

Voices of Early Career Researchers in and out of the Academy: A Pan-African Perspective

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Foreword

1. Introduction: Background, Purpose and Overview

Background

This publication stems from the Global State of Young Scientists (GloSYS) Africa Project, a Global Young Academy (GYA) (<https://globalyoungacademy.net/>) initiative. The GYA was founded with the vision to give a voice to young scientists across the world. The GYA's diverse membership base – which includes members and alumni from 83 countries – clearly demonstrates its commitment to this vision. In line with this, one of the GYA's strategic targets is to provide benchmark reports on science policy topics relevant for young scientists. Since 2013, GYA members have been working to meet this target by engaging with scientists, policy makers and influential leaders beyond its membership through several studies on the Global State of Young Scientists (GloSYS).

The goals of the GloSYS Africa project were to a) document the experiences of African early-career researchers (ECRs), b) develop evidence-based initiatives from the emerging issues, c) report to policymakers in Africa as well as international funding bodies; and d) provide comparable data to other GloSYS studies conducted in different regions. This is the third GloSYS study of the GYA, with the first being a pilot study of ECRs from 12 countries across five continents¹, highlighting the differences in experience of ECR across regions.

Since the first study, the GYA has embarked on an ambitious goal to conduct regional comparative GloSYS studies across all continents. The guiding principle of all GloSYS studies is a mixed methods approach capturing the experiences of a large number of ECRs using a survey and then delving deeper into certain topics by interviewing a proportion of survey respondents. The first regional study was of four southeastern Asian (ASEAN) countries, which concluded in 2017.²

The second regional study was conducted in Africa, and was built upon the foundations of the ASEAN study. In the GloSYS Africa study, over 85% of survey respondents expressed a willingness to be interviewed. In choosing which to interview, we decided to focus on PhD graduates over Master's graduates given their longer academic journey, so we contacted and then interviewed nearly 10% of such survey respondents. All interviewees self-defined as ECRs and were from or living in one of 14 focal countries of interest, which we have grouped into four African regions.³ They held a PhD (57) or master's (4), could be living and working in their home country, another African country or outside Africa. Further, they could be working in any labour sector, and might or might not be active in research.

1 https://globalyoungacademy.net/wp-content/uploads/2015/06/GYA_GloSYS-report_webversion.pdf.

2 https://globalyoungacademy.net/wp-content/uploads/2017/01/GloSYS-in-ASEAN_webversion.pdf.

3 Northern Africa: Egypt, Morocco, Tunisia; western Africa: Cameroon, Ghana, Nigeria, Senegal; eastern Africa: Kenya, Rwanda, Uganda; southern Africa: Mauritius, Mozambique, South Africa, Zimbabwe.

Purpose: Why we wrote this book

While there is a burgeoning literature on the experiences and career trajectories of ECRs in Europe, North America and Oceania, there are, in fact, very few documented experiences of young African researchers. Yet Africa is a huge continent of 54 countries with a population of over one billion people in 2018, and a growing demand for researchers – both to advance knowledge and to increase university participation rates. The purpose of writing this book is to offer narratives that highlight the on-the-ground experiences of African ECRs who are trying to navigate their careers while dealing with personal and work challenges and affordances. Due to their personal nature, these accounts can often speak to us in ways that statistical reports and summaries may not.

The 61 stories presented here recount the successes and challenges of navigating individual careers and lives. The stories encompass those who have stayed in the academy and those who have left, those who live in their home countries and those who don't. The stories do not dwell on the global and continental structures that other reports may – though you will see some of these described in the individual stories. Rather, these global forces are background, as each of these individuals negotiates work amidst personal goals and values and the 'rest of life.' Thus, while most accounts of ECRs focus on their academic journey and careers, we also report broader life perspectives and the influence that family and children have on decisions.

