

and advice they received from their current research leaders and institutions were useful or not.

Generally, the leaders described their national and institutional research culture in favourable terms and highlighted the advice and support from fellow researchers as prevalent and useful. They also indicated the presence of positive organisational culture for doing and managing research with little political interference. Survey results which rated various aspects of research culture, although statistically significant, were not so strong. Contrary to expectation, ubuntu/humaneness, as indicated earlier, was ranked lowest as part of research culture or the research management environment.

2.4 Leadership challenges for researchers

Researchers in Africa face many challenges both in conducting research and ensuring the use of results. In rating specific challenges, 97.9% of research leaders cited funding–related issues. At a national level they noted:

i) difficulties in engaging policy makers, 91.7%;
ii) little time for research, 91.5%;
iii) lack of or weak national research councils and institutions, 89.5%.

Important constraints at the institutional level included lack of incentives and shortage of time.

The majority of respondents of both sexes agreed on specific factors hindering women from full participation in research and research leadership in Africa, including low access to education, social and domestic responsibilities and entrenched institutional practices. Recommendations for addressing gender imbalance included "Affirmative Action Programmes" – by funding agencies such as PASGR, IDRC, DAAD and others, as well as governments – such as research competitions, with seed money, specifically for women.

2.5 Research leadership development opportunities

The literature did not deliver a comprehensive list of institutions providing research leadership training. A lack of development opportunities for African researchers emerged as a critical gap in renewed efforts to improve research capacity. In developed countries, this responsibility has been met by individual universities or research-funding agencies setting up their own leadership training programmes. These opportunities are often made available to other nationals, including Africans. The literature indicated that some funding agencies abroad have Africa-focused research leadership development programmes. Examples include the Medical Foundation's African Research Leadership (AFL) Training Programme Workshop, a multilateral initiative on malaria (MIM) and the MRC/DFID African Research Leader Scheme.[1] These are useful programmes in nurturing research leadership in Africa, but they focus on specific subject areas, such as the health-related disciplines, to the neglect of the social sciences and policy-orientated research.

The survey respondents indicated a general lack of formal opportunities for research leadership development. This view was consistent among all groups irrespective of age, gender, institution, and so on. Some disciplines had more training opportunities, but these were largely in research capacity building rather than research leadership, *per se.*

[1] For the Medical Foundation African Research Leadership Training Program Workshop: Multilateral Initiative on Malaria (MIM), see the following website: http://www.ellisonfoundation.org/node/4288; and for the MRC/DfID African Research Leader scheme, see http://www.mrc.ac.uk/Fundingopportunities/Calls/ARL2013/MRC008917.

Both research leaders and team members indicated the importance of several leadership development strategies, especially learning through experience, mentorship of young researchers by seasoned researchers, and some training through conferences and workshops. There was no mention of specific research leadership training programmes. Again, the mentioned strategies were largely within the purview of research-capacity building and not specifically related to leadership development.

Respondents agreed that while the current informal system of training may work for some, it does not work for the majority of either junior or senior researchers. However, almost all respondents who had participated in some form of research capacity training felt that the programme had been – indirectly – very helpful in fashioning them into more effective researchers and/or research leaders. Further, most respondents expressed readiness to spend several days annually for leadership development programmes if these were available.

2.6 National research environments and institutional arrangements for delivering formal research leadership development programmes

National research environments – notably the public ministries and agencies set up by governments that fund research – are crucial in creating conducive conditions for independent institutions. Lead agencies often make important decisions on what to fund; they develop and apply funding formulae; and they make policy (sometimes with disastrous results). Although the mandate of this study was on "research leadership", this is just one aspect of the overall research enterprise, so it is important to emphasise the national research environment and its strong relationship to research management institutions, both public and private.

To this end, Chapter 4 is devoted to discussion of national research environments in Africa and selected institutions in Africa and abroad that have research leadership development programmes. For national research environments we focused mainly on South Africa and Kenya as examples of African countries with renewed realisation that innovations in science and research are crucial for economic development. While academics at some institutions of higher learning expressed dissatisfaction with overall institutional support for research management, both national funding institutions and the local private sector support South Africa's research, while Kenya and other countries are trying to improve research capacity through the creation of public funding institutions.

The main conclusion here is that although African governments and universities are putting in place structures to develop research capacity, much needs to be done in parallel to develop a pool of research leaders. Further, while it is important to focus on research leadership, this is only half of the equation; the other half is the need for leadership in research management and research systems, including development of specialist research management expertise, improving the knowledge base in this area through research on national and local research/innovation systems and their components, and, through policy and institutional development, to build and improve the functioning of research management components and systems. Focus on both "research leadership" and "leadership in research management" will help improve policy-orientated research and research management environments in Africa.

Chapter 4 also focuses on organisations which deliver research leadership training programmes or which fund research and aim to develop the capacity of African researchers in general. For each of the selected institutions we briefly discuss their programmes and the strategies they have used, to understand what worked and what did not. The selected

organisations and programmes included The Group of Eight's (Go8) Future Research Leaders Program (Australia); The German Academic Exchange (DAAD) office in Nairobi, Kenya; African Economic Research Consortium (AERC) in Nairobi, Kenya; and Vitae in the UK.

Vitae and Go8 focus specifically on research leadership while DAAD and AERC focus more on researcher capacity building, with potential for research leadership development. These organisations offer different institutional arrangements for delivering leadership development, including collaboration between several universities (as in the case of Vitae and the Go8). DAAD works through individual universities while AERC works as a consortium.

Some organisations focus on one discipline (e.g. economics at AERC) while others are multi-disciplinary. Vitae and Go8 are also national in focus while AERC has a continental reach and DAAD can be seen as an international programme linked to German foreign aid. Most of these institutions employ a combination of programmes, including workshops, printed matter/publications and web-based resources. Most have gender-specific programmes, and AERC addresses gender imbalance in the economics-based professions.

Evaluations indicate that Vitae has long-term impact in developing capable and effective research leaders. Institutions or individuals have to pay a fee to access the training modules.

The Go8 is a relatively young coalition of leading Australian universities whose programmes have not yet been evaluated. However, an examination of their modules shows intensive research and comprehensive general and professional education in the research leadership field.

The AERC has a proven track record in both capacity building and research. Its support for research in economics as well as major involvement in graduate training has made a significant contribution toward strengthening the economics professions in sub-Saharan Africa. A standout achievement by AERC has been its networking approach to capacity building.

AERC's challenges have included changes in higher education in Africa with emphasis on income generation, resource constraints, policy reception by African governments, satisfying donor wishes, and retention of built human capacity. While AERC's and DAAD's strategies are commendable efforts at capacity building for administrators and researchers, their programmes are not specifically designed to train and shape African scholars with reference to research leadership.

3. Lessons learnt and recommendations

3.1 Definition of leadership styles, attributes and competencies of good research leaders

The general view in the literature is the prevalence of paternalistic leadership styles in non-Western cultures, and the importance of ubuntu in the leadership style and organisational culture in African institutions. This study asked respondents to rank the following leadership styles:

- paternalistic;
- democratic/participative;
- people-orientated/relations-orientated;
- laissez-faire;
- task-orientated.

Note that the above terms to are not necessarily optimal for describing African leadership styles, nor should they be considered exclusive from each other. For example, the terms "paternalistic", "democratic/participative", and "people-orientated/relations orientated" all have elements of ubuntu. However, where leaders' and team members' views diverge, the differences are important, and development of research leadership training programmes should include efforts to resolve them.

3.2 Unmet needs in research leaders' development in the African context

The prevalent research leadership development strategy for many in Africa is "learning-by-doing" and informal mentoring. Although these approaches may have worked for some, the current system is not an effective strategy for nurturing future research leaders.

There is considerable unmet need and pent-up demand for formal research leadership development opportunities. Accordingly, future studies should explore the willingness of researchers (or their institutions) to pay for leadership development programmes. Indeed, demand implies the presence of funding of some kind, and this is where private and public academic institutions and international organisations could pool their resources.

3.3 Guidelines for developing research leadership programmes

The findings of this study point to the need for formal leadership development strategies to complement the current informal approaches. The most effective institutional arrangement for delivering research leadership development in Africa must be identified; definition is needed for the different roles of national and international institutions, academic and non-academic; individual institutions and inter-institutional collaboration; discipline-specific versus multi-disciplinary programmes; etc. Future studies could look at effective demand for research leadership training and different channels of delivery – channels that are borrowed from the experiences of other organisations (e.g. Vitae and Go8) but with the African context in mind. Whatever institutional arrangements are adopted, it is important to recognise that research leadership development is a long-term and continuous activity. Questions about funding and sustainability should be an integral part of any discussions aimed at developing such programmes.

3.4 Addressing the gender gap in research leadership

Owing to historical, cultural and social causes, the gender constraints that limit the number of females in research leadership roles in Africa must be integrated into research leadership development. Among other things, there should be gender-specific programmes which help women overcome constraints at the individual, household, community, and institutional levels.

4. Conclusion

Research leadership programmes are a very good investment, both to help meet pent-up demand and because the research sector helps frame and develop policy, practice, and products. For the research sector to successfully integrate social science knowledge into the policy arena, it needs to be actively involved in funding research leadership training. In other words, the "upstream investment argument" applies – if the upstream is done poorly, resources are wasted downstream. The implication is that careful training of research leaders will enhance the production of excellent and policy-relevant research products in the future.

Chapter 1 - Introduction

1. Background

A strong research capacity in African institutions is essential. Robust social science and policy research, both basic and applied, is crucial in the search for solutions to the region's development challenges. However, some development actors question whether social science and policy researchers in Africa "have what it takes" to help the world understand the region's complex development challenges and to contribute to formulating policies. There has been increasing recognition that strengthening social science research will yield dividends in the formulation of well-informed development policies and help ensure their implementation (EDCTP Forum, 2011).

Building a strong research capacity entails not only the creation of supportive institutional environments; it includes the availability of a cadre of competent researchers and experienced research leaders (Evans, 2012; Bashour, 2013). Addressing weak research capacity often requires training individuals at multiple levels in the research process (Camara and Toure, 2013). One link in this process that receives inadequate attention is availability of capable research leaders. Yet the role of good research leaders in building a strong research capacity seems quite obvious – *they lead and support research efforts; they manage project researchers and staff; they are primarily responsible for acquiring project funding; they are often the vocal cheerleaders; and they help sustain energy and a can-do mentality in the project team. Good research leaders offer forward vision in the fast-changing research environment, motivating staff and leading them through these changes, while stimulating innovation and creativity.*

Several reasons have contributed to the dearth of effective research leaders. For instance, research training in many schools does not adequately prepare graduates to assume leadership roles. Rather, most programmes focus on different theoretical approaches, quantitative and qualitative methods and grants writing. While these build researchers, they do not necessarily result in leadership skills development. There is, therefore, a need for intervention programmes expressly designed to develop leaders, particularly for institutions involved in research throughout Africa.

This report focuses on research leadership development, not capacity-building for researchers. While general capacity building for researchers is very useful in the African context, and could potentially lead to the emergence of good research leaders, such indirect efforts should not be substitutes for programmes designed specifically for research leadership development. Many developed countries have programmes and other opportunities specifically to shape researchers into research leaders. For example, in the United States, billions of dollars are funnelled through research foundations such as the National Science Foundation, the National Institutes of Health and others with a focus on creating world-class research leaders (Steinert et al., 2003; Getis, 1993). Other similar research leadership programmes include one at Monash University in Australia, and at the UK's National Institute for Health Research and the Higher Education Funding Council for England.

2. Research objectives and questions

The Partnership for African Social and Governance Research (PASGR) commissioned this study to better understand the role research leadership can play in research capacity building in Africa. The study was charged to review research leadership development within and outside Africa; to identify the attributes of effective research leadership; and to suggest factors for consideration in research leadership capacity building in Africa. The report is expected to be informative to organisations such as PASGR on how to better leverage

existing research leaders to maximise their contribution to the development of researchers in the region, as well as how to design specific activities to accelerate or enhance development of African research leaders in a much more systematic and deliberate fashion.

Questions in pursuit of understanding included:

- What makes an individual a "good" research leader?
- Are there identifiable attributes and competencies associated with being a good leader of research teams?
- How do research leadership competencies differ from other forms of leadership?
- Are any qualities especially relevant or unique in the African context?
- How are these characteristics formed?
- Are some dependent on exposure to different kinds of formal training?
- Are some accrued only experientially through involvement in research activities, interaction with more experienced research leaders, or other activities?
- How did some of the current research leaders acquire their competencies?
- In what ways are those skills improving their leadership and performance?
- How does their input contribute to the development of new researchers?
- What kinds of interventions have been designed to support or accelerate development of research leadership, and to what extent do they offer lessons for Africa?
- Are there ways to use existing research leaders in Africa more effectively in efforts to build the number and capacity of future researchers/leaders?

The study answers these questions by focusing on the following four related topics:

1. *Definition of research leadership*: According to Pinnington (2011), models of effective leadership and the motivations of leaders vary for public, private and not-for-profit sectors. This suggests approaches and practices must be flexible and reflect context – in this case, the research enterprise. Thus, our purpose here is to contextualise the research leadership literature by addressing the following questions:

How do informed actors define "leadership"? Is there a common definition of "research leadership", or at least commonality in how research leadership is defined? Do these definitions vary for the "Africa context"?

2. *Attributes and competencies of effective research leadership*: Pinnington (2011) recognises that one's deeply held values, life, and work experiences can influence how leaders and followers respond to informal and formal leadership development. Goh (2009) adds that Western educational leadership theories are "culture-bound", and cautions against uncritical transfer of Western leadership practices to non-Western contexts. Similarly, in stressing the importance of cultural familiarity in the mentoring of American Indian/Alaska Native students in the US, Gray and Carter (2012:165) argue: "The research team's leadership has had to fill many different roles such as advisor, counsellor, mentor, mother, and grandmother." Thus it is important to identify particular leadership approaches and practices most effective for Africa. The second set of questions therefore revolves around the nature of research leadership in Africa. Does the African cultural context matter in terms of research leadership?

Questions of special interest here include:

- Are there definable attributes and competencies associated with effective research leaders and how do different actors see these?
- Do acknowledged senior researchers view research leadership competencies and formation differently from junior researchers?

- Is it possible to identify existing research leaders and establish a relationship between their presence and the ability/quality of researchers they have led?
- Aside from technical competencies, are there any variations in research leadership from a disciplinary perspective or between "policy-orientated" and "academic" research?

3. *Research leadership development*: A crucial component of research leadership capacity building is institutional support.

- Are there identifiable activities or experiences that play a particular role in development of research leadership?
- To what extent does higher education and/or other formal mechanism of training or professional development deliberately target research leadership in Africa or internationally?
- Do any such efforts achieve positive outcomes and what are the lessons arising?
- What do those who have been engaged in development of research leaders have to say about what has worked and not worked? Do some things work better than others?
- How universal or contextually local are these lessons?
- Are non-African lessons transferable to Africa or vice versa?

Since mentoring is by far the most commonly used research leadership capacity building strategy, it is important to ask:

- Which is more important: diversified or homogenous mentoring?
- Is voluntary mentoring more effective than mentoring as a funding-organisation's requirement?
- What factors help promote or hinder research leadership capacity building efforts?
- How significant is the gender issue in research leadership development?

4. *Recommendations for research leadership development*: Here we explore issues of research leadership vis-à-vis research management, and how to encourage development of these aspects. We focus on organisations concerned with building policy-relevant research capacity, supporting research projects, higher education activities and other forms of professional development.

Importantly, the results of this study should be useful in designing programmes to accelerate or enhance development of African research leaders in a much more deliberate and effective manner.

3. Report outline

The rest of this report is divided into five chapters.

Chapter 2: the methodology of the study.
Chapter 3: the general literature on leadership, including research leadership in Africa.
Chapter 4: results from interviews with institutions and organisations in Africa and abroad, which already have research leadership development programmes.
Chapter 5: the results of surveys with research leaders and research team members, focusing on the definition, attributes and competencies of good research leadership; opportunities for acquiring such competencies; and the gender dimension of research leadership.
Chapter 6: a summary of findings and discussion of the lessons the study offers.

Chapter 2 - Methodology

1. Introduction

This work's objectives required an empirical study of the attributes and competencies of good research leaders, measurement of the need and demand for research leadership development opportunities in Africa, and exploration of the necessary institutional forms for delivering comprehensive research leadership development programmes. The study used a four-phased methodology to collect data.

2. Phase 1 – desk study of the literature on research leadership

This involved review of the literature on leadership in general, including approaches, attributes and competencies of a good leader, and common development practices for acquiring them. The study also looked specifically at the literature on research leadership – to help define it – and explored whether any of the leadership approaches, competencies and development practices were specific to research leaders. The review compiled a list of institutions and organisations involved in research leadership capacity building within and outside Africa

3. Phase 2 – focus group discussions on research leadership

The study conducted focus group discussions during the Research and Higher Education Forum on Post-MDGs in Africa, held in Nairobi, Kenya, on March 18th, 2013. The aim was to examine the role of research leaders in Africa in the production of quality social science research; how research leaders contribute to skills formation; and the capacity development of researchers. Two focus groups were selected from the conference attendees: Group A (Research Leadership Session) and Group B (Research Team Members Session). Discussions were also an opportunity to validate some of the findings from the literature review (Phase 1) and to determine the type of information that should be collected in phase four of the study (see later). The report on the research leadership focus group discussions is given in Appendix 1.

4. Phase 3 – case studies of research leadership development institutions

This phase involved interviewing institutions and organisations within and outside Africa that are involved in research leadership capacity building. Using the list compiled in Phase 1, we invited six institutions. Four agreed to participate and their officials were interviewed (Table 1).

Table 1: Case study institutions

Name and location of institution invited	Name and position of respondent	Response and/or outcome
1. Vitae, United Kingdom	Dr. Ellen Pearce, Executive Director	Phone interview, 20th May 2013
2. African Economic and Research Consortium (AERC), Nairobi, Kenya	Prof. Damiano Manda, Acting Director of Research.	Face-to-face interview, 27th April 2013
3. German Academic Exchange (DAAD), Nairobi, Kenya	Dr. Christoph Hansert, Director, Regional Office for Africa	Face-to-face interview, 29th April 2013
4. The Group of Eight (Go8), Australia	Dr. Fiona Nielson, Manager, Research Planning and Administration, Monash University	Skype interview, 10th June 2013
5. International Development Research Centre (IDRC)*	Simon Carter, Regional Director, Sub-Sahara Africa, Nairobi, Kenya	Not available for interview
6. Medical Research Council (MRC) *	Samia Majid, Panel Manager, Africa Research Leader (ARL) Scheme	MRC funds research leadership efforts but does not directly implement such programmes.

Note: * = these institutions did not participate in the study

We collected information on:

- each institution's experience with research leadership;
- whether they provide opportunities for leadership training;
- their suggestions for improving research leadership in Africa;
- their research leadership development programmes;
- their own assessment of these programmes and their challenges (See Appendix 2 for a copy of the interview guide).

Reports on these institutional interviews are presented in Chapter 4 of this report.

5. Phase 4 – surveys of research leaders and research team members.

The final phase of the study surveyed two groups. One comprised "research leaders" – people who had led one or more members of a research team, based in Africa, and who had been funded by institutions, organisations and/or centres in the past five years. The other group comprised "research team members" – individuals who had been part of research teams but not in a leading capacity.

The groups were given separate questionnaires, both of which were pre-tested on about 20 other researchers and then revised based on their inputs and suggestions. The questionnaires were administered using the online survey tool, SurveyMonkey,[2] over a three-week period in April and May 2013. The survey followed research compliance protocols of the study team's universities and was approved by their respective Institutional Review Boards (IRBs). The questionnaires were designed to collect information on

[2] See http://www.surveymonkey.com/

attributes and competencies of good research leadership. We sought to identify the different types of research leadership in institutions, what they thought were ideal attributes of research leadership and how they would rank themselves or others on those attributes. We were also interested in opportunities available for acquiring such competencies in Africa and explored the gender dimension. The results are discussed in Chapter 5 of this report (also see Appendices 3 and 4 for research leaders' and team members' questionnaires respectively).

It is important to note that owing to the dearth of studies on this subject in the African context, the survey was designed to be exploratory. This was reflected in the population of the surveys – the two databases of respondents were compiled from the databases of various research funding agencies that were willing to share such information. As a result, our sample was not random and therefore not rigorously representative. In addition, even though the database was made up of researchers from Anglophone and Francophone countries, only the English-speaking researchers participated because the survey instruments were in English only.

Chapter 3 - Literature Review

1. Introduction

The literature review sought to understand the current state and strategic development of research leadership in Africa. It also intended to develop a framework for empirical study of the attributes and competencies of good research leaders; to capture the need for development opportunities; and to understand the institutional forms and requirements for delivering research leadership programmes.

The rest of this chapter is divided into four sections:

i) the literature and theoretical perspectives and styles of leading and leadership development in both Western and non-Western contexts;
ii) the specific application of leadership literature to research by defining the research leader's role, attributes and functions;
iii) strategies that institutions have put or are putting in place to develop effective research leaders;
iv) the way forward.

2. Leadership

2.1 Leadership – a definition

Despite a long history of research interest in leadership there is no consensus on what leadership means. Those who take the "individual" perspective focus on personal traits or characteristics, while proponents of the "collective" focus on social processes in group relationships (Bolden, 2004). The implication of the former is that leadership is inherent in a few people born with this special talent, while the latter suggests that leadership is contextual, can be learnt, and everyone is capable of exercising it (Rowe, 2007).

Others have sought to define leadership by distinguishing it from management. Kotter (1990:104), for instance, argues that: "management is about coping with complexity" while leadership "is about coping with change." This requires leadership to create a vision and strategic direction, communicate that vision to the people and customers of an organisation, and then inspire, motivate and align people and the organisation to achieve this vision. Bolden (2004:7-8) stresses that this depiction "can be misleading and potentially harmful in practice." Mintzberg also avoids the distinction and argues that managers have to lead and leaders have to manage (cited in Western, 2008). The "leader-manager" view is particularly relevant to defining good research leadership, since many project drivers tend to function as both managers and leaders.

Cross-cutting all the variants and evolutions of leadership concepts over the past century, the single most fundamental change in the style/definition of leadership has been a shift from "hierarchical" to "non-hierarchical" – to the extent that "leader" and "follower" roles are neither ranked nor fixed. As such, any person in a participatory/group endeavour can be either. There is an interesting parallel here to mentorship, which challenges the teacher-learner paradigms. Thus, we define a leader as any person who inspires and helps enable others to optimise their contribution to a group objective.

2.2 Mainstream leadership theories and styles

Leadership theories have evolved over the years from the early "Great Man" traits through "contextual" approaches to the current "dispersed leadership" theories.

Before the 1930s, the predominant view of leadership was based on the individual, control and centralization of power. The "*Great Man*" theory argued that leaders are born and not made. Researchers looked for evidence of mysterious qualities and believed they were frequently passed between generations (Klingborg et al., 2006). During this time, the "*Traits"* theory attempted to identify specific personal qualities that would qualify an individual for leadership. This involved observing leaders and analysing personality traits that made them successful. Not surprisingly, the number of traits identified was roughly equal to the number of studies undertaken (Bolden et al., 2003; Winston and Paterson, 2006).

By the late 1940s, leadership studies began to look at what leaders do, rather than their personalities. These "*Psychoanalytical" theories* looked at groups and organisations to understand what motivates individuals to lead, or to follow a particular leader. They also studied human relationships within organisations, alongside outputs and performance (Klingborg et al., 2006).

A common criticism of all these theories is their one-size-fits-all view. They ignored possible variety, or gender, race and other aspects of cultural diversity (Western, 2008). "*Situational"* and *"Contingency"* theories emerged to address this limitation. These argued that good leadership is contingent on many factors, including the situation, the people, the task, the organisation, and other environmental variables (Bolden et al., 2003). To them, therefore, different leadership styles were needed to fit different situations.

In recent years, leadership researchers have focused on the leader's relationship with his/her followers and the interdependence of these roles. The result has been a shift from the individualistic view of leadership (the sole leader) to leadership as the collective (team leadership) and this has resulted in the emergence of diverse styles (Bolden et al., 2003). Early research in this genre drew from organisational behaviour and management science and led to *"Attribution"* theories based on how followers assign certain qualities to leaders. This led to identification of several leadership styles, including "*Transactional"* leadership*,* in which "one person takes the initiative in making contact with others for the purpose of an exchange of valued things" (Burns, 1978:19); and "*Transformational/Charismatic"* leadership*,* whereby "one or more persons engage with others in such a way that leaders and followers raise one another to higher levels of motivation and morality" (Burns, 1978: 20). Later iterations of the attribution theories stress the leaders' responsibility to their followers – a kind of more "spiritual or value- or principle-based relationship between leaders and followers." This has resulted in current leadership styles including "*Servant"* leadership, which sees leadership as arising out of the desire to serve rather than a desire to control; and "*Dispersed"* leadership, which advocates a less formal model in which individuals at all levels in the organisation and in all roles can exert leadership influence over their colleagues and thus influence the overall direction of the organisation (Bolden et al., 2003).

Meredith Belbin's "*Team"* leadership style based on the 1970s study of factors that separated successful and unsuccessful teams (Belbin, 2010) is particularly relevant. Belbin identified nine distinctive roles and showed there was no "ideal" leader that could perform all of these – indeed, most people embraced a mix of only two or three roles while avoiding those they deemed uncomfortable. Based on this work, Belbin differentiated between the "solo" and the "team" leader (Table 2). As can be seen, solo leaders may be useful in a workplace for overcoming internal barriers and allowing decisions to be made and implemented urgently. However, team leadership may be more appropriate in dealing with

changing and uncertain work environments and for bringing out the best in team members. Thus, a team leadership style may be more suitable to the research environment because such leaders would allow for "a more holistic or participative style of leadership where teamwork, problem solving, decision-making and innovation can flourish with heightened teamwork and work performance" (Bolden et al. 2003:14).

Table 2: Comparison of Solo and Team leadership

Solo Leader	**Team Leader**
Plays unlimited role; interferes in everything	Chooses to limit role to team preferences; delegates roles to others
Strives for conformity; tries to mould people to particular standards	Builds on diversity; values differences between people
Collects acolytes – admirers and sycophants	Seeks talent – not threatened by people with special abilities
Directs – subordinates take their leads and cues from the Solo Leader	Develops colleagues – encourages the growth of personal strengths
Projects objectives – the Solo Leader makes it plain what everyone is expected to do	Creates mission – the Team Leader projects the vision which others can act on as they see fit

Source: Belbin, 1993, cited in Bolden et al. (2003:14).

2.3 Leadership styles in non-Western context

Studies of cross-cultural organisational behaviour have confirmed the intuitively evident observation that culture influences many of the values that underline leadership theories and styles (Dickson et al., 2003). For instance, work motivation, the relationship between individuals and organisations, organisational commitment, and how individuals manage their interdependence in organisations, have all been shown to vary significantly across cultures (Gelfand et al., 2007). These variations are significant, given that mainstream leadership literature has been dominated "by work from US business schools where there is traditionally a focus on positivistic and scientific approaches to management and leadership that creates a reductionist tendency" (Western, 2008: 25-26). Goh (2009) broadens this criticism beyond the US and notes that Western leadership theories are "culturally bound" and cautions against uncritical transfer of Western leadership practices to non-Western contexts. One of the most ambitious and most cited works on the relationship between culture and leadership is the Global Leadership and Organisational Behaviour Effectiveness Research (GLOBE) Project (House et al., 2004). This showed that culture affects leadership styles as well as how followers see leaders. In sum, culture affects leadership styles, behaviours and practices, and moderates the relationship between leadership and employee outcomes (Gelfand et al., 2007).

2.4 Is leadership in Africa unique?

Empirical data on leadership in Africa is limited. However, there is ongoing debate about the relevance of a Western-orientated leadership approach for Africa (Whitley, 1994; Sorensen and Kauda, 2001). Some, such as Littrell (2011), argue that there is no evidence of "unique African leadership" among the African business community who generally accept "Western" attitudes. Others insist that leadership in Africa is distinctive, especially in one aspect – the incorporation of the "human touch"[3]. Jackson (2004) also argues that African leaders tend to

[3] The point here is not to argue that there is an overarching "African" culture on the basis of "common otherness". Indeed cultures across Africa are notably diverse; sometimes dramatically so, even when in close geographic proximity, and often in ways crucial to the subject of this study (e.g. the status of women). In similar way, the claim that leadership in Africa is characterised by human touch is not meant to insinuate that leadership in ALL non-African cultures lacks the human touch.

incorporate a "humanistic" as opposed to an "instrumental" view which perceives people as a means to an end. Some researchers linked this to the concept of *"Ubuntu"*[4]. According to Bolden and Kirk (2009), ubuntu (now in the English lexicon, defined as an essential human virtue of compassion and humanity) offers a powerful frame of reference and a way for talking about the interdependence of social actors that bridges the individual and the collective. Clearly, more empirical research is needed to show the extent to which ubuntu in business and other modern organisations in Africa really applies.

2.5 Leadership development strategies

Leadership concepts necessarily influence the required leadership competencies and how they are acquired. For instance, if leadership is an individual activity or social process, this will affect the leadership development strategies to be adopted. If leadership is just an application of a set of principles, then development will demand more experiential training. If leadership development is a collective process, then we may challenge the traditional approach of sending only senior employees on training and encouraging others to "follow the leader" (Bolden, 2005: 7). Similarly, any distinction between leadership and management will affect the choice of leadership development strategy. Management development involves equipping managers with the knowledge, skills and abilities to organise performance on known tasks through the application of proven solutions, while leadership development is more orientated towards building capacity in anticipation of unforeseen challenges (Bolden, 2007). A leader-manager view will require a more comprehensive development strategy that stresses the competencies of both disciplines.

Changes in leadership theories have influenced leadership development approaches (Bolden, 2005). For instance, the Traits theory placed greater emphasis on recruitment and selection but discounted management and leadership training. The Behavioural approach led to programmes to help leaders develop appropriate and universally applicable leadership styles and practices. Situational theories are associated with strategies to develop the leader's diagnostic abilities as well as ability to use different leadership styles. The current emphasis on qualities which followers attribute to a leader has led to the proliferation of development strategies that stress the leader's ability to develop and communicate inspiring vision and to motivate followers to have a sense of purpose beyond the material benefits from the job.

According to Day (2001), the common leadership development strategies used in the business world include *360-degree feedback* (a multi-source rating of performance, organised and presented to an individual), *coaching* (a practical, goal-focused form of one-on-one learning), *mentoring* (an advisory or developmental relationship, usually with a more senior manager), *networks* (connecting to others in different functions and areas), *job assignments* (providing "stretch" assignments in terms of role, function, or geography), and *action learning* (project-based learning directed at important business problems). Bolden (2007: 2) also argues that leadership development strategies in the UK show preference "towards more flexible, experiential and informal approaches, tailored to the requirements of individuals and organisations." He identifies a number of weaknesses in many of these strategies in the UK including:

i) a focus on the development of "leaders" rather than contextually embedded or as part of a collective process;

[4] 'Ubuntu' is a highly humanistic concept of interdependence. Ubuntu 'dictates that, if we [are] to be human, we need to recognise the genuine otherness of our fellow citizens' (Louw, 2002: 8). It offers a powerful frame for sense-making capable of holding the paradox of individual and community in dynamic and interdependent tension. This is global, universally human, and the essence of Democracy. The word ubuntu has been adopted because it is a good summary, not a unique or new concept.

ii) viewing management and leadership as distinct rather than integrated and complementary activities/processes;
iii) limited consideration of the impact of contextual factors on individuals and on organisational performance.