You the reader

How might this book be interesting or helpful for you? Here is who we have imagined you might be and what you might want to gain from reading this book:

- You might be an African ECR establishing yourself in a career. You may be interested in exploring the lives of others who are in the same phase of their careers and lives as you are.
- You might be an aspiring African doctoral student or post-PhD graduate and establishing yourself in a career. You may be interested in exploring the lives and journeys of others who have recently taken such a pathway.
- You might also be an ECR or postgraduate student from elsewhere in the world who wants to understand the experiences of African researchers, and the similarities and differences with your own.
- You could also be a non-African researcher or supervisor of African researchers wanting to gain insight into an African perspective on career development and support, in order to be more knowledgeable about the realities of balancing personal and career intentions through their lived experiences.
- You might be a policy maker or a funder of research who wishes to understand the challenges and needs of ECRs to assist your work.
- Or you might just be an interested reader, for instance, someone who works in academic communication or journalism.

We hope these narratives will help you gain a deeper understanding of what ECRs from Africa may experience. Depending on where you live, you may have had similar experiences, despite a geographical distance. Africa's 54 countries each have a rich and varied history, including of traditional cultures and methodologies cultivated around issues of local context as well as the more recent (in terms of human history) professionalisation of higher education and scholarly achievement. The GloSYS Africa Report, which can be accessed on the GloSYS website, provides a detailed background to the differences in development of higher education systems across the African continent as well as a comparison in political, cultural, economic and sociodemographic differences between the countries of our respondents.

How we have structured the book

You will notice that we have adopted a more informal style of writing than we would in research papers. We have also grouped the chapters into three sections designed to help you decide which stories you wish to explore first. We have also made the chapter headings as descriptive as possible.

Section 1 contains two chapters. Chapter 2 tells the four stories of those with Master's degrees, three of whom are now working on their PhDs. Master's holders represented a sizable proportion (48%) of those who completed the survey, and you can find out more about their perceptions in the GloSYS Africa report noted above. Chapter 3 includes the accounts of the nine humanists and social scientists, a discipline with relatively small representation (22%) amongst those who completed the survey.

Section 2 reports the experiences of STEMM (science, technology, engineering, mathematics and medicine) researchers working in academia. Chapter 4 recounts the stories of the three who have always lived and worked in their home countries. Chapter 5 covers the stories of nine ECRs living in the diaspora, both inside and outside of Africa. The next three chapters provide insights into the experiences of those who have been away from their home countries and since returned: nine earned their PhDs outside Africa and returned (Chapter 6); four returned home after earning their PhDs elsewhere in Africa (Chapter 7); and eight earned their PhDs in their home country but have also spent time away – either elsewhere in Africa or beyond – for research purposes and returned (Chapter 8).

Section 3 offers the accounts of STEMM scientists working in non-academic sectors: Chapter 9, recounts the experience of eight in the public sector, and Chapter 10, seven in the private and para-public sectors, or unemployed.

In each chapter, the accounts appear in alphabetical order of the pseudonyms that were given to each interviewee; this makes it easier to find a story you may want to return to. We have chosen to use English-centric pseudonyms rather than names common to the participant's country given our concern with preserving anonymity and preventing assumptions of ethnicity or tribe which may unconsciously arise. Further, we have been careful to remove other potential identifying information to preserve confidentiality, e.g., describing location at a regional level and not naming their specific academic specialisation. Designated regions represent methodological groupings of the larger project and do not represent the political regions within Africa. We invite you to read through Section 4 as there we provide a glossary of the terms (Appendix 11), our research methodology (Appendix 12), and a demographic breakdown of the interviewees with comparison to all survey respondents (Appendix 13).

Notably, each story includes direct quotes from the participant so you can get a sense of their individual voices. For readability we have not indicated missing or added words in all quotes (e.g. [modification] or ...), rather we ensured such modification did not change the original meaning. Lastly, from time to time we refer you to other chapters when there are, for instance, similar stories.