3. Research leadership

While there are overlaps between "leadership" in general and "research leadership", some attributes are specific to the research enterprise. We explore these differences through examination of literature on the definition of research leadership and common development strategies; and through literature that discusses the differences in research leadership from a disciplinary perspective. The disciplinary focus is important precisely because a good number of research leaders require specific training in specific disciplines and methodologies to improve their efficiency.

3.1 Defining research leadership

Lack of consensus is evident in research leadership literature. In addition, there is no agreed set for the qualities of a good research leader. Evans (2012) has noted that research leadership is a niche topic within the study of educational leadership and management, and it has received scant attention because it is obscure within the higher education leadership and management package. As a consequence, scholarship on research leadership continues to suffer underdevelopment and a starved knowledge base (Evans, 2012). Instead of giving a concise definition of who a research leader is, Evans elaborates on the emerging field of "researcher development." In other words, he has focused on capacity building for researchers to conduct research rather than and strategies to make research leaders more able and available.

The National Science Foundation (USA) and the National Institutes of Health (USA) define the principal investigator or research leader as the person who takes direct responsibility for completion of a funded project, directing the research scientifically, technically, logistically, and reporting directly to the funding agency (National Science Foundation US, 2002; National Institutes of Health, 2011). S/he is the lead scientist for a well-defined research project. The University of Massachusetts goes further to define a principal investigator or research leader as the primary individual responsible for the preparation, conduct, and administration of a research grant, co-operative agreement, training or public service project, contract, or other sponsored project in compliance with applicable laws and regulations and institutional policy governing the conduct of sponsored research (University of Massachusetts at Amherst, 2009).

Given these definitions and the foregoing literature review, we can describe a good and effective research leader as an individual or a group of individuals who are involved in training and pushing their research teams and/or individual star performers to manage the research, and to yield output whose wider impact is evident either in the development of new products or in advancing social science and informing policy.

3.2 Attributes and competencies of research leaders

Here we briefly highlight research leader attributes and discuss strategies for acquiring competencies.

The University of Leeds Research Board (2003) put out a draft framework for internationally recognised research leaders, per:

i) attributes;
ii) activity indicators;
iii) metrics;
iv) managing a continuous cycle of research.

Competencies for excellence included:

i) influencing the research agenda through sustained quality (and volume) of published output;
ii) shaping the development of the subject or championing the discipline;
iii) influence through networking and involvement in high-level activities;
iv) peer recognition through prizes and awards;
v) continuously evolving research strategies;
vi) ability to attract and develop good quality research students and staff;
vii) obtaining prestigious fellowships;
viii) maintaining research income;
ix) setting very high standards.

(Eady et al., 2002; University of Leeds Research Board, 2003; Fielden, 2011).

It is important to note that this list is suggestive, and far from exhaustive (Bolden et al., 2003; Winston and Paterson, 2006). Also, these qualities do not happen in a vacuum but are supported by an enabling, motivating and research-rich environment, which provides a supporting infrastructure, a critical community of researchers, and an atmosphere in which research thrives (University of Leeds Research Board, 2003). Table 3 summarises specific attributes and competencies of research leadership.

Table 3: Necessary attributes and competencies for research leadership

• Communication skills	• Self-motivation, pushes self
• Time management skills	• Conviction
• Self-management skills	• Opportunism
• Interpersonal skills	• Inspirational
• Managing research at departmental level	• Influential
• Love of the subject	• Embraces publicity /visibility
• Drive, determination, ambition, energy, tenacity	• Delivers to 'supreme best'
• Vision, capacity for strategic thinking, 'thinks big'	• Concerned for the common good as well as own success (self-sacrificing)
• Fearlessness, initiative	• Sustained influential publication record
• Single-mindedness, desire to be the best	• Getting grants
• Infectious enthusiasm	• Delivering [grant and other] outputs on time
• Individuality, maverick	• Attending international meetings as an invited speaker
• Self-sufficiency	• Holder of, and achievements with, a prestigious fellowship in some disciplines
• Anticipation	• Involvement with external activities

Source: University of Leeds Research Board (2003: 2).

According to Jusoff (2007) and other scholars, research leaders are visible and accountable to the research team or staff and have a commitment to further the purpose and goals of research (Evans, 1999; Jusoff, 2007; Lam et al., 2012; Liden, 2012; Waldman, 2011). Skills and creativity are crucial, and leaders must be able to generate and maintain a group of creative and productive followers (Hemlin et al., 2011; Winkler, 2011). The Leeds Report and Jusoff's and other researchers' work show good and innovative research leaders must be creative, visionary, imaginative, inspirational, insightful, foresighted and intuitive in leading their pool of researchers. Research leaders do not sit on their laurels but continue to be innovative with traits that comprise intelligence, initiative, excellent interpersonal skills, high self-esteem, a willingness to take risks… and their consequences (University of Leeds Research Board, 2003; Carucci, 2007; Jusoff, 2007; Jusoff et al., 2009; Kantabutra, 2010).

4. Research leadership development strategies – an overview

How do good research leaders acquire the attributes and competencies to perform their roles? Like the traits and attributes of other leaders, these have to be instilled into individuals through a lengthy process. Research leaders have to be forged, not only by learning skills and methods but also through mental conditioning that comes with training. As Jusoff (2007) notes, good research leaders develop through a never-ending process of self-study, education, training, and experience. Effective leadership requires desire and willpower, as well as a continuous development process. Clearly, the saying that "good leaders are made not born" applies especially to research leaders. The challenge is identifying effective strategies for this development.

Unlike the situation in the business world, research leadership development programmes are few and have not received much scholarly attention. One attempt at filling this gap is Evans' (2012) conceptual model, which emphasises three key components:

i) behavioural development (the process whereby people's behaviour and/or performance are modified);
ii) attitudinal development (the process whereby people's attitudes are modified);
iii) intellectual development (the process whereby people's knowledge, understanding or reflective or comprehension capacity/competence are modified).

Evans prefers the term "people" to be more inclusive, embracing not only researchers but also the general populace that may also be involved in the processes that research subsumes. The challenge is what set of interventions can be used to provide all of Evans' three dimensions of leadership development? How effective will the leadership development strategies that are now in vogue[5] in the business sector be in the research sector?

One common strategy is mentoring – an advisory relationship between a more senior researcher and a junior one (Day, 2001). Mentoring has long been shown to have positive impacts on the development of individuals in both research and other professional careers (Dickinson et al., 2009; Roche, 1979). Research on mentorship in Africa confirms the benefits in increased performance and productivity (see for example, Colborn, 1995). Other studies have shown that mentoring can lead to expanded capacity-building, not only in the conduct of research but also in research leadership and training (Agumba et al., 2010; Doumbo and Krogstad, 1998; Ngalame et al., 2004).

Research leadership development often includes action development projects, conferences, leadership meetings and events, work assignments, active participation and memberships in scholarly and professional organisations, as well as research networks and other learning opportunities. While there are several general research capacity-building efforts and strategies in Africa – such as short courses focusing on specific conceptual and methodological approaches and courses on proposal writing to acquire grants – there is a dearth of similar attempts to train effective research leaders. It could be argued that general 'research' capacity activities indirectly contribute to development of future research leaders. But purpose-designed research leadership training remains an area of great need – a need that could be met by organisations such as PASGR.

Elsewhere in the world, there are a number of institutions which have developed or are in the process of developing research leadership training. For example, Monash University in Australia has a leadership and management development programme for future research leaders (Monash University, 2013). The objectives of their modules are to:

i) provide comprehensive professional development;
ii) enhance the careers of research staff in Australian universities;
iii) develop the next generation of Australian research leaders;
iv) increase university success in research;
v) stimulate Australia's research competitiveness.

The training approach is holistic, providing online learning materials and activities that are then supported by a face-to-face workshops designed to help researchers establish and finalise research projects, and with financial management, commercialisation, technology transfer, governance, and audit requirements. Although much of the training at Monash University is general capacity building for researchers, some of the modules emphasise research leadership training. In a similar vein, a number of universities in Europe and North America have developed programmes for principal investigators or research leaders, geared to enhance knowledge of how to run a research project effectively (University of Massachusetts at Amherst, 2009; University of Leicester, University of Cambridge and Loughborough University, n.d).

[5] See Day's (2001) list of such strategies discussed earlier.

What is clear from the literature is that effective strategies should take a holistic approach. According to Pasmore (2009) this will enable organisations to leverage their time, energy and resources for leadership development in areas with greatest potential for learning and critical application. The recent works of Evans (2011; 2012) and Day (2001) suggest a similar approach. As Evans (2011: 427) argues, institutions that attempt to shape current and future research leaders should be cognisant of the "width, multidimensionality and complexity of researcher development: that it is much more than changing observable behaviour and increasing productivity and output; it also involves changing viewpoints, mindsets and perceptions, and increasing intellectual capacity".

Literature on research leadership shows that it is imperative for any institution to think systemically as it develops its leadership cadre. Developing competencies requires a deliberate leadership culture, well-placed practices and procedures, coaching and mentoring as well as executive engagement. In this respect, it is gratifying to note that there has been considerable movement in Africa to promote research networks as a way of building capacity in research leadership. Examples include the 2011 conference in Addis Ababa to develop scientific research capacity in sub-Saharan Africa (see EDCTP Forum, 2011). There was a quite impressive set of papers presented at this conference, including one titled "Building a sustainable Eastern Africa network for capacity strengthening and mentoring in research and health" (Kaleebu and Miiro, 2011).

5. Conclusion and way forward

Our review of experiences from North American and European institutions of higher learning suggests good and effective research leaders both lead and manage i.e. the "leader-manager". The importance of the "human touch" could be taken as an added dimension in the African context. In this sense, what is considered good research leadership in Africa may be similar to Gray and Carter's (2012:165) description of good research leaders for American Indian/Alaska Native students in the US: "The research team's leadership has had to fill many different roles such as advisor, counselor, mentor, mother, and grandmother."

It is also gratifying to note that African universities, governments, and international organisations are beginning to recognise the relationship between research leadership and research capacity, and the implication for Africa's social science and policy (see for example: Camara and Toure, 2010; Brodén, 2012; Sawyerr, 2004; Mouton, 2010). However, these efforts continue to be stifled by meagre funding, a deficit of effective organisation and management and lack of research infrastructure. They have therefore not resulted in significant increases in research productivity and research leadership development (Camara and Toure, 2010; Brodén, 2012). Although the issue is beginning to gain the attention of universities and leaders across Africa, efforts on this front have been short of the holistic approach to research leadership proposed by Pasmore (2009), Evans (2011, 2012), Brodén (2012) and others.

We see gaps in the literature in terms of:

i) research leadership competencies;
ii) leadership for research management;
iii) African leadership peculiarities;
iv) social science and policy research leadership in Africa.

There is also the lingering question of how to develop effective social science and policy-orientated research leadership programmes in Africa. Below we discuss how these issues/gaps informed the empirical section of this study.
Institutions involved in leadership development: One gap in the literature is the lack of a comprehensive list of institutions that offer research leadership training opportunities. An

important step is compilation of such organisations and their capacity building interventions. Relevant questions would include: what do the organisations look like? What strategies do they employ? Which strategies worked and which did not? What did these organisations do and what did they not do? Appendix 5 and 6 are lists of such institutions that will form the basis of this exploration.

Definition of research leadership: Given lack of agreement on the definition of research leadership in the African context, it will be helpful to find out if African institutions and researchers involved in social science and policy research see leadership as an individual or social/group process; and whether they distinguish between leadership and management or embrace the leader-manager model. It will be important to find out whether views vary between research leaders and research team-members. For example, which attributes and competencies are the same/similar between the two and which are different? This information is essential to discussion about effective development of research leadership and research management strategies.

Attributes and competencies of good social science and policy research leaders: While the literature review shows research leadership studies in Africa are still in their infancy, there are indications that leadership in Africa is different in some ways, especially with its attention to the "human touch". This suggests the need for an additional set of attributes and competencies. This study explores these differences from disciplinary perspectives, comparison between "policy-orientated" and "academic" researchers, as well as gender differences. With regard to gender, we explore specific factors that hinder women from being research leaders.

Availability and need for leadership development opportunities: A crucial gap in Africa's renewed efforts in improving research capacity is the seeming lack of leadership development opportunities for African researchers. In many developed countries this responsibility has been met, in some cases by individual universities setting up their own leadership training programmes or, in others, by national research funding agencies performing these functions. These opportunities are often made available to other nationals, and we expect some African researchers have taken advantage of such options. It will be important to get a sense of what these opportunities are, and their relevance to social science and policy researchers in Africa; and to determine whether there are unmet needs for researchers as well as discovering what types of leadership strategies will be most useful to African researchers.

Availability of institutional support: A vital component of research capacity building is institutional support. We need to identify the different institutional arrangements (universities, national budgets and research institutes, think tanks, international research institutes, etc.) that support development of their own researchers. For instance, it will be helpful to know which of them have in-house programmes, what types of programmes they have (e.g. training as part of graduate curriculum, short-term courses, etc., both in Africa and abroad); how they do or do not help their researchers access external opportunities. Equally important will be information on the challenges their researchers face in strengthening their leadership capabilities and skills.

Leadership in the research management organisations of countries: While leadership in research performing organisations is one key, the development of a national innovation system also requires strong leadership of policies and of organisations such as ministries, councils, academies, agencies, boards, commissions, and foundations. Also of crucial importance are funds and funding mechanisms which support research and innovation from national to very local (base-of-the-pyramid) levels. Study and mapping of national systems, together with development of leaders in research system management, are needed to support more dynamic research and funding environments.

Chapter 4 - National and Institutional Environments and Experiences in Promoting Research and Research Leadership

1. Introduction

This issue demands investigation of both supply (research) and demand (seeking/using//funding/managing) constraints. The oft-cited examples of the need for research leadership development are based on the demand side (Spence, 2008; Pitayarangsarit and Tangcharoensathien, 2009). However, the focus of research leadership development is more often on the research side, with an outward look to the research environment and its importance.

We begin this chapter by looking at the research environment in Africa in general and the efforts being made to build capacity. We single out South Africa and Kenya where the national environment seems relatively conducive to the growth of research leadership and research management, and yet there are no deliberate research leadership/management programmes. We then look at two other research leadership programmes in the UK and in Australia. There exist other organisations that fund research and aim to develop the capacity of African researchers in general. We examine the African Economic Research Consortium (AERC) – which has a postgraduate training programme and a highly developed research programme – and look at the German Academic Exchange (DAAD), which is global in nature but has a strong presence in Africa. We briefly discuss their programmes and the strategies that they have used. Of particular significance to this study is what worked or did not work in their efforts.

2. The national research environment in Africa

For a long time in Africa, education funding has focused mainly on primary and secondary education, with tertiary education receiving little funding from governments (Brodén, 2012). The scant funding tertiary institutions receive is often used for core teaching and salaries, with little or no funding left for activities like research. However, this scenario is changing as African governments have begun to draw attention to the tertiary education sector and research activities in particular. Some have recently created national funding bodies that support research in different fields. An example is Kenya's National Council for Science and Technology. Though not linked to any particular university, the Council has become a significant resource for academic researchers all over the country.

Though research funding is slowly increasing, the research environment is still challenging. The IDRC/West African Regional Office held a round-table meeting with African university researchers and administrators in 2008 to learn more, and discovered that, among other issues, university research lacks effective organisation and management. According to Camara and Toure (2010) the IDRC 2008 forum revealed that "not only is there a lack of vision or appropriate policy frameworks and strategic planning, but there is also a lack of service culture within structures responsible for administering, coordinating and promoting research". As Sawyerr (2004) noted: "Research capacity includes: quality of the research environment, research funding, adequate infrastructure, research incentives, time available to the researcher …in most African countries, conditions for research have been severely compromised as manifest by the poor remuneration, heavy teaching loads, inability to mentor young faculty and inadequate infrastructure." Despite the challenges for African researchers, Mouton (2010) argues: "The fact that there is still sustained and vibrant social

science research in African countries in spite of inadequate government support, poor institutional facilities, and many other challenges says a great deal about the resilience and resolve of African scholars."