Where these stories come from

You may ask yourself how representative these stories are. The 1,157 individuals who completed the survey were asked if they would be willing to be interviewed. Well over three-quarters said 'yes.' In choosing which to contact, preference was given to those with a PhD in order to gain a longer-term view of their academic journey, so only four of the 61 interviewees were holders of Master's degrees. Additionally, we focused on participants that were born or living in one of the 14 focal countries of the study. Out of 604 PhD survey respondents, 500 indicated a willingness to be interviewed, including 429 that were

born or living in one of the 14 focal countries. We invited 236 to be interviewed, chosen based on their representing the diversity of all respondents within the focal countries. Of those invited, 74 formally consented to be interviewed, and 59 interviews were actually conducted; 2 experienced significant technical difficulties and were excluded from the final analysis. So, we ended with 57 PhD graduate accounts (plus the 4 Master's accounts previously mentioned).

How representative are these 57 stories to the 604 PhD survey respondents? This is, of course, a valid question, especially with regard to the themes emerging from the survey responses presented in the GloSYS Africa report.

Below we provide a sense of how the survey and interview respondents compare. At the same time, every individual's story is a unique blend of experiences. Part of the value of these stories is the variation in each person's efforts to succeed in their careers and broader lives. We have written these stories because we believe we can all learn from others' accounts of how they navigate their lives.

To what extent are these stories representative of the survey sample?

Overall, we are relatively pleased with our efforts to seek comparable representation of interviewees to survey respondents. As a start, it is important to note that despite only interviewing half the number initially intended, we still interviewed nearly 10% of the PhD holders surveyed, a sizeable proportion. Further, there are many ways in which the two sample groups are roughly equivalent. For instance, the comparative distribution of survey responses and interviews by age and employment category is excellent. Similarly, distribution across labour sectors and job type is roughly equivalent. The two samples are relatively well-matched regarding time since graduation, considering leaving academia, and self-reported ethnicity. Finally, disciplinary affiliation is roughly comparable, with only a slight over-representation of physical sciences and under-representation of social sciences in the interviews (see Appendix 13 for actual figures).

In other ways, the interviewees are less well-matched to respondents, which is evident in the following statistics regarding only the PhD holders in the interviews and survey. We interviewed fewer males (43.9%) and more females (56.1%) than those surveyed (53.2% and 46.8%, respectively). We also interviewed more women with children (35.1%) than survey respondents (25.7%), and fewer men (35.1%) with children compared to survey respondents (39.3%). Overall though, we interviewed a similar proportion of respondents with children (70.2%) compared to the survey population (65.0%). Finally, we have a higher representation in the interviews of respondents who had spent three months or more outside their home country, compared to respondents who hadn't⁴ – though in both samples the percentage of respondents who had spent time outside their home country was high (70.1% for surveys, 87.7% for interviews).

Finally, we sought an even distribution of interviews across African regions and those living outside Africa (i.e., not weighted by survey respondent rate). As such, relative to survey respondents, interviewees in the diaspora (both in Africa and outside Africa)⁵ and those from eastern and northern regions are over-represented, whilst interviewees from the western and southern regions are under-represented. The concept of African diaspora 'in Africa' is a terminology we would like to highlight. An African in the 'diaspora' may be viewed from a non-African perspective as an African-born individual living outside Africa. However, diaspora specifically refers to anyone living outside their home country. We have therefore created two categories of diaspora, those living outside their home country, but 'inside Africa', and those living 'outside Africa'.

4 As an aside, we found, not surprisingly, that survey respondents with PhDs were much more mobile (70.1%) than those with master's as their highest degree (47.3%).

5 See Section 11 for definition of diaspora inside Africa and diaspora outside Africa.

Key themes

The interview and the survey explored the same broad themes (discipline, location, employment sector, mobility, societal influences on family/life), so you will see parallels in the narrative accounts with the GloSYS Report. But we did not aim for the same kinds of interpretations or quantitative descriptions since narrative analysis involves, in the first instance, a focus on understanding the particulars of the individual's account rather than looking across individuals for commonalities (see Appendix 12 for information about the research process). In a narrative approach, it is only after this stage that one can consider the extent to which themes are evident across individuals, but with varying responses to those themes, i.e., similarities and differences in the ways in which individuals characterise these themes. Or, alternately, one can compare their accounts with those from the earlier studies in Europe, North America and Oceania. Below we summarise themes that emerged from the interviews.

Particular to the narratives

First, there were similarities with what we know about career decision-making globally (McAlpine & Amundsen 2018)⁶. These accounts show that career decision-making and resulting paths develop through a complex interaction between personal career hopes and multiple other influences. These include the following: personal values; quality of life issues; family hopes and goals; financial security; and mobility, i.e., the individual's interest or ability to remain local, move nationally or internationally.

Still, we noted in many of these stories the importance of the extended family – rather than just the nuclear family (as reported in research elsewhere) – in life and career decisions. For instance, a number of females noted how their mothers were central to helping them manage their work and childcare. Both males and females reported the loneliness they felt when away from extended family as well as the desire in job-seeking to co-locate with their partners and children if they had family. The importance of family to well-being and to career decisions has also been reported by ECRs in Europe and North America – however, the emphasis in these stories tends to be on the nuclear rather than the extended family.

Regarding mobility, in our view, nearly all those who had taken the opportunity to move within or outside of Africa for education or research purposes reported it to be fruitful despite the range of challenges. Such work experiences offered the opportunity to learn new things, see different ways of practicing research, experience diverse cultures, and develop networks for future collaboration. Those returning felt they had gained much that they could offer to their students and to their research fields – though they often expressed caveats about what was feasible in their particular institutions. What struck us was that the length of time away need not be long to have some influence: individuals who were away from their home country just a few months still appeared to experience many of the same benefits as those who were away longer. At the same time, there is an added value with longer stays: individuals may benefit from more practice and training, and perhaps improve publication outputs that could help them get promoted or further ground their reputation locally and internationally.

Alongside these personal factors is, of course, the viability of the job market in the different employment sectors. Of course, there is the actual knowledge each person holds of job opportunities – research elsewhere suggests ECRs do not do much actual research in this regard (Barnacle et al. 2019; de Grande et al. 2014)⁷ and so may be missing potential careers of interest. We believe this to be generally true of these interviewees. While a relatively large proportion in academia experienced precarity due to lack of a secured position, few had concrete ideas as to other options to follow.

6 McAlpine, L., & Amundsen, C. (2018). *Identity-trajectories: Ways of understanding post-PhD career choices*. Basingstoke: Palgrave MacMillan.

7 Barnacle, R., Cuthbert, D., Schmidt, C. & Batty, C. (2019). HASS PhD graduate careers and knowledge transfer: A conduit for enduring, multi-sector networks. *Arts and Humanities in Higher Education*; de Grande, H., de Boyser, K., Vandeveld, K., & van Rossem, R. (2014). From Academia to Industry: Are Doctorate Holders Ready? *Journal of the Knowledge Economy*, 5, 538-561.

For some, a further contributing factor to their career paths was the national, political and economic situation in their country and racial/ethnic influences. Such factors led to questions about the viability of careers and the quality of life for their children. In a few instances, individuals described leaving Africa or their home country or deciding not to return until things got better.

Finally, there was constant reference to a lack of infrastructure of various kinds. We note in particular here two things: the general lack of dependable internet service, which affects not just work but life in general, and many individuals not having access to online journals through their universities.

Finally, while many desired improvements in the academic system, there was, among a few, a belief that the nature of the improvements and the way towards them could be different from practices outside Africa.⁸ Shane, for instance, says:

‘We’ll have to establish our... own way of doing things and our contributions might be slightly different. And I think that’s just more this acknowledgement that there are differences between countries and that one isn’t superior or inferior.’

Links to the GloSYS Africa Report

The GloSYS Africa report addresses workload extensively. The narratives in this book provide some detail about this. Generally, individuals described a range of tasks dependent on their role and employment sector – and often noted support for their work, for instance, a helpful boss, or good infrastructure. Respondents also reported challenges related to academic culture such as the unequal ways senior academics treated more junior ones, and the lack of transparency around rewards for work.