It is therefore crucial to examine the leadership side of the research enterprise as well as the research environment and management at national levels. Efforts to develop research leadership in environments where research management is weak or completely non-existent will definitely fail. There is great need to look at research environments, which involves everything from entire research (and innovation) systems or knowledge sectors to sub-sectors and organisations, to individual development. As Jorge and Spence (2009) showed in the case of Chile, university funding mechanisms play crucial roles in research leadership development. Even countries with relatively well-developed national innovation systems for research have substantial distortions and disincentives to research in their public university funding mechanisms.

In a recent survey of research management practices in the Africa and Caribbean regions, academics at institutions of higher learning throughout Africa expressed dissatisfaction with the overall institutional support for research activity, with an average of 66% having a negative perception (see Falk, 2012). The need to improve national research environments warrants emphasis. One country where the national environment is becoming more conducive is South Africa. Several other countries are also working to create supportive research management environments, including Senegal, Ghana and, to a lesser extent, Kenya. Below we briefly highlight the cases of South Africa and Kenya in these respects.

3. Efforts to develop research capacity and research leadership in Africa: the cases of South Africa and Kenya

Here we examine the national research environment with reference to promotion of research and the presence or absence of supportive national policy, including training and funding for researchers, using South Africa and Kenya as examples. Our aim is to identify factors which directly affect the capacity of researchers to assume leadership roles.

South Africa's research efforts are supported by both national research funding institutions and the private sector. Its key public funding agency is the National Research Foundation (NRF-South Africa), but it also has other more specialised funding agencies such as the Medical Research Council of South Africa and the Health Systems Trust. There is also a network of international organisations that offers funding for research, among them the Canadian International Development Agency (CIDA), the Department for International Development (DFID-United Kingdom), the International Development Research Centre (IDRC) of Canada, the United States Agency for International Development (USAID), the World Health Organisation (WHO), the World Bank, and many others. While the core focus of these institutions varies, much of the funding is for agricultural programmes and healthcare research, especially work on diseases such as tuberculosis and HIV/AIDS.

The National Research Foundation Act (Act No 23 of 1998) established the NRF-South Africa to incorporate the functions of the former Centre for Science Development (CSD) of the Human Sciences Research Council (HSRC) and the former Foundation for Research Development (FRD). As an independent government agency, NRF promotes and supports research in all fields of knowledge. It also conducts research, provides access to national research facilities and services to the research community – especially at Higher Education Institutions (HEIs) and Science Councils – to promote high-level human capital development. The NRF aims to uphold excellence in all its investments in knowledge, people and

infrastructure. This agency has put in place innovative research management policies with a view to using research to help solve South Africa's development needs.

Relative to other African countries, South Africa has a substantive set of funding institutions, senior researchers, research managers, administrators and many others interested in the science and innovation strategy of their institutions and their country. However, it is unclear how the research management side works. Randy Spence (the Chile study) notes that, compared with Kenya and Senegal, South Africa has a more complex and difficult research management strategy, and lacks incentives or privileges and immunities (reflecting, among other things, the relative newness of the South African nation and prior distrust of foreign organisations).

While the national research environment in South Africa is exemplary in terms of available sources of funding, the situation at the local level is far from satisfactory in terms of institutional research training and management (Falk, 2012; Whitaker, 2004). Whitaker (2004) notes: "Recent changes within the South African landscape present new opportunities and challenges to identify gaps and priorities in research and training. The higher education sector is undergoing major reforms that seek to address issues of access, resource allocation, diversification, and quality assurance." The consolidation of disparate research funding and agenda-setting bodies into a single institution, namely the NRF, by the government is an encouraging sign. Nonetheless, the streamlining process has been complicated by the emergence of a range of non-governmental research organisations and private higher education institutions (Whitaker, 2004; Randy Spence, personal communication).

At the institutional level, much of the effort in South Africa has revolved around the mobilisation of research funding and capacity development through organising or sponsoring researchers to attend short courses. Research collaborations with higher-profile partners have also become the norm in a bid to attract funds and access research equipment through research budgets or visits to more developed institutions (Whitaker, 2004; Wight, 2008). Informal mentorship is also gaining ground in its basic form, with young researchers paired or incorporated in a team with more seasoned practitioners. Despite these efforts to build skills, research leadership as a concept is still lacking in many South African institutions. Possibilities exist for deliberate training programmes for "research leadership" and "research management". Even though the situation in South Africa and many other countries is still complex and fluid, PASGR and like-minded organisations can assist in filling this gap.

Kenya is improving its national research environment. For a long time state funding focused mainly on primary and secondary education, with tertiary education receiving little (Brodén, 2012). In recent times the government has begun to fund universities and is assisting development of research policies and providing funds for national institutions charged with strengthening research and innovation. One is the National Council for Science and Technology (NCST).

The NCST is similar in mandate to the NRF in South Africa. The Kenyan Government created the Science and Technology Act, Cap 250 of the Laws of Kenya, in 1977[6], establishing Advisory Research Committees (ARCs) and the National Council for Science and Technology (NCST) to serve as advisory institutions to the Government on matters of science and technology. Although policy and administrative anomalies remain in Kenya's research structure, the government is recognising the importance of science and technology in facilitating economic, social and cultural transformations at national and global levels. The

[6] In January 2013, the Kenyan government replaced this law with the Science, Technology and Innovation Act 2012, which is meant to facilitate the promotion, coordination and regulation of the progress of science, technology and innovation in the country.

NCST was mandated to determine priorities in science, technology and innovation, to give advice, and to co-ordinate and promote research, science and technology activities for the country's development. Though not directly linked to universities in Kenya, the NCST has become a significant resource for university researchers looking for funding.

Universities in Kenya have created their own strategies for developing research capacities and, by implication, research leadership. These include offices or departments of research, incentive mechanisms for faculty, training for faculty in proposal writing, and courses in research methodology for early career researchers. Kenyan universities are taking seriously the issue of research funds mobilisation and strenuously forging partnerships and collaborations with other universities and multilateral/bilateral agencies (Brodén, 2012; Whitaker, 2004).

Some universities are working to integrate academic research with national policy research, to make themselves more relevant to national objectives. For example, since 2010, the University of Nairobi has created the office of the Deputy Vice Chancellor, Research Production and Extension. Though this office still suffers financial constraints, it has a mandate to develop research leadership and to link with policy makers and other stakeholders to ensure production, consumption and support for university research. The office has links with other university research centres to foster mentorship for the next generation of research leaders.[7]

In a survey conducted by the Association of Commonwealth Universities, respondents (mostly academics) were dissatisfied with their institutions' support for research management training for all levels of staff. They were particularly negative about support for senior staff and displayed low satisfaction in the area of negotiating research projects, where 80% considered needs to be 'not met at all' or 'rarely met' (Falk, 2012). Respondents indicated that where training was available for research management it was provided from within the university. Results like this call for a closer look at capacity building efforts for specific research leadership and research management in African institutions of higher learning.

In sum, universities are awakening to the fact that they cannot lead knowledge creation efforts without strong participation in research and its dissemination. This has created a ripe environment for research and research leadership development efforts. African governments are also increasingly funding (albeit modestly) and prioritising tertiary education. African universities are putting in place structures to develop research capacity. However, much needs to be done in evolving a pool of research leaders in African universities as an integral part of capacity-building efforts. This presents an opportunity for stakeholders such as PASGR to build networks with African universities to help develop research leadership through sharing of information and other resources. With support from both national and international stakeholders, leaders of social science and policy research in African universities can contribute to the continent's development efforts.

4. Selected organisations with researcher-development programmes outside Africa

Concerted investment is needed for training dedicated to research leaders and research managers. In this section we briefly examine one research leadership programme in the UK (Vitae) and another in Australia (The Group of Eight [Go8] Future Research Leaders Program). We briefly discuss their programmes and the strategies they have used. Of particular significance is what worked and what did not. Africa can learn from their achievements and challenges.

[7] See http://www.uonbi.ac.ke/about/administration

4.1 Vitae[8]

Vitae has a central team based in Cambridge, with eight regional hubs throughout the UK as well as international networks. It is supported by the Research Council UK (RCUK) and UK Higher Education funding bodies and is managed by The Career Development Organisation (CRAC). Vitae works in partnership with regional hub host universities and champions the professional and career development of postgraduate researchers and research staff in higher education and research institutions.

4.1.1 Vitae's research leadership training programmes and strategies

Vitae has developed the following training elements:

i) Researcher Development Framework;
ii) Leadership in Action Programme;
iii) Leadership development for principal investigators;
iv) Web-based resources for developing research leaders;
v) The Concordat: national policy framework guiding research careers in the UK;
vi) The 'How to be an Effective Researcher' programme (also known as Effective Researcher). For a full description of these, visit Vitae's website.[9]

In 2009 Vitae launched Leadership in Action, a three-day residential programme that allows researchers (particularly doctoral researchers and research staff) to explore and develop their leadership skills. Participants learn relevant theories, practice their unique styles, and receive feedback. In 2012, Vitae developed a Researcher Development Framework – a comprehensive package that underpins the professional development of researchers in the UK. It discusses the knowledge, behaviours and attributes of successful researchers to help individuals take control of their professional and career development.

Vitae has also recently developed the Effective Researcher element – a convenient web resource for new and aspiring principal investigators. Issues addressed on the web include:

i) what is expected of a principal investigator;
ii) understanding the research environment;
iii) how to articulate the expected impact of a research project;
iv) people skills (how to manage people);
v) project management and networking.

Vitae has published a series of skills booklets and, most importantly, runs the national policy framework for research in the UK. Launched in 1996, the "Concordat" (meaning Treaty) prescribes the expectations of research funders and employers while acting as a guide for the responsibilities of researchers. Research funding institutions and researchers use the Concordat as their guiding standard for engagement

4.1.2 Effectiveness of Vitae's programmes

The overall impacts of Vitae's programmes have been judged very effective. For example, the Effective Researcher is a comprehensive two-day non-residential programme to support new researchers' skills in communication, planning, time management, problem-solving, leadership, and assertiveness. To assess the effectiveness, value for money and impact for institutions and participants, Vitae

[8] www.vitae.ac.uk
[9] www.vitae.ac.uk

commissioned an independent evaluation (see Vitae, 2010; Henderson et al., 2010) to:

i) identify and analyse the impact of the programme on UK Higher Education Institutions (HEIs);
ii) identify and analyse the impact of the programme on a sample of researchers from a selection of institutions who had attended;
iii) gather case study examples to illustrate the impact;
iv) discover any additional benefits institutions had identified as a result of running the programme;
v) consider recommendations for next steps and future developments of the programme.

The evaluation indicated long-term impact, highlighting the following positive results from an institutional perspective:

i) 95% had positive impact on personal and professional development of researchers;
ii) 82% advanced their relationship with Vitae;
iii) 73% enhanced the connection between training delivery and research at the HEI;
iv) 64% of institutions reported support for the development of internal facilitators.

Institutions regarded Effective Researcher as a cost-effective, off-the-shelf product, which helped promote and support the development of a wider generic skills programme.

From individual participants' perspective, the evaluation was equally positive with respondents reporting:

i) 84% were more confident as researchers;
ii) 84% gained better understanding of their transferable skills;
iii) 79% improved their research;
iv) 71% improved their relationship with their supervisor. One respondent noted: "I feel more confident in communicating with others in my field, managing my supervisor and getting the support I need."

4.1.3 Challenges encountered by Vitae

A significant constraint to Vitae's programmes is sponsorship. Institutions or individuals have to pay a fee for any of the training modules, so access is dependent on affordability. Many of the evaluator's recommendations were related to funding. The report suggested programmes should be designed so HEIs had the option to deliver without recourse to external facilitators to ensure sustainable cost effectiveness. Vitae was also advised to explore how it supports HEIs during a transition to reduced funding and ensure that the benefits from programmes such as Effective Researcher were not lost as a result. However, the evaluators felt the impact and value for money Vitae achieved warranted continued development using a model similar to Effective Researcher (see Henderson et al., 2010).

Other evaluations of Vitae's research leadership training endorse the verdict of effective and long-lasting impact (see Vitae, 2011). Ellen Pierce, the Executive Director of Vitae, has said:

"In order to enable research leaders to reach their full potential, there is both an institutional context role and an individual role. The structures within the institution for recruitment, progression, talent management, and reward need to enable [future] leaders to thrive. Role models are also important. Physical spaces and infrastructure also make a difference (we've seen this in terms of supporting mobile researchers – the importance of having a desk, for example!). In addition to this, it can be helpful to work with individuals to develop and understand their own personal leadership capability, career options and opportunities"

4.2 The Group of Eight (Go8) Future Research Leaders Program

The Group of Eight (Go8) is a coalition of leading Australian universities known for their intensive research and comprehensive general and professional education. The Go8 exists to:

i) Enhance the contribution of its member universities to the nation's social, economic, cultural and environmental well-being and prosperity;
ii) Extend the contribution of its member universities to the generation and preservation of the world's stock of knowledge;
iii) Strengthen Australia's capacity to engage in and benefit from global developments and respond to global and local challenges;
iv) Expand opportunities for Australian students, regardless of background, to participate in higher education of world class.

The Future Research Leaders Program (FLRP) is a government-funded project under the Go8. It is basically a development framework for early-career researchers in these universities. It was launched in 2009 and is still in its first phase. The FLRP is intended to provide emerging researchers in Go8 universities who are identified as future research leaders with best-practice training in financial management, grant administration, business planning, commercialisation and technology transfer, corporate governance, financial reporting, and audit requirements. The target group is Levels A to C staff, comprising teaching and research personnel with up to three years post submission of their PhD. Faculties are asked to nominate staff they feel would benefit from the programme.

4.2.1 Programme design

The first step is online induction/orientation designed for researchers who are new to Go8 universities. The module comprises a checklist of local practices and expectations which should be discussed with researchers during the induction process, and documentation of principles and processes which should be reflected in effective research management practices. There are then eight modules that prepare participants for future roles as managers of research grants and leaders of research teams. These explore the roles and responsibilities researchers assume as project managers, research supervisors, team leaders and centre leaders. Each module has an independent online study, which may take anywhere from 8 to 16 hours of individual work. Finally, there is an end-of-module workshop, open only to those who have completed the online modules.

The modules target the development of specific capabilities in a number of areas that are crucial for research leadership, including the successful management and completion of a research project. The target areas are described in greater depth on the Go8 website. They include:

i) Research strategy and planning;

ii) Commencement and collaboration: putting ideas into practice;
iii) Governance and compliance: protecting yourself, your research and your university;
iv) Intellectual property and commercialisation;
v) Financial, resource and risk management;
vi) Grant and contract administration;
vii) Managing and leading people in a research context;
viii) Project closeout.

For a fuller description of what each of these modules covers see the Go8 website.[10]

4.2.2 Successes and challenges of the Go8 programme

Successful research leaders are invited to be resource persons during the workshops and they share personal experience of the course with participants. Though the programme itself does not have a gender strategy, the University of Monash's general principles ensure there is equal participation by men and women in all respects.

A framework for evaluation has been developed but has not yet been tested (see Centre for the Study of Higher Education, 2010). As yet there is no follow up to ensure that what participants learn is put into practice, or to evaluate the effectiveness of the programme, but the administrators recognise this need. The other major challenge pertains to funding, which is through ad hoc sponsorship and is not underwritten.

5. Selected institutions that fund research in Africa

In addition to Vitae and Go8, there exist other organisations which fund research in general and aim to develop the capacity of African researchers. We singled out two of these:

i) the African Economic Research Consortium that has a postgraduate training programme and a highly developed research programme;
ii) the German Academic Exchange (DAAD) that is global and has a strong presence in Africa.

We briefly discuss their programmes, the strategies they have used, and which have worked or not worked in developing research leaders and/or capacity building for researchers.

5.1 The African Economic Research Consortium (AERC)[11]

The AERC was established in 1988 as a public not-for-profit organisation devoted to the advancement of economic policy research and training in Africa. AERC's mission is to strengthen local capacity for independent rigorous inquiry into problems pertinent to the management of African economies, through synergetic programmes that combine economic research with post-graduate training in economics. The AERC has three specific mandates:

i) to enhance the capacity of African-based researchers to conduct policy-relevant economic inquiry;
ii) to promote the retention of such capacity;
iii) to encourage its application in the policy context.

[10] http://www.go8.edu.au/university-staff/programs-_and_-fellowships-1/go8-future-research-leaders-program.
[11] www.aercafrica.org

AERC does not have an explicit mandate or programme to build research leadership, but many of its workshops indirectly help shape research leaders in the discipline of economics.

5.1.1 AERC's strategies for researcher capacity building

AERC has developed the following capacity-building strategies:

i) facilitating research collaboration between senior and junior researchers and developing research networks;
ii) conducting technical workshops;
iii) training and infrastructure support.

AERC uses the "Collaborative" research programme to pair seasoned and new researchers. This type of research – teams are led by senior researchers and may have junior researchers within the team – attracts much larger grants than thematic research.

AERC's periodic technical workshops deliver cutting-edge techniques to build the skills in certain fields, on a per-need basis. International or Africa-based resource persons may be invited to facilitate the courses.

The AERC support programme trains a qualified pool of researchers to undertake economic research for Africa and in Africa. AERC collaborates with universities to give scholarships to Masters and PhD students, and also funds basic infrastructure like computer rooms, office and classroom furniture. It ensures that each teaching university under the programme has enough qualified personnel to deliver to international standards.

5.1.2 The AERC experience with female participation

AERC's programmes engage researchers/scholars at the postgraduate level, where women are in the minority because of family commitments, low awareness of opportunities and few role models. To bridge the gender gap, AERC has developed strategies including:

i) Sensitisation/awareness creation missions;
ii) Women-friendly grants at AERC programmes;
iii) Giving priority to female applicants.

Regular AERC missions to universities around Africa sensitise female undergraduates to the opportunities available through the AERC network, and encourage participation by offering child-support/family-support grants for female participants with children below the age of one year, and child-care facilities for paper presenters at AERC's bi-annual conferences. Further, AERC gives research grant priority to qualified female applicants.

5.1.3 AERC's achievements and impact

Early evaluations highly commended AERC and its programmes (see Henderson and Loxley, 1997; Horton, 1999). A 2004 evaluation noted AERC had a proven track record and credibility in both capacity building and research (Hassan and Rempel, 2005). The Consortium's support for research and major involvement in graduate training has made a most significant contribution to strengthening the economics profession in sub-Saharan Africa, and external evaluations have highlighted AERC's impact on retention of good professionals in the region. Anecdotal evidence indicates AERC has played a significant

role in inducing a number of individuals to persist in teaching and research under very trying circumstances (Lyakurwa, 2005).

AERC's networking approach in capacity building is novel. The Consortium itself is a network, currently consisting of 16 funders who support a mutually agreed programme of research activities, the dissemination of research results, and the training of potential researchers and academics at the Master's and Doctoral degree levels. This has established a critical mass of support for a set of coordinated activities with shared overheads (Melber, 2007). Many African countries are increasingly drawing on AERC'S experience, and we recommend that other funding agencies interested in setting up training and network programmes in research leadership should carefully examine the three areas AERC has excelled in through deliberate and sustained effort. These are the operation of the research network, the workings of the training network, and the dissemination network for policy briefs and publications. Of importance here is AERC's experience in linking research to policy.

As such, the success of AERC's programmes should be seen in terms of "outcomes," not just volume of "outputs". Lyakurwa (2005) notes that the programmes, though exemplary and successful, are limited interventions that must somehow overcome constraints that are largely systemic. This is the basic consideration that has shaped AERC's programmes, "specifically efforts to exploit potential externalities and scale economies, to insulate the activity from political and economic vicissitudes, and to introduce and sustain pecuniary and professional incentives" (Lyakurwa, 2005:36). Other organisations can learn from "what has worked" in AERC's efforts: "careful attention to process, confidence in local professionals, and use of material and professional incentives to foster institutional reform." (Ibid)

5.1.4 Challenges faced by the AERC

As Melber (2007) notes, the Consortium's experience may suggest that networking is the panacea for capacity building in Africa. However, this is far from the truth as there are enormous challenges that must be overcome before a success story can be told. AERC has been challenged by changes in higher education in Africa, resource constraints, satisfying donor wishes, policy reception by African governments, and retention of built human capacity (for a detailed discussion of these challenges, see Melber, 2007).

Changes in higher education in Africa include charging fees for higher education, privatising services at universities, running parallel programmes that rely on full fee recovery, and initiating fund-raising strategies to augment available resources (Melber, 2007). These initiatives have led to changes in the incentive structure for faculties, with the aim of stemming the brain drain from universities – teaching capacity has declined in the face of very high enrolment rates, and the shift of human resources to parallel degree programmes has eroded staffing for the regular degree programme AERC depends on.

AERC grapples with limited resources and high demand, particularly for graduate training at the MA level, where needy students require scholarships. Much time is spent on the constant search for funds to sustain the programmes, and unending shortfalls have constrained scaling-up.

Donor requirements also shackle AERC's activities. For example, a donor may wish to fund research theses by female students on a particular topic, so expenditure can only be incurred if female participants apply and are selected and they choose to do research in the target area. AERC is not able to use funds that are unutilised in one area to support other budget lines. AERC encourages donors (as much as possible) to allow flexibility on how funds are allocated.

To link research with policy, and simultaneously satisfy donor wishes, AERC has developed a series of workshops that target senior policy makers in the region, and the presentation style is tailored to the audience. This approach is effective but expensive. Though AERC has attempted to build a stock of knowledge in policy-relevant areas, African policy makers are not always open to and willing to call on this expertise for policy advice and more often follow the policies prescribed by donors (Melber, 2007).

Retention of human capacity in academia depends on several factors beyond the control of AERC, such as institutional structures, the reward system and the incentives structure in a particular country (i.e. the research management environment). This is an area where AERC's impact has been limited, and adds to the lessons other organisations could learn from AERC's efforts.

5.2 The German Academic Exchange (DAAD)[12]

Founded in 1925 and headquartered in Bonn, Germany, The German Academic Exchange Service is the largest funding organisation in the world for the international exchange of students and scholars. Members of DAAD include German institutions of higher education and student bodies. Activities go far beyond simply awarding grants and scholarships, and include fostering researchers around the globe in various disciplines through differing means. DAAD has several regional offices, including an East and Central Africa base in Nairobi. Though DAAD plays a very important role in developing careers, it does not have explicit programmes on research leadership.

5.2.1 DAAD's approaches to research capacity building

DAAD's three main strategies are:

i) collaboration with other organisations to support research and training;
ii) support for the creation of "centres of excellence";
iii) technical support for institutions of higher learning.

Collaborations involve a number of German-based organisations such as the German Research Foundation (DFG), the German Federal Ministry for Education and Research (BMBF), and the Alexander Von Humboldt Foundation, among others. DAAD supports its alumni through short research visits to Germany, thus helping new professionals to develop their skills with more experienced researchers abroad. Visits to Germany also offer access to cutting-edge technology and well-equipped labs, and develop international networks.

Within Africa, DAAD has created "centres of excellence" with capacity to support research and promote learning at tertiary level in seven countries: South Africa, Tanzania, Ghana, Benin, Burkina Faso, Senegal and Kenya. These centres can also support short-term research stays to hone skills. Some of the centres support postdoctoral fellows, to build their capacity in teaching and supervision as well as research, ensuring good capacity to conduct learning and research at all levels, including PhD supervisions.

Technical support includes short courses to improve the management skills of university administrators and managers. An example is the International Deans Course, which is an annual two-week training, usually held in Germany with participants drawn from universities in many parts of the world. DAAD's commendable efforts do not, however, specifically train and shape African scholars in research leadership.

[12] http://nairobi.daad.de/

6. Concluding remarks

South Africa and Kenya are driven by a renewed realisation that innovations in science and research are crucial to economic development, but neither have any dedicated training for research leadership; nor does any other African country. This is a major gap and bottleneck.

It is our strong conviction that organisations interested in developing leadership programmes should carefully examine international programmes such as Vitae, Go8 and DAAD to avoid common pitfalls. Challenges include funding, systemic issues and acceptability of research products for policy formulation. Programme design is a key element, as illustrated by Vitae in the UK. The excellent Go8 programme design looks readily transferrable to the African context.

Pivotal aspects include utilisation of existing eminent scholars as advisors and trainers, economies of scale, content geared to the needs of the different institutions, and involvement of both early-career and senior researchers. AERC's networking strategy warrants close attention. Although externally funded, the AERC is truly an African network that creatively involves both Africans and Africanists to understand Africa's problems and offer coherent solutions through economics research. The obvious conclusion is that, though complex, the success of research leadership development will be determined by programme design, management and resource availability.

Chapter 5 - Research Leadership Experiences From Research Leaders and Team Members

1. Introduction

The purpose of the survey of leaders and team members was to capture the attributes and competencies of good research leadership in Africa, to discern what matters most in a research leader, to assess the need for development of this cadre, and to identify what kind of support strategies were required. We also wanted to explore in greater depth the role of research leadership in addressing Africa's social science and policy research capacity needs. The results should help inform policy and organisations on how to grow future African research leaders, and on what can be done to get more from existing leaders. Analysis in this chapter suggests a number of factors for leveraging existing leaders to play more active roles in helping other researchers become leaders in their own right.

We begin with the background characteristics of the survey respondents and a discussion of the composition of research teams. We then present findings on leadership styles, assessments of attributes and competencies; institutional and/or research environments; opportunities for research leader development; demand or unmet needs for such development; and challenges faced by research leaders, including the gender issue. We offer suggestions on what organisations can do to sharpen the attributes and competencies of both existing and future research leaders.

2. Background characteristics of respondents

A total of 464 research leaders were invited to participate in an online survey and 119 (25.6%) responded. Of the183 research team members invited, 37 (20.2%) responded.[13] Tables 4 and 5 summarise their background characteristics. The largest proportion (90%) of research leaders were in the age range of 30 to 59 years, while the majority (68%) of research team members were aged between 30 and 39 years. This is as expected and highly correlates with 80% of research leaders indicating that they had a PhD degree while 49% of team members had that level of education. The others had a Master's degree. Only 14% of the research leaders and 32% of team members were females – a significant gender imbalance. The majority of respondents (both research leaders and team members) were affiliated to academic institutions, with the rest coming from either autonomous or semi-autonomous think tanks, government-funded think tanks, non-governmental organisations (NGOs), and the public sector. The disciplinary background of research leaders was skewed towards economics (51%) and agriculture & natural resource-related management fields (30%). Team members were largely from the fields of governance which included political science, public policy, finance, and administration (38%) and the social science disciplines such as sociology, geography, psychology, anthropology, and so on (38%). The differences are probably a result of the databases used rather than a representation of the specialisations prevailing across Africa. The majority of research team members had been involved in research for more than five years and all had either on-going funded research projects or had undertaken research projects of one kind or another that had been funded within the past three years.[14]

[13] The database of respondents was compiled from the application lists of various funding agencies. Since researchers tend to apply for funding from multiple sources, there were possible duplications in the database so the actual response ratio may have been much higher than the percentages indicated.

[14] Note that unless otherwise indicated, bivariate analyses, using these background characteristics (i.e. gender, age, institutional type, disciplinary background, etc.), did not show any significant differences. They were therefore not included in the report.

Table 4: Background characteristics of respondents

Characteristic	Categories	Research leaders		Team members	
		No.	%	No.	%
Institution type	Academic	82	71.3	24	66.7
	Autonomous or semi-autonomous think tank	7	6.1	5	13.9
	Government funded think tank	2	1.7	0	0.0
	NGO	2	1.7	0	0.0
	Public sector – Ministry	11	9.6	2	5.6
	Public sector – research council	11	9.6	5	13.9
Sex	Male	99	86.1	25	67.6
	Female	16	13.9	12	32.4
Age	<30 years	2	1.7	0	0.0
	30-39	27	23.5	25	67.6
	40-49	47	40.9	10	27.0
	50-59	30	26.1	2	5.4
	60 or older	9	7.8	0	0.0
Disciplinary background	Governance	5	4.4	6	16.2
	Economics	59	51.3	14	37.8
	Social sciences	11	9.6	14	37.8
	Medicine & health-related	4	3.5	2	5.4
	Population studies	1	0.9	0	0.0
	Agriculture-related & natural resource management.	35	30.4	1	2.7
Highest degree completed	Doctorate	92	80.0	18	48.7
	Master's degree	21	18.3	18	48.6
	Bachelor's degree	1	0.9	0	0.0
	Other	1	0.9	1	2.7

Table 5: Research team members' experience

Years involved in research	No.	%
1 year or less	1	2.7
2-5 years	11	29.7
>5 years	25	67.6
Research projects in the past 3 years		
1 research project	0	0
2-3 research projects	16	43.2
3-5 research projects	13	35.1
>5 research projects	8	21.6

To help understand the composition of research teams, research leaders were asked to provide information on the categories of staff and research students involved in their current (or most recent) research project. Most teams include one or two research staff, post-graduate research students, administrative/clerical, and academic staff. A few research teams have as many as 3-10 staff. Although the proportion of males was higher, many teams have both male and female staff (see Table 6).

3. Leadership styles and attributes

The research leaders were asked to rate their agreement with statements describing the following leadership types[15]:

- *Paternalistic leadership* – guides the professional and personal lives of the research team members.
- *Democratic/participative leadership* – strives to include team members in the decision-making process.
- *People-orientated/relations-orientated leadership* – focuses on organising, supporting, and developing research team members and encouraging good teamwork and creative collaboration.
- *Laissez-faire leadership* – allows research team members to work on their own.
- *Task-orientated leadership* – focuses on getting the job done and actively defines the work and roles required; puts structures in place; plans, organises, and monitors work.

Table 6: Characteristics of research teams – research team leaders (%)

		Involvement		Number involved				Gender		
	No.	Yes	No	1-2	3-5	6-10	<10	Male	Female	Both
Research staff	80	92.5	7.5	41.9	33.8	16.2	8.1	20.3	6.8	73.0
Post graduate research students	79	91.1	8.9	52.1	26.0	12.3	9.58	18.3	4.22	77.5
Administrative/ clerical staff	64	87.5	12.5	79.6	18.5	1.9	0.00	18.2	32.73	49.1
Academic staff	72	91.7	8.3	51.5	33.3	15.2	0.00	33.9	6.15	60.0

Figure 1 summarises the ratings of various leadership styles by the research leaders. All were highly rated, but "people-orientated/relations-orientated" was the most preferred, with "*laissez-faire"* and "paternalistic" the least liked. The results suggest research leaders in Africa prefer emphasis on organisation, support, encouragement, and creative collaboration, and that it is incumbent on a good research leader to actively cultivate and organise smooth collaborative efforts in a team to optimise productivity.