The GloSYS Africa report also addresses equity policies. Interviewees were not asked about such policies, but female respondents made references to the lack of childcare facilities. Further, both males and females referred to perceptions of unfairness due to ethnicity and race – not just at work, but in the wider society. They also noted that when working predominantly outside of Africa (though sometimes within Africa also), they met and interacted with people who lacked cultural understanding or expressed biases. At the same time, individuals sometimes remarked that policy and societal changes were making some of these issues less intrusive.

The full GloSYS Africa report also presents results on the academic pipeline and mentorship. We have noted already the insecurity that a relatively large proportion in academia experienced. One aspect of precarity, perhaps particular to Africa at this point in history, was that respondents noted that a PhD (whether they had one already or not) is required of them by their institution in order to remain employed or be promoted. Insecurity also shared some similarities with ERC experiences elsewhere. For instance, even if applicants receive funding or a contract offer, the funding is for a limited duration. This reflects the inability or unwillingness of universities to hire individuals permanently due to the long-term cost commitment. Also of note are the poor salaries in comparison to work outside academia. Moreover, for those who were permanent and sought a promotion, a relatively large number reported having to publish a certain number of journal papers, with the stipulation that such articles be in one of the university’s prescribed journal list – a list that could change at any time.

As for parallels with the report relating to research funding and infrastructure, in the narratives most STEM researchers who had worked outside their home country noted a lack of equipment in their home

⁸ This perspective is well developed amongst African higher education specialists e.g., Tade Akin Aina 2010): Beyond Reforms: The Politics of Higher Education Transformation in Africa African Studies Review, Volume 53, Number 1 (April 2010), pp. 21–40

country in comparison to elsewhere, particularly those who had travelled outside Africa. Consequently, their inability to do cutting-edge research impacted their ability to obtain grants and publish their work. (We can say little about the experience of social scientists, given the small number of narratives.) A particular issue noted by some in the northern Africa region, where French or Arabic is the predominant lingua franca in academia, was the challenge of applying for international grants, which most frequently required English academic fluency.

How we wrote the book

The collection of these interview data was truly a collaborative effort, involving many people, all overseen by the GloSYS Africa team. We were a mixed team⁹ in terms of age, research experience, gender, race, and language, and attempted to take advantage of that diversity. We used a range of communication modes (face-to-face meetings, videoconferencing, email exchanges and common document storage) to facilitate our progress given our various locations and time zones.

The first step was to develop an interview protocol consistent with the GloSYS Africa goals which would enhance the picture emerging from the survey results. Much of this work was done by Lynn McAlpine under the oversight of the GloSYS team. Then the data needed to be collected, organised, and managed.¹⁰ All the research assistants (Hamza Saidi, Judith Nagasha, Martin Wasike, and Otilia Chiramba) participated in this process along with Marie Neumann, Matt Keane, and later Fatima Kareem in the GYA Office. Finally, to create the book, there was another team effort that included all the authors of this work – see Afterword: Who we are. Finally, if you would like more detail on the whole research process, please see Chapter 12.

9 See the Afterword for our individual narratives.

10 The interviews were all conducted in English, regardless of region, which we recognise may have led to less rich stories given that Arabic and French were often the common other languages.

Agnes Alice Amina Amos Anna Benjamin Bernard Caroline Cathrin Cecilia Charity Charles Christine Clara Cleop
Daniel Dominique Dorcas Dorothy Edna Elizabeth Emily Ethan Eveline Faith Felix Fiona Fredrick Gerald Gertru
Grace Hunter Ian Ivy Jack Jacob Janet Jason Jeremiah Judy Kenneth Kimberly Monica Moses Nathaniel Nelisiwe Oliv
Patrick Sam Shadreck Shane Sheila Simon Stanford Stephen Sylvia Tanya Timothy Trevor Valentina Victor

Section 1:

Master's, Humanities and Social Sciences

2. Master's only – STEMM and Social Sciences

Introduction

In Africa, the academic career and promotion structure begins with those who have master's degrees. For instance, in South Africa, only around 40% of 18,000 full-time academics have PhDs.¹ People with master's degrees, no matter their years of experience or number of publications, will generally not be appointed higher than a lecturer. Completing the PhD degree usually leads to promotion to the next rank. In this chapter, you will meet three men who have this experience in common; they are maintaining their institutional duties while working on a PhD (or trying to begin): Cleopas, Felix, and Jack. Meanwhile, Moses has just completed a second master's degree.