Based on our literature review and in consultation with a number of experts in this field, we compiled a list of attributes and competencies of good research leaders (see University of Leeds Research Board, 2003; Eady et al., 2002; Evans, 2011 & 2012).[16] We attempted to validate this list by asking both research leaders and team members to rate these attributes and competencies in terms of their importance for good research leadership based on their own experiences. The results of the ratings on each attribute/competency are given in

[15] These definitions were adopted from James Manktelow and Amy Carlson's list of leadership styles available at http://www.mindtools.com/pages/article/newLDR_84.htm

[16] See Table 3 of this report

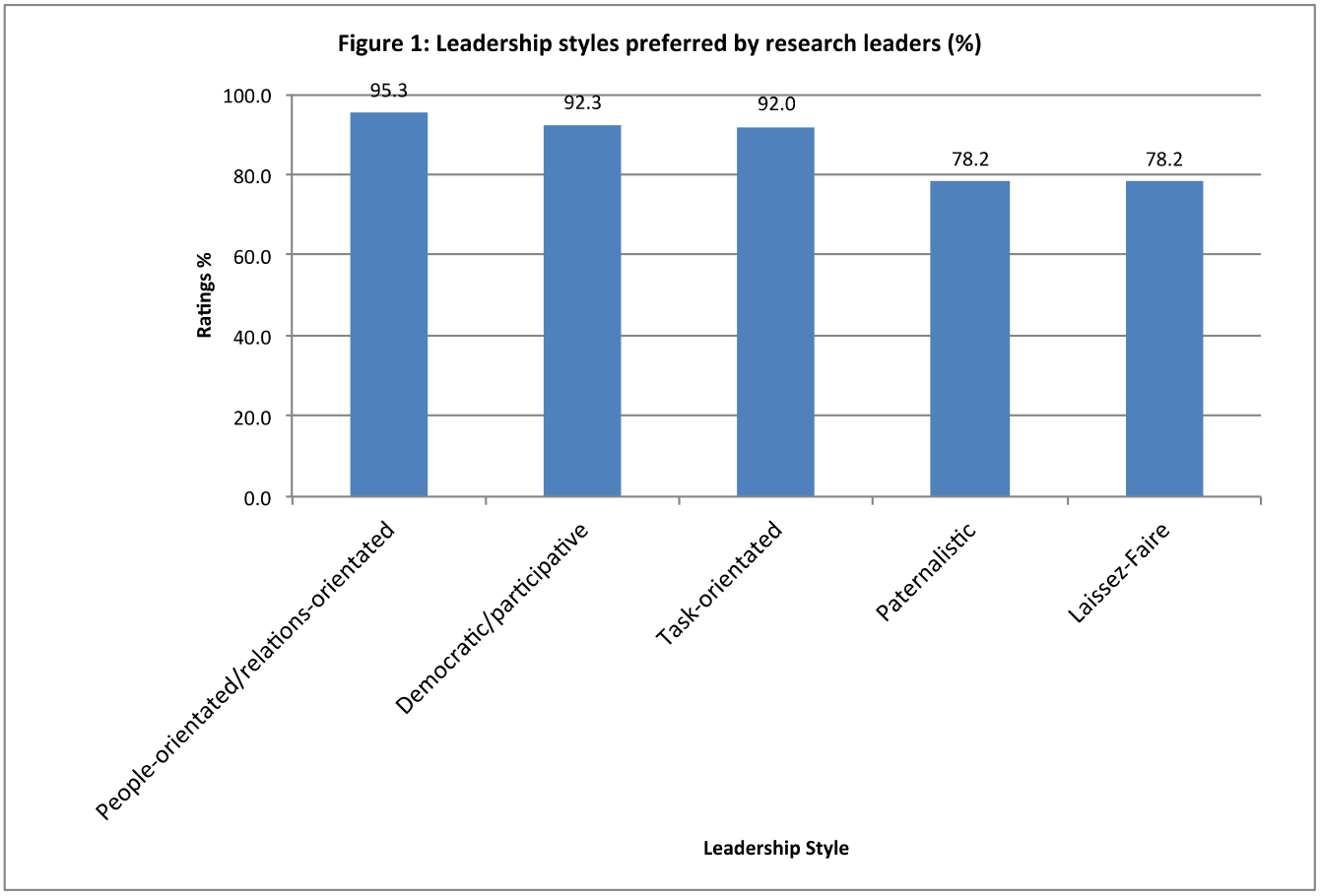


Table 7.[17] The data shows a very high correlation between the two groups of respondents. (Pearson correlation coefficient of 0.948, p=0.000 and Chi Square Test p-value=0.9999). The Chi Square Test results indicate that the distributions of the observed versus the expected frequencies are the same; the two groups are in agreement. Both groups placed the following attributes and competencies for good research leadership (in order of importance):

i) communication skills;
ii) time management skills;
iii) delivering outputs on time;
iv) competence;
v) vision and strategic thinking;
vi) getting grants or the ability to write winning proposals;
vii) anticipation;
viii) interpersonal skills;
ix) self-management skills;
x) inspirational.

The following attributes and competencies were rated as the least important by both groups:

i) concerned for own success;
ii) maverick individuality;
iii) embraces publicity and/or visibility;
iv) infectious enthusiasm;
v) internationally recognised as an authority on the subject.

[17] See Appendix 7a for the detailed percentage scores for each attribute for both research leaders and research team members.

No major differences in scoring between the two groups were observed (see Table 7). The lesson here for accelerating research leadership development in Africa is the need to include these attributes in programmes.

Table 7: Important of attributes and competencies of good research leaders

Attributes & Competencies	Research Leaders' rating (%)	Team members' rating (%)	Average rating (%)
Communication skills	98.0	99.0	98.5
Delivering outputs on time	97.1	98.0	97.6
Time management skills	97.1	97.1	97.1
Competent	96.1	97.1	96.6
Vision and strategic thinking	95.8	97.1	96.5
Anticipation	93.1	97.1	95.1
Getting grants (ability to write winning proposals)	93.7	96.1	94.9
Inspirational	92.7	95.1	93.9
Interpersonal skills	92.8	94.9	93.9
Self-management skills	92.7	94.1	93.4
Knows and interacts with research users	92.4	93.1	92.8
Love of subject	91.5	91.9	91.7
Gets research results into policy or practice	88.3	91.9	90.1
Sustained influential publication record	85.3	88.2	86.8
Ambition and/or tenaciousness	85.8	86.9	86.4
Concerned for the common good	86.8	85.9	86.4
Internationally recognised as authority in the subject	85.3	80.4	82.9
Infectious enthusiasm	78.3	84.8	81.6
Embraces publicity and/or visibility	74.0	78.8	76.4
Concerned for own success	63.4	76.8	70.1
Maverick individuality	64.3	68.7	66.5

Pearson correlation coefficient (r) = 0.948, p=0.0000; Chi Square: p= 0.9999
Note: values in table are arranged in descending order of the "Average rating"

4. Assessment of research leader attributes and competencies

Significantly, results were very different when we asked research leaders to rate themselves on the research attributes and competencies, and asked the research team members to rate their current research leaders. Table 8 shows the percentage of responses that rated the various attributes and competencies as needing improvement. The detailed results from these questions are presented in Appendix 9b.

The correlation coefficient (r) this time was much lower (0.521). The Chi Square Test had a p-value of 0.0000, which means the differences in the observed and expected frequencies shown in Table 8 were not random, but statistically significant patterns. In other words, the two groups identified different areas of deficiency. The top five attributes and competencies flagged by most research leaders as needing most improvement included:

i) getting research results into policy or practice;
ii) embracing publicity and/or visibility;
iii) raising one's international recognition as an authority in the subject;
iv) concern for own success;

v) maverick individuality.

On the other hand, the top five attributes and competencies identified by team members as needing improvement were:

i) internationally recognised as authority in the subject;
ii) knowing and interacting with research users;
iii) delivering outputs on time;
iv) getting grants (ability to write winning proposals);
v) getting research results into policy or practice.

The differences are not surprising, as these two groups have different interests. Nevertheless, there was agreement on some areas requiring improvement such as getting research results into policy or practice and raising one's international recognition. This offers insights to organisations on what attributes and competencies should be emphasised in capacity-building efforts for effective research leadership in Africa. Programmes should innovatively harmonise the differences in seeking remedy.

Table 8: Attributes and competencies of research leadership that need improvement

Attributes & Competencies	Research leaders' self-assessment	Team members assessment of research leaders	Average rating (%)
Internationally recognised as authority in the subject	20.8	35.5	28.2
Gets research results into policy or practice	25.7	19.4	22.6
Knows and interacts with research users	12.9	22.6	17.8
Embraces publicity and/or visibility	22.2	12.9	17.6
Concerned for own success	17.0	12.9	15.0
Sustained influential publication record	13.0	16.7	14.9
Delivering outputs on time	5.9	22.6	14.3
Getting grants (ability to write winning proposals)	7.9	20.0	14.0
Maverick individuality	13.7	6.7	10.2
Communication skills	4.0	16.1	10.1
Interpersonal skills	2.0	16.1	9.1
Anticipation	2.0	16.1	9.1
Time management skills	4.0	9.7	6.9
Vision and strategic thinking	5.1	6.5	5.8
Infectious enthusiasm	8.1	3.2	5.7
Ambition and/or tenaciousness	2.0	6.5	4.3
Self-management skills	1.0	6.5	3.8
Love of subject	1.0	6.5	3.8
Competent	1.0	6.5	3.8
Concerned for the common good	1.0	6.5	3.8
Inspirational	3.0	3.3	3.2

Pearson correlation coefficient (r) = 0.521, p=0.05; Chi Square: p=0.0000
Note: Values in the table have been sorted in descending order of the "Average rating".

5. Institutional/research environment

For research to thrive in African institutions there is need for a conducive and supportive environment and infrastructure, with a critical community of researchers supportive of each other. We asked the research leaders about how much support and advice they offered, and how they would rate the support and advice that their institutions offered other

researchers in their institution. We asked team members whether the support and advice they received from their current research leaders and institutions were useful or not. The responses are summarised in Table 9. A significant proportion of research leaders indicated that they offered a lot or a fair amount of support and advice to other researchers (85%), and that their institutions were offering some very useful or somewhat useful support to their community of researchers (78%). These statistics were generally confirmed by research team members who indicated that the support and advice that they received from their team leaders and institutions was either very useful or somewhat useful (85% and 78% respectively). However, a significant proportion of team members indicated that the support they received was inadequate or not very useful (15% and 22% respectively).

Table 9: Availability of support and advice for researchers

RESEARCH LEADERS	Number	%
How much support and advice do you offer to other researchers in your institution?		
A lot	44	45.8
A fair amount	38	39.6
Little	13	13.5
None	1	1.0
Rate the support and advice that your institution offers to other researchers in your institution?		
Very useful	40	40.8
Somewhat useful	36	36.7
Not very useful	13	13.7
NA	9	9.2
RESEARCH TEAM MEMBERS		
Support and advice that your current research leader offers		
Very useful	20	60.6
Somewhat useful	8	24.2
Not very useful	5	15.2
Support & advice that your institution offers		
Very useful	15	46.9
Somewhat useful	10	31.3
Not very useful	7	21.9

One of the lessons from our literature review was that “research culture matters.” The review highlighted several environmental factors crucial to research, including opportunities for leadership development, availability of institutional support, and a research culture that embraces the concepts of “ubuntu” or humaneness. The work of Randy Spence and others is informative in this respect (Spence, 2008; Pitayarangsarit and Tangcharoensathien, 2009). To capture these effects, research leaders were asked to rate the influence of specific aspects of research culture and organisation on research performance and research management in their respective institutions. The results of this probe are offered in Table 10.

Overall, the results suggest a moderately favourable research culture and organisational environment, both within and outside most of the institutions of the respondents (Table 10). Resultant p-values for the Chi Square Test of below 0.05 imply that the differences in observed versus expected frequencies are true or statistically significant. In terms of research performances, respondents reported a culture characterised by good vision and planning, support for senior and junior researchers, a competitive environment that is motivating and energising, and relatively free from political interference. The only surprising result was the relatively low rating for humaneness (ubuntu, kindness, compassion, etc.). This contrasts with the review of literature that suggests a prevalence of ubuntu in African institutions and organisations. Further, our communications with Randy Spence about his

experience working in Asian countries suggested that the development of research leadership in the Thai health R&D and care systems could be attributed partly to the existence of a research culture of human-ness.

There are two possible reasons for our unexpected findings (Table 10). First, our use of the word 'paternalistic' in reference to ubuntu leadership style may have biased the responses. While paternalistic (fatherly, caring) might be translated as ubuntu (compassion, humanity) it might equally have negative connotations (master, male-dominated, patronizing, even patriarchal) which African elites (researchers) do not want to be associated with. Thus, they are likely to steer away from acknowledging its relevance although they accept people-centric or relational leadership, which is ubuntu's intended meaning. This argument is endorsed by responses to other neutral ubuntu-related concepts in other parts of the survey, which were rated very highly by respondents. For instance, Figure 1 that shows the ratings of leadership styles by research leaders had people-orientated/relations-orientated leadership as the most preferred. Indeed, these leadership styles were interpreted as humaneness (what we have called ubuntu).

The relevance of ubuntu in African leadership should not be determined by findings based on differing interpretations of a couple of items on a questionnaire. The core question is whether or not the ubuntu style is prevalent (and popular) in Africa's research institutions. Clearly, this question needs further study and we recommend that future study on research leadership in Africa devote more attention to whether and how ubuntu should play a meaningful role in building effective research leaders in African institutions. Respondents also gave very positive ratings of their research management environment, describing it in terms of reliance on peer-review, well-administered institutions, and research as a high national/regional priority.

Table 10: Attributes of research culture and organisation of the research environment

Attribute	Number	Ratings (%)		
		Applies much	Applies some	Applies little
A. Research Performance				
Good vision, planning	94	54.3	34.0	11.7
Supportive of younger researchers	94	46.8	36.2	17.0
Supportive of senior researchers	95	46.3	40.0	13.7
Motivating, energising	95	45.3	34.7	20.0
Competitive environment	95	39.0	47.4	13.7
Merit-based system	92	38.0	46.7	15.2
Humanness	92	29.4	48.9	21.7
Political influence[18]	94	17.0	44.7	38.3
B. Research management				
Well-administered	95	42.1	42.1	15.8
High priority in country/region	95	42.1	37.9	20.0
Reliance on peer-review	94	38.3	53.2	8.5
Open funding mechanisms	94	34.0	36.2	29.8
Well organised in country/region	93	32.3	38.7	29.0
Open to using research results	95	30.5	45.3	24.2
Political influence[19]	95	26.3	35.8	37.9
Merit-based system	94	25.5	48.9	25.5

Chi Square Test for Research Performance: p= 0.0000
Chi Square Test for Research Management: p= 0.0003

[18] This includes whether there are pressures on researchers from within the research institutions in selecting research topics, interpreting research results, etc.
[19] This refers to external pressures on the management of research institutions in the conduct of their research.

Note: Values in table are arranged in descending order from highest value to lowest value by the rating of “applies much”.

6. Team members’ views of good and bad research leadership

To help capture the full complexity of what makes a good research leader, we asked team members to describe their most pleasant and worst experiences in working with a research team leader and/or fellow researchers on a project. We also asked them to highlight the role the research leader or principal investigator played to make the experiences pleasant.

A number of themes emerged, including the presence of a caring and non-intimidating leader and members committed to the tasks and the project. Additional themes of positive experience were good time management, meeting deadlines, members working like a “family” of professionals, excellent communication, team spirit, and cohesion. For many, gratification came from the exchange of ideas, the use of mixed-methods approach, and the opportunity to share new knowledge and ideas with and from colleagues. Many respondents liked the fact that colleagues often came from different disciplines, age categories and backgrounds. These sound bites from respondents capture the flavour of working with an effective leader:

- “Each member of the research team has individually and collectively identified with the purpose and success of the project.”
- “Members regularly share ideas and experiences”
- “Members monitored and reviewed the execution process for the purpose of realising high-quality research products.”
- “Leadership only provided a facilitation role and contributions of all members were recognised and counted.”
- “There was opportunity for inter-personal interaction to explore and exchange new ideas.”
- “It promoted innovation and creativity, which are crucial for insightful and policy-orientated research.”

The research team members described several instances when they had bad experiences, most of which had to do with ineffective research leadership. The following are examples:

i) leader presumes knowledge s/he does not have;
ii) leader is not in charge of the research process and exhibits hypocritical tendencies;
iii) leader has poor writing skills and fails to take advice from other team members;
iv) leader is busy working on other projects and is not able to meet deadlines;
v) leader lacks transparency with the spending of research funds.

Several respondents indicated their leadership was more interested in financial benefits than project outcomes. Such leaders demoralised team members. The following remarks from respondents build the picture:

- “The research leader took part of the money and yet failed to produce any output.”
- “The team was forced to borrow additional funds to complete the project.”
- “The team leader was not bothered with deadlines, always had a reason for not submitting a report or was not bothered at all.
- “He was only available when responding to emails from the donor without consulting the co-researchers about how he should respond.”

- "When workshops were organised to measure progress he was busy doing his own work on a laptop computer, even during the presentations, treated co-researchers as students and just as a bunch of useless 'women'.
- "He was very selfish and money-minded."
- "I had to spend sleepless nights working on the reports and coordinating the project during his absence. He only said thank you when we sent the final report on his behalf."

Some questioned the optimum level of qualification for leaders: "Most often, funding agencies prefer team leaders to be PhD holders but when it comes to real work – especially in the development of study tools and writing progress reports – these leaders often get lost and sometimes they don't know what they are writing about. At the same time they don't want to be corrected by someone in the team who only has a Master's degree, even if he is wiser and more intelligent than them."

In sum, many who had positive experience working in a research team pointed to the presence of a good research leader. They appreciated leadership that fostered a spirit of cross-disciplinary sharing between young and old. Experience was enriched by positive debate on all aspects of a research and at different stages of the project down to the delivery of the findings.

Those who indicated bad experiences pointed to the presence of a leader who had no regard for the opinion of others. Such leadership was described as weak, passive, paternalistic, clientelistic, demotivating, and non-welcoming of new ideas from others. Such leaders often acted as "bosses" assigned to manage without team members' input. Lack of transparency, effort, responsibility, respect, and poor understanding of teamwork were also cited as marks of bad leadership. These results, like the results in the survey, suggest that the respondents may have "negatively" interpreted the term "paternalistic". In line with evidence from other research in the literature, the respondents in this study seem to be screaming out their *desire* for ubuntu, but suggest it might be far from inherent or prevalent. This underlines the need to institute a carefully designed study to probe the presence or absence of ubuntu in African research leadership.

6.1 Becoming a good research leader – research team members' suggestions

The research team members were asked to give suggestions that would help research leaders become more effective. Many proposed better communication skills; creative use of all team members' competencies; personal humility and willingness to listen to and accept the views of others. Transparency, especially on funds, was deemed crucial. This included prompt and contractually correct payments to researchers. Other suggestions included regular updates of timelines, working within deadlines, open discussion of all facets, effective planning, regular follow-up on assignments, and fair distribution of tasks. The following statements are examples of what some of them had to say:

"Research leaders should be transparent, objective, humble, be seen to be concerned with the welfare and personal development of team members. Furthermore, they should be seen to have serious concern for the positive outcome of the project. They should understand that organisation and their availability is important for the success of the project."

"Research leaders should learn to delegate work and accept to be corrected by a junior researcher in the team. Funding agencies should also give opportunities to people who are holders of Master's degree to be team leaders. They can be just as effective as PhD holders. During workshops where progress reports are shared,

junior researchers should be given opportunities to present as a way of building capacity of future research leaders."

The lesson here is that research leadership development is important in ensuring the effective implementation of research projects and the production of high quality research products. Also of importance is the impact of ineffective research leadership on capacity building for future leaders. These findings reinforce the need for formal research leadership training and development for current and future research leaders in Africa.

Areas that need to be emphasised in any training of current research leaders include:

i) the ethics of managing research and leading others;

ii) managing people in a research context, particularly in an African setting;
iii) governance, ethics and compliance;
iv) research strategy and planning;
v) financial, resource, and risk management.

7. Opportunities for research leadership development

Both research leaders and research team members were asked whether they had received any form of induction or organised training/preparation for the roles of research leaders or team members. Some 62% of research leaders and 61 percent of research team members had *never* had any organised training for the role as research leader. Results were similar in terms of gender (63% of males and 57% percent of females had no training); in terms of age groups, (with the exception of those aged 60 and over – meaning they were early-career in the 1970s, emergent seniors in the 1980s – where 57% had received formal training), and in terms of institutional types (no significant differences between academic and non-academic). It is unclear whether the leadership training provided to the respondents in the 60-and-over age group made any difference in their roles as research leaders. This finding needs further research to find out exactly what, if indeed training, yielded significant results in strengthening their research leadership skills.

The situation is less clear when the results are broken down by disciplinary background. Fewer social science-related researchers – including those in governance and economics – reported formal training, while those in medicine or health and in agriculture-related and natural resource management fields were more likely to have received formal training (see Table 11). These results are confirmed by Chi Square Tests (Table 11). In this table, sex was the only characteristic with a p-value greater than 0.05, an indication that the observed differences are random. All the other characteristics have p-values of less than 0.05, indicating the differences between observed versus predicted frequencies are statistically significant.

Table 11: Research Leaders who have received any form of induction or organised training in conducting research (research capacity building)

Characteristic	Categories	No.	Yes (%)	No (%)
Institution type	Academic	72	38.9	61.1
	Autonomous or semi-autonomous think tank	6	33.3	66.7
	Government-funded think tank	2	0.0	100.0
	NGO	2	50.0	50.0
	Public sector – Ministry	5	40.0	60.0
	Public sector – research council	8	50.0	50.0
Sex	Male	84	36.9	63.1
	Female	14	42.9	57.1
Age	<30 years	2	50.0	50.0
	30-39	24	25.0	75.0
	40-49	40	40.0	60.0
	50-59	25	40.0	60.0
	60 or older	7	57.1	42.9
Disciplinary background	Governance	5	40.0	60.0
	Economics	48	33.3	66.7
	Social sciences	11	0.0	100
	Medicine & health-related	4	75.0	25.0
	Population studies	1	100.0	0.0
	Agriculture-related & natural resource management.	30	53.3	46.7
Total	Research leaders	98	37.8	62.2
	Team members	33	39.4	60.6

Chi Square Tests: (a) Institutional Type: p=0.0000; (b) Sex: p=0.3863; (c) Age: p=0.0000; (d) Disciplinary Background: p=0.0001.

Those who had received some training were probed for further details. The results are summarised in Tables 12a and 12b, which show the range of opportunities include, but are not limited to, advice and mentoring from others, workshops, conferences, and formal leadership training. It also seems that these opportunities have been offered for quite some time now although formal leadership training is a recent trend. The respondents indicated that leadership development programmes are largely conducted by foreign/international organisations. Funding for leadership development activities comes mainly from their faculty/college – sourced both within their institutions and with significant amounts from funding agencies abroad. There was broad consensus that these activities were extremely useful.

Table 12a: Description of leadership development opportunities used by research leaders

	Advice and mentoring		Workshop		Conferences		Formal training	
When offered?	Freq.	%	Freq.	%	Freq.	%	Freq.	%
<6 months ago	5	20.0	11	35.5	6	35.3	9	42.9
1 year ago	4	16.0	4	12.9	4	23.5	3	14.3
2-5 years ago	8	32.0	13	41.9	5	29.4	4	19.1
>5 years ago	8	32.0	3	9.7	2	11.8	5	23.8
Who offered it?								
Your institution	3	12.0	5	16.7	5	29.4	5	26.3
Your faculty/college	3	12.0	3	10.0	0	0.0	1	5.3
Other national institution	0	0.0	0	0.0	2	11.8	3	15.8
Foreign/international organisation	17	68.0	22	73.3	10	58.8	10	52.6
Other	2	8.0	0	0.0	0	0.0	0	0.0
Who funded it?								
Your institution	4	16.7	7	23.3	6	35.3	7	36.8
Your faculty/college	15	62.5	13	43.3	6	35.3	10	52.6
Funding agency abroad	4	16.7	10	33.3	5	29.4	2	10.5
Funding agency in Africa	0	0.0	0	0.0	0	0.0	0	0.0
Public sector	1	4.2	0	0.0	0	0.0	0	0.0
How useful was it?								
Very useful	23	95.8	27	90.0	16	88.9	16	88.9
Somewhat useful	1	4.2	3	10.0	2	11.1	2	11.1
Not useful	0	0.0	0	0.0	0	0.0	0	0.00

Proportions of respondents noting that the activities were very useful ranged from 75% for conferences to a high of 100% for formal training in research leadership and team member roles. In short, those who have been given a chance at any form of induction or organised training for research leader roles overwhelmingly endorse such training. Thus the demand is great and the opportunities are few, particularly in the social science disciplines. There is therefore an opportunity for research leadership development organisations to step in to meet this need.

Table 12b: Description of leadership development opportunities used by research team members

	Advice and mentoring		Workshop		Conferences		Formal training	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
When offered?								
<6 months ago	2	20.0	4	36.4	2	28.6	2	33.3
1 year ago	1	10.0	3	27.3	2	28.6	1	16.7
2-5 years ago	4	40.0	4	36.4	3	42.7	2	33.3
>5 years ago	3	30.0	0	0.0	0	0.0	1	16.7
Who offered it?								
Your institution	2	20.0	3	27.3	2	28.6	1	16.7
Your faculty/college	2	20.0	0	0.0	0	0.0	1	16.7
Other national institution	1	10.0	1	9.1	2	28.6	0	0.0
Foreign/international organisation	5	50.0	7	63.6	3	42.9	4	66.7
Who funded it?								
Your institution	2	20.0	2	20.0	3	37.5	1	16.7
Your faculty/college	4	40.0	4	40.0	2	25.0	3	50.0
Funding agency abroad	3	30.0	4	40.0	2	25.0	2	33.3
Funding agency in Africa	0	0.0	0	0.0	1	12.5	0	0.0
Public Sector	1	10.0	0	0.0	0	0.0	0	0.0
How useful was it?								
Very useful	9	90.0	10	90.9	6	75.0	6	100.0
Somewhat useful	1	10.0	1	9.1	2	25.0	0	0.0
Not useful	0	0.0	0	0.0	0	0.0	0	0.0

The research leaders were asked to rate the usefulness of the programmes they had participated in, and there was strong agreement that the training effectively covered all major components of research capacity building, not necessarily research leadership. Identifying important research topics and writing proposals ranked as the most useful elements. The less useful included project close out; governance, ethics and compliance issues in a research context; and intellectual property and commercialisation of research products (see Table 13). Yet these very same topics were identified by research team members as areas of deficiency in their team leaders.

Almost all leaders and team members (93%) who had not participated in any form of training in research leadership felt that training programmes that covered the above topics would have been very helpful to their professional development. In addition, most respondents indicated their willingness to spend many days per year for such development – 59% preferred 3-10 days annually and 33% opted for more than 10 days. The overwhelming "yes" view on whether leadership training would have been helpful, and the willingness of research leaders to spend time on leadership training and development, are indications of the unmet need in this area.

Table 13: Research leaders rating of the usefulness of research leadership development programmes (%)

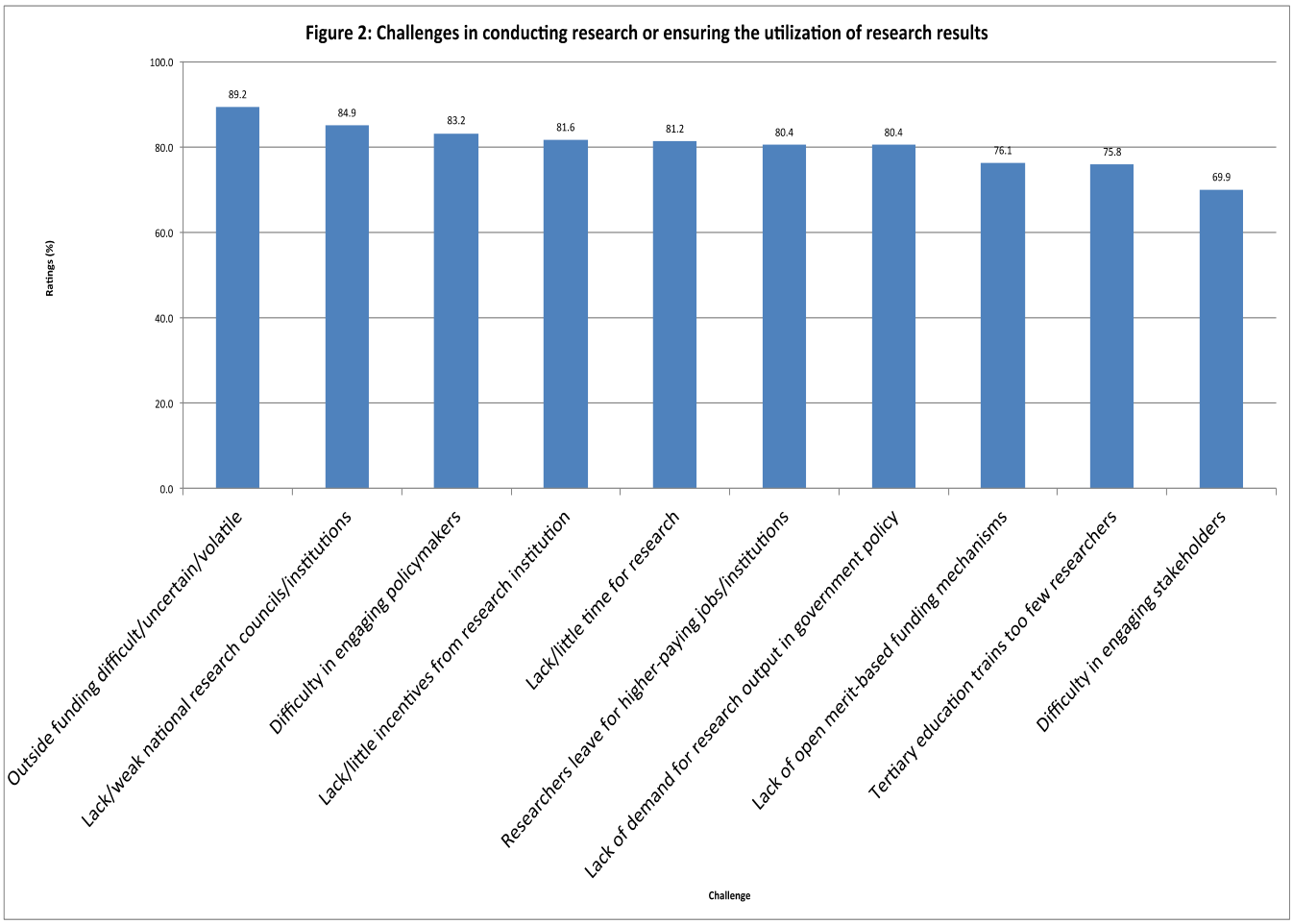
Topics covered in the program	Very useful	Somewhat useful	Not useful
Identifying important research topics	82.4	17.7	0.0
Writing proposals	82.4	11.8	5.9
Securing research funding	72.7	24.2	3.0
Financial, resource and risk management	72.7	21.2	6.1
Grant & contract admin	67.7	29.4	2.9
Managing & leading people in a research context	67.7	29.4	2.9
Utilisation and impact of research results	58.8	41.2	0.0
Intellectual property and commercialisation of research products	54.8	35.5	9.7
Governance, ethics and compliance issues in a research context	51.6	41.9	6.5
Project closeout	44.1	47.1	8.8

Chi square test: p = 0.0000
Note: Values in the table have been sorted from highest value to lowest by the “Very useful” column.

The unmet need for training in the conduct of research, and more importantly in research leadership, offers an opportunity to impact social science research in Africa by putting in place programmes that accelerate and advance research leaders. There are several ways PASGR could get involved in this enterprise. We suggest a two-stage process, which leverages current research leaders. The first stage would include design of training modules and inviting a number of prominent social science research leaders from across Africa for a training workshop. In the second phase, these leaders could take the training back to their regions and, given modest funding for workshops, invite emergent research leaders for training.

8. Challenges of research leadership

Respondents were asked to rate the severity of specific challenges for research. The results are reported in Figure 2. Their greatest challenge was difficulty and uncertainty in securing funding, followed by non-existent or weak national research councils/institutions and difficulty in engaging with policy makers (as opposed to stakeholders). Important constraints at the institutional level included lack of incentives and lack of time for conducting research.



9. Gender dynamics of research leadership – context and challenges

One factor evident throughout our review – of the literature, focus group discussion in Nairobi, discussions with other experts, and our own experiences – is the paucity of female research leaders in African countries. Although largely anecdotal, this observation was confirmed by discussion of the background characteristics of respondents. To better understand why there are so few female research leaders in Africa, the respondents were asked about factors that hinder women from becoming research leaders or principal investigators.