Cleopas and Felix work in higher education. Cleopas has worked for many years in a university as a lecturer, and has never had an opportunity to go abroad. Felix has only recently begun working in another university as an academic professional (a project coordinator) and hopes to go abroad to study if he is assured his position when he returns. Jack works as a research officer in an agriculture and veterinary science organisation (public sector), and Moses is a senior programme officer in a para-public institute of health. We end the chapter with our view of the common themes influencing how these Masters' holders navigate their career trajectories to realise their dreams.

11 <https://www.universityworldnews.com/post.php?story=20100820150736361>

Stories

CLEOPAS² lives in eastern Africa. He completed a Master's degrees in social sciences in 2013, and began his PhD in 2017. He began teaching in 2008 in a college of education. He tried 'my level best to get a scholarship... to upgrade my level' without success, so in the end he used his own money to do his master's. Then, in 2015 due to a restructure, his college became part of a university, and he became an assistant lecturer. Unfortunately, the restructuring meant that he was sent to a region six hours from his family, and one with poor teaching conditions. Just this year there was another merger, which brought more teacher educators to his area, but there is no infrastructure to deal with this influx.

Cleopas has two children, the older being five. He misses his family but travel back home is expensive. Additionally, his salary isn't enough to cover all the other costs. He has to pay for his own and his family's housing. There are also fees for his wife's studies and for his son in nursery, and he has duties to his immediate family. 'Family is important here, with society based on sociability so sometimes you have to support people.'

Cleopas is expected to do teaching, research, academic administration, and social engagement – but has no research training. He likes teaching and trying to be up-to-date on science, however, the merger created many challenges to cope with: each trimester he teaches three courses, though there are two lecturers to teach 1,300 students and no rooms for such big numbers. Sometimes there is no internet. Therefore, 'to carry out tangible research... isn't possible sometimes.'

While they have a library, he has no printer and no office space – just a common room where you 'find a chair.' There may be a projector but not always power, microphones, or even enough classrooms. Further, courses are to be taught in teams, but the new arrivals don't want to do this, so his supposed team of four to five is really only two – and the department head doesn't want to deal with it. Finally, 'the students aren't well trained in secondary school.'

'They [have] told us... we have to upgrade a level to go for PhD studies... [but] finding a scholarship it isn't easy.' The university has started a PhD programme to meet the requirement, however, it isn't well organised. For instance, his assigned supervisors aren't available. Further, the university only provides a tuition fee waiver, which is given on the condition that they are bonded to the institution for five years after completion of the PhD. He had the same challenge with his master's degree, which he self-funded since he wasn't eligible for the available funding.

Cleopas is supposed to publish at least one article and work on his PhD. He is working on two papers and one is submitted. He wants to concentrate on the PhD, but with work conditions as they are, his productivity is limited and he isn't sure he can. If he doesn't complete the PhD or publish, he is concerned they will 'chase [me] out of the university.' Also there is a rumour that those without PhDs after three years will be put on a contract. So, he is 'frightened to be fired because of this and that.' He stays because there are no other options and he has a family to support.

Promotion doesn't depend on performance evaluation for academics (only for administrators); you are promoted because you have published. As an assistant lecturer, you can move to lecturer 'without a PhD once you have publication.' Each year you can apply for promotion, and a committee assesses the application. Cleopas hasn't thought of changing labour sectors, but has had to move to keep his post. As for five years from now, he would like to have published, finished the PhD, and be teaching at the university – 'if God helps.' He feels this is possible if he gets mentoring to do research and be a good researcher, as well as study leave so he isn't overloaded.

FELIX, 31, completed a Master's in Health Sciences in 2016, in his home country in eastern Africa. He is a project coordinator on two projects on a fixed-term contract in a university. He has two children, the older of which is five. He prefers not to be away except for short periods 'because of my family.' In fact, he turned down an opportunity to go to western Europe for his master's because his first child had just been born.