Many respondents cited historical and cultural inhibitors, reflecting unequal access to education at all levels. Here are some of the observations that put those factors in real-life context:

- "In some African communities women are not expected to hold positions of authority. In many African cultures, women are considered to be the home-keepers."
- "Some cultural practices prohibit women from taking up certain jobs, but first and more so they inhibit educational advancement for females."
- "In many circumstances women do not have the higher qualifications that are required for being a principal investigator."
- "In some cases men refuse to nurture women and are patriarchal in their approach, treating women as their students in research projects."
- "Social responsibilities in the African context hinder women from participating meaningfully in research leadership activities. Of particular significance are

domestic or household production activities, child-bearing and caring responsibilities which have to be juggled together with career demands."

- "…young women scientists also wish to start families and this limits (their involvement) in projects that will demand much of their time out of their homes and away from their kids, especially in large regional projects."
- "The rigour and time-consuming nature of research work vis-a-vis the demands of family life on the home front are formidable obstacles for women – especially married women and even more so when married with children."
- "To work with married women and those with children, the researcher would have to somehow get connected with the husband. The husband should have trust in you that the woman is actually being mentored and developed to reach her peak in life as a researcher."
- "Juggling mothering responsibilities, especially when there are under-fives at home, with being research leaders – which requires international travel as well as travel for fieldwork – can be emotionally difficult".
- "Women who work in a male-dominated department may find it difficult to lead a team of men, some of whom find it difficult working under the 'supervision' of women."
- "A woman researcher might need to put a lot of time as research leader and this is not possible, especially for young women researchers who have to balance their time between family-time and work time."
- "There are limited research mentorship programmes targeting young women."
- "Difficult conditions in the field (i.e. safety) can be discouraging to promising young women researchers who have the potential of becoming principal investigators."
- "Patriarchal and negative cultural perceptions and socialisation have discouraged women from taking any leadership positions."

Stereotyping was starkly evident:

- "The major hindrance is grantsmanship – writing a proposal, submitting to a donor and getting funding. If one fails on a number of attempts, most women simply give up."
- "Women's demeanour suggests that they do not always have confidence to lead; men's lack of support, including belittling women research leaders, does not help either; women's frequent inability to consider research themes or activities in the context of wider strategic goals is also a major hindrance."
- "Many academics, especially females, have a tendency to slow down once they reach the position of senior lecturer. Other obstacles are institutional such as the difficulty of keeping up with developments in quantitative techniques and the lack of access to online journals and databases. Women see these obstacles as insurmountable."

This attitude did not resonate with all respondents, especially women. One countered:

- "There are no insurmountable factors hindering women from becoming research leaders other than the compromise to get time – to reconcile and balance use of full professional opportunities and individual social life. It really depends on organisation – the flexibility to balance family and research work/duties."

9.1 Constraints faced by well-established female research leaders

A number of male and female respondents alluded to other consequential constraints. The top three were:

i) lack of access to capacity building and research opportunities for well-established female research leaders;
ii) continued male bias against women even when the women have proven themselves successful at research leadership;
iii) lack of a critical mass of female research leaders in institutions of higher learning.

To a lesser extent a number of respondents mentioned safety concerns while conducting research in the field; time constraints; and diminished stamina and/or inertia.

A substantial number of male respondents indicated that female research leaders who had gone beyond the "glass ceiling" of seniority often lacked access to capacity building programmes, research funding, and research tools such as online journals and databases – because of stereotyping and prejudices from colleagues and friends, communities and cultures, family background and the status of the family or husband.

One male respondent noted:

> "Even well-established female researchers face the misplaced belief about women's role being in the home."

Both male and female respondents agreed there was continued male bias against successful women. They said men often find it difficult to work in a team led by a woman and, more importantly, women who work in a male-dominated department may be intimidated. The following quote is representative:

> "In some situations, some men do not welcome females being in authority over them due to rampant sexism …women's demeanour suggests that they do not always have confidence to lead; men belittle rather than support."

The current inadequate number of women research leaders tends to make them fairly timid; a critical mass would significantly increase their self-confidence. Safety in the field was listed as a major concern. Women are more vulnerable to assault, sexual harassment and intimidation by male competitors. Female research leaders shy away from conducting research in risky environments, which deters them from some projects they would otherwise be well suited to lead.

9.2 Suggestions for addressing gender-based constraints[20]

Respondents were asked to offer suggestions for overcoming the gender-based constraints. Several called for a form of "Affirmative Action" geared towards cultivating women research leaders in Africa – for instance, funding agencies such as PASGR, IDRC, DAAD and others as well as governments could create research competitions specifically for women. Another suggestion was to set aside resources to be used as seed money for women researchers, though others cautioned that research grant processes should be based on competence rather than 'affirmative action' which can result in complacency and limit pro-active engagement."

[20] We acknowledge that addressing these socio-cultural bias and gender-based constraints requires cultural change at the individual, household, community and institutional levels. Given that researchers are situated in a broader cultural context of their various countries, recommendation for a cultural change and suggesting ways to accomplish this is beyond the scope of this project.

Other suggestions were directed at the roots of the problem – changing the culture rather than just treating some of its symptoms – and actively ensuring gender equity at all levels: in the home, in the community, and at work. Measures would need to drive cultural awareness, expectation and acceptance of gender equality…in education, literacy campaigns, opportunities in the labour force, in institutions of higher learning and among researchers, consideration of women's special roles, universal education for all, training of researchers, capacity building, mentoring, targeting and disseminating information on training opportunities, and the tailoring of training programmes. Other respondents noted that women should continue to fight for their self-confidence in all spheres, in addition to what governments are already doing to support their empowerment. The parallel need was also recognised, to sensitise men to respect women as equals, and to guide institutions on how to encourage and mentor women to be persistent and aggressive in attaining research leadership. In this regard it was suggested that all incoming staff to institutions of higher learning should go through gender-sensitivity training.

In sum, the relative dearth of women research leaders in Africa can be attributed to many factors, including the historic lack of educational opportunities for women; the culture of male dominance that makes many men unwilling to be led by women; the need for women researchers to balance research work with their social and domestic responsibilities, including their roles as mothers and wives; and the lack of institutional support that addresses the specific needs of women research leaders. Despite these constraints, women have, of course, shown themselves to be capable and effective research leaders when not denied the opportunity; and even when opportunity has not been readily available. As indicated by one female respondent, women in some institutions have shown that they can succeed even in the face of such obstacles and have become formidable research leaders:

> "…my observation and personal interactions with some women research leaders in Ghana show women can be focused and know what they are about. There are a number of women, both young and old, who occupy very high positions, some far higher than their male counterparts in research leadership in Ghana."

Thus, actively addressing the roots of gender inequity in African societies with concerted efforts and assistance from governments and funding agencies will go a long way to ensure women participate meaningfully in research leadership positions. But for this to happen, there is need to raise the number of women graduates. Elsewhere in the world (e.g. Canada and the USA), women are the majority of tertiary education graduates. In the words of one respondent, "There is no question that with a proper mix (male and female) and effective and caring support, women can make excellent research leaders/PIs." Meanwhile, even women who have broken the glass ceiling continue to face constraints. Many of these can be dealt with by well thought-out programmes that specifically target women who have a successful record in research leadership.

Chapter 6: Summary and Recommendations

1. Introduction

There is no doubt that research leaders play a crucial role in research and its translation into policy. This report provides a rich dataset on research leadership attributes and competencies in Africa, and the needs and challenges for development of future research leaders. The results indicate a huge gap between demand for and supply of research leadership training. We summarise the findings in the next section and then offer suggestions for creating leadership programmes.

2. Summary of findings

This exploratory study's objectives include helping to define what research leadership means in the African context; identifying the important attributes and competencies of research leadership; identifying research leadership development opportunities available to researchers in Africa; and (based on the findings) recommending guidelines for research leadership capacity building efforts in Africa.

The study includes review of the literature, focus group discussions, case studies, and online surveys. The findings are summarised in line with the main objectives and the questions posed in Chapter One using the following subheadings:

i) defining research leadership;
ii) ascertaining attributes and competencies of effective research leadership;
iii) institutional culture;
iv) the gender context of research leadership;
v) opportunities for research leadership training;
vi) case studies of capacity building institutions.

2.1 Defining research leadership

Although leadership studies in Africa are still in their infancy, there are indications that research leadership in Africa is different in some ways, especially with its attention to the "human touch". The results indicate that respondents distinguish clearly between paternalistic and ubuntu and these two leadership styles emerge as contrasting terms rather than complementary. Respondents preferred "people/relationship orientated"; "task-orientated"; and "democratic/participative" styles of leadership, all of which have strong elements of ubuntu. Ubuntu (humaneness) is desired and should be integral to the culture in African institutions.

2.2 Ascertaining attributes and competencies of effective research leadership

Both research leaders and research team members agreed on the important attributes and competencies. These findings were confirmed during focus groups – where both leaders and team members agreed on the following:

- Research leaders should not see themselves as the boss, but as part of a team.

- Team-building skills are important so the research leader must have qualities to lead and manage a team socially and technically;
- Research leaders must have financial competencies for dealing with budget issues related to the research project;
- Research leaders also need effective communication skills to present the project to external constituencies as well as facilitate internal communication among research team members.

On the question of which attributes and competencies need improvement, there were significant differences between research leaders and team members. Although both agreed that getting research results into policy and raising international reputation needed improvement, areas prioritised by team members included: communication skills, interpersonal skills, getting grants, delivering outputs, and knowing and interacting with research users. In contrast, research leaders flagged maverick individuality; publicity and getting research results into policy.

2.3 Institutional culture

The research leaders described their research culture and environment in positive terms – advice and support from fellow researchers is prevalent and useful, and there was a positive organisational culture for doing and managing research with little political interference. The respondents identified several obstacles to the research leader's role, including funding, national and institutional and research culture, weak research capacity in some countries, difficulty engaging with policy makers, and lack of time to devote to research.

2.4 The gender context of research leadership

Respondents attributed gender-related challenges to historical and cultural factors including lack of educational opportunities for women in some countries, the patriarchal nature of many societies, women's social and cultural roles as homemakers/mothers/ wives, and institutional constraints in work environments. Some male respondents implied there was an innate tendency of many women to avoid research leadership roles, but others pointed to examples where women had excelled in leadership positions. However, even women who had broken the 'glass ceiling' as research leaders continue to face many social and institutional challenges. Suggestions for overcoming these included gender-specific leadership training and affirmative action programmes to increase the number of female researchers and research leaders.

2.5 Opportunities for research leadership training

The literature revealed that training of research leaders has been done by individual universities (and some international research funding agencies) setting up their own programmes. Yet there is a gap in Africa's renewed efforts to improve research capacity in the lack of leadership development opportunities for African researchers. Further survey showed a general lack of formal opportunities, irrespective of age, gender, institution, etc., but with some discipline-dependent variations favouring health and agriculture.

There was consensus on the following strategies: learning through experience; mentorship of young researchers by seasoned researchers; and some training, such as workshops. Findings suggest that while the current system of mentoring may work for some, it does not

do so for the majority of both junior and senior researchers. Almost all the respondents who had participated in some form of formal training felt that the programme was helpful. There is a yearning need for formal leadership development and most respondents were willing to spend several days annually for leadership programmes. There is opportunity for leadership training programmes that target social science and policy researchers in Africa.

2.6 Case studies of capacity building institutions

Institutional arrangements (universities, national research institutes, think tanks, international research institutes, etc.) were the focus of four case studies on Vitae and Go8 (specifically on research leadership) and AERC and DAAD (researcher capacity building, with potential or indirect impacts for research leadership development). Many different leadership development approaches emerged, including collaboration between several universities (Vitae and the Go8), working through individual universities (DAAD) or forming a consortium (AERC). Some focus on one discipline while others are multi-disciplinary. Vitae and Go8 are national, AERC has a continental reach, and DAAD is an international programme linked to German foreign aid. Most of these institutions employ a combination of programmes, workshops, and web resources/publications which cost less to deliver and give more flexible time access. Most of the institutions have gender-specific programmes; AERC has a specific programme for addressing gender imbalance in the economics profession.

3. Lessons for creating research leadership development programmes

Four important areas could form the basis for developing comprehensive leadership training programmes for researchers in Africa. These include:

i) the definition of leadership styles, attributes and competencies of good research leaders;
ii) dealing with the unmet needs in research leaders' development in the African context;
iii) guidelines on developing research leadership programmes;
iv) addressing the gender gap in research leadership.

3.1 Defining leadership styles, attributes and competencies of good research leaders

Our findings raise the question: are the expectations of a research leader and the relationship between the research leader and research team members in Africa different from those of institutions elsewhere? Does the temporary nature of the relationship have any role to play in this? Answers to these questions will be crucial in thinking about what constitutes a good research leader in the African context.

Though leaders and team members generally agreed on important attributes and competencies – leaders should not see themselves as the boss but as part of a team; need qualities to lead and manage a team socially and technically; financial competencies; and effective communication skills. There was some divergence on which attributes and competencies needed improvement. Team members highlighted communication and interpersonal skills. Development of programmes should be preceded by efforts to resolve these differences. It is important to note that some attributes (e.g. getting research into policy or practice) can readily be taught through formal training, while others (e.g. interpersonal skills) are personality traits requiring long-term intervention to change.

Personality traits therefore need to be a criterion in selecting candidates for leadership training and/or in leadership development strategies.

3.2 Unmet needs in research leaders' development

Leadership development for many in Africa relies mostly on "learning by doing" and informal mentoring, and less on formal strategies. Although these approaches may have worked for some, the current system is clearly not an optimum long-term strategy for developing a cadre so important to robust research capacity. The unmet need and demand for formal research leadership development can be seen as an opportunity, not just a problem. While respondents indicated willingness to devote time to attending training, the study did not address the ability of the researchers (or their institutions) to meet the cost.

3.3 Creating institutions for delivering research leadership programmes

The study exposes the need to develop formal strategies to complement informal approaches. Questions emerging most strongly are:

i) What is the best institutional arrangement for delivering research leadership development in Africa?
ii) What should be the role of national and international institutions in research capacity development?
iii) Can African institutions and universities generate the needed resources and expertise for such programmes?
iv) Should international agencies partner with African universities to deliver such programmes?
v) Would inter-university collaboration (within and across countries) be a better and more efficient strategy?
vi) What roles should the private (for profit) sector play in research leadership training?

On programme design, the prime question is: would discipline-specific or multi-disciplinary programmes be more relevant? Either has advantages and disadvantages, so care must be taken to ensure the most effective option for the diverse research needs of Africa, and which also complements institutional arrangements. It is important to realise that research leadership development must be a long-term and continuous activity, so questions about funding and sustainability should be an integral part of discussions. Further, should funding and the conduct of programmes be same-organisation or separate functions?

3.4 Addressing the gender gap in research leadership

There should be gender-specific programmes to address historic imbalance by helping women overcome constraints at the individual, household, community, and institutional levels.

Increasing the number of female research leaders cannot be achieved without increasing the pool of researchers from which these leaders are expected to emerge. Thus the effort of organisations such as the Association for the Advancement of African Women Economists (AAAWE)[21] in the economics sphere should be applauded and emulated by other disciplines and professions. Institutional responses including affirmative action policy for funding and training should be explored. Given the prominence of mentoring and learning-by-doing, it will be necessary to target male research leaders in any comprehensive

[21] See http://www.aaawe.org/

programme for rectifying gender imbalance. Such programmes should help educate male research leaders to accept some flexibility in their work schedule (including working off site) that would allow more women to work on research teams. Also, male research leaders should be encouraged and sensitised on mentoring women researchers into leadership positions.

3.5 Building leadership in research and knowledge sector management

While leadership in research is one key, components of a national innovation system also require strong leadership – in policies, and in organisations such as ministries, councils, academies, agencies, boards, commissions, and foundations. Development of funding mechanisms is crucial to support research and innovation from national to very local (base of the pyramid) levels. Although this study has not specifically touched on the management side, this aspect is integral to research leadership training programmes. We encourage the study and mapping of national systems, together with development of leaders in research systems management. This aspect is vitally important to the strategic development of more dynamic research support and sustainable funding.

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