As a coordinator, he liaises between team and study participants, and ensures the project's objectives are met. He likes the flexibility and interaction of having a fixed daily plan. He may stay late to complete his tasks, for example, reviewing proposals from programme participants to meet deadlines for the ethics board.

There is a good space to work and limitless databases, which is good since he has to read a lot in his role. On the other hand, he often has out-of-pocket purchases, such as buying internet time since the university has poor IT infrastructure, and he also has to pay for journal access. Further, there are issues linked to team communication, attracting funds and providing the necessary guidance to programme participants. Finally, he has health issues, meaning things such as fieldwork are difficult. Yet he remains motivated: 'I love research... [and] generating knowledge.'

To evaluate him, the institution tracks the number of participants who achieve the prescribed milestones in the training programme and the proportion of participant manuscripts submitted in comparison to the number of participants. While he believes his work is good for career growth, it is time-consuming and so he hasn't the time to focus on publications, or the PhD he plans to start: '[g]etting... time to actually sit down and write has become quite a challenge.' At the moment, he isn't actively seeking promotion: he wants first to build a profile, which is one of the reasons he wants to do a PhD.

Felix learns about funding opportunities from friends' referrals, internet searches, newsletters, and the university grants office. He has applied for a number but has largely been ineligible since he lacks a PhD. He feels it is easier to get funding for research with a policy impact or a strong evidence base, but much more difficult for systematic reviews, which is what he would like to do.

Securing grants and having a mentor would help him advance his ambition to do a PhD. If he is to begin a PhD, he wants 'job protection' – or a job guarantee from his institution – to ensure he is employed when he finishes. He is writing a PhD concept related to his job so he can stay, but he would consider the right opportunity abroad for a maximum one year. He is only looking for 'opportunities that allow me to conduct my research in my country of origin, because of my children.'

Felix has had to make a number of adjustments to his career aspirations. He sees it as trying to fit somewhere while not losing track of what he wants to do. For example, in his master's, he was interested in a sub-field of health sciences but couldn't find a supervisor for the specific topic, so he did something related. Similarly, he has 'flirted with the idea once or twice' of changing employment sector. Originally he specialised in clinical work, though he realised early on, 'I wasn't into [it]... I didn't see how it would move my career... and personal growth.' As such, he changed to something with a research focus.

As for the future, Felix says he could plan for a number of options and yet none may be what he actually does. He has experienced this already, whereby because of circumstances in his family, 'I changed direction completely.' He wanted to research on a particular disease but couldn't get the training he needed in his home country. He's now considering health policy, using econometrics and evidence synthesis. In five years he hopes to be 'contributing to the field... [and] I should be either completing or finished a PhD.' The biggest obstacle to achieving this is time to develop the expertise and time to build the right team.

JACK, 38, completed a master's in life science in 2013 and started his PhD the same year in his home country in eastern African. He works full-time as a research officer in an agriculture and veterinary science organisation and has two very young children. 'I'm at a stage of life and career where I have a very young family with whom I would want to spend time and... sometimes your work takes you away from home; it [is] very, very challenging to leave... my young kids.'

Jack's main tasks and responsibilities include planning for research activities, implementing them and reporting. He also applies for funds for research activities, although the work within the research institute is funded by governmental and other funding organisations. He enjoys doing research because, '[I]t gives me a lot of freedom... [and] open mind in doing [it].' Despite other challenges he receives support in terms of vehicles for easy mobility when carrying out research. His employer also has laboratories, although they aren't well equipped.

Doing the work is always a challenge when he spends time away from his family: '[S]ometimes your work takes you away from home.' Balancing between family and work has always been a challenge to him. He also faces problems in applying for funding and thinks, '[L]imitations of my experience limit my opportunity' to write successful grant proposals and get published. There are also challenges of poor internet and other infrastructure, meaning, for example, that he pays for a private internet connection to do his work.

What motivates him to remain in this job despite the challenges is the opportunity to be involved in graduate research 'funded by external organisations.' Within the institution he has also had opportunities for funded master's and PhD programmes. The bursaries come with the opportunity to link with international scientists.

In terms of mobility, Jack has carried out short research stays in northern Europe. He went there to finish his master's and went back again to write his PhD proposal. Being in northern Europe gave him exposure to facilities that weren't available in his own country as well as more funding. People were very willing to help and the lesson he brought home is that his institution should create a supportive environment where a 'clear programme of mentorship and motivation are prioritised.' When he returned home, he saw the problem is that a lack of funding and infrastructural challenges lead to 'very weak designs of experiments and... very poor data, which you cannot easily publish' in high impact factor journals.

Jack has faced discrimination in terms of tribalism, where he felt that opportunities are given to certain people, not himself, because his supervisor favours the other person's cultural background. He recalls an experience when he was competing with one other candidate for an assignment and his 'supervisor opt[ed] for the other person.' He thinks this happened because of where 'the supervisor and the other person come from.'

In the future, Jack wants to establish his own laboratory in the private sector where he can 'manage both knowledge of research and also do business in my area of specialty.' He hopes to find funding to help him in accomplishing his dreams, as well as relationships with organisations and people that might help him establish the lab. However, he foresees challenges, for instance, not having sufficient salary to self-fund activities.

MOSES, 45, completed his first Master's in Health Sciences in western Europe in 2009 and a Master's in Communications in his home country in western African in 2018. He has an open-ended post as a senior programme officer in a para-public institute of health sciences. He has two children, each over 10 years of age: 'My family... east or west, home is the best.'

Moses has worked at his present institute since 2010, starting as a programme officer before promotion to his present job. He manages the prevention, care and treatment of infectious disease patients, the clinical and logistical aspects of providing a service throughout the country, and collects data to report to funding donors. 'I love the field aspect of it,' especially where he travels to and interacts with different facilities: 'You see the impact [of the work] on patients.' He also gets to see problems as they arise and try to resolve them. The institute is 'dependent on you... to be self-motivated to... observe a particular problem and... resolve it.'

The team are given targets to meet for the whole programme or country, so there are regular deadlines to meet and reports to compile. There is also an annual individual evaluation of performance. Opportunities for training and self-development help him to be productive. The institute allows these, even if not sponsored but you have to find your own funding. There is also a conducive work environment that allows for diversity as well as allowances for housing, travel, leaves, bonuses, and paternity allowances.

Still, there are challenges. There is no guarantee of promotion since it is contingent on funding and donor requirements. So for the first five years, he wasn't promoted at all. And now, he will likely have to wait three more years before another promotion. Further, 'I have a number of research ideas but I can't... sit down to do them, because of the nature of the job.' And even though he has a 'free hand' in developing ideas, the follow-through from management is sometimes lacking. He had trouble, for example, getting sign-off on letters of recommendation for conference funding from the head of department. 'He never did it until the deadline went by... so I don't know what their decision will be.'

Further, Moses faced a degree of unfairness when he was barred from applying for a vacant position at work because his boss 'insisted that it had to be [an] external candidate.' Yet, the person hired lacked the knowhow and was less experienced than him, so 'they had to learn from us.'

In terms of mobility, Moses prefers short visits rather than spending long periods away from home: while he has benefitted from the short visits he has had, 'I don't believe in staying abroad forever and ever.' Owing to this, he did a master's in western Europe and returned home soon after with others he met there. 'We thought it was going to be automatic to get good jobs ...but it's not that easy. [In] my own case, I did almost two years without a job since coming back.' Still, he has a strong sense of duty to help his home country: 'I just feel I belong here more, they need me here more.'

Looking to the future, Moses plans to be his 'own boss' with a firm which will allow him to 'marry health and communication in a unique way through evidence-based research.' He is happy that he is already pursuing his dream by utilising journalistic channels to enlighten people about health issues, using evidence from contemporary research in the field. He hopes this work will continue since he sees it as being beneficial to many people. Still, he foresees the challenges of accessing modern technology as a hindrance in pursuing his dream of having his own firm.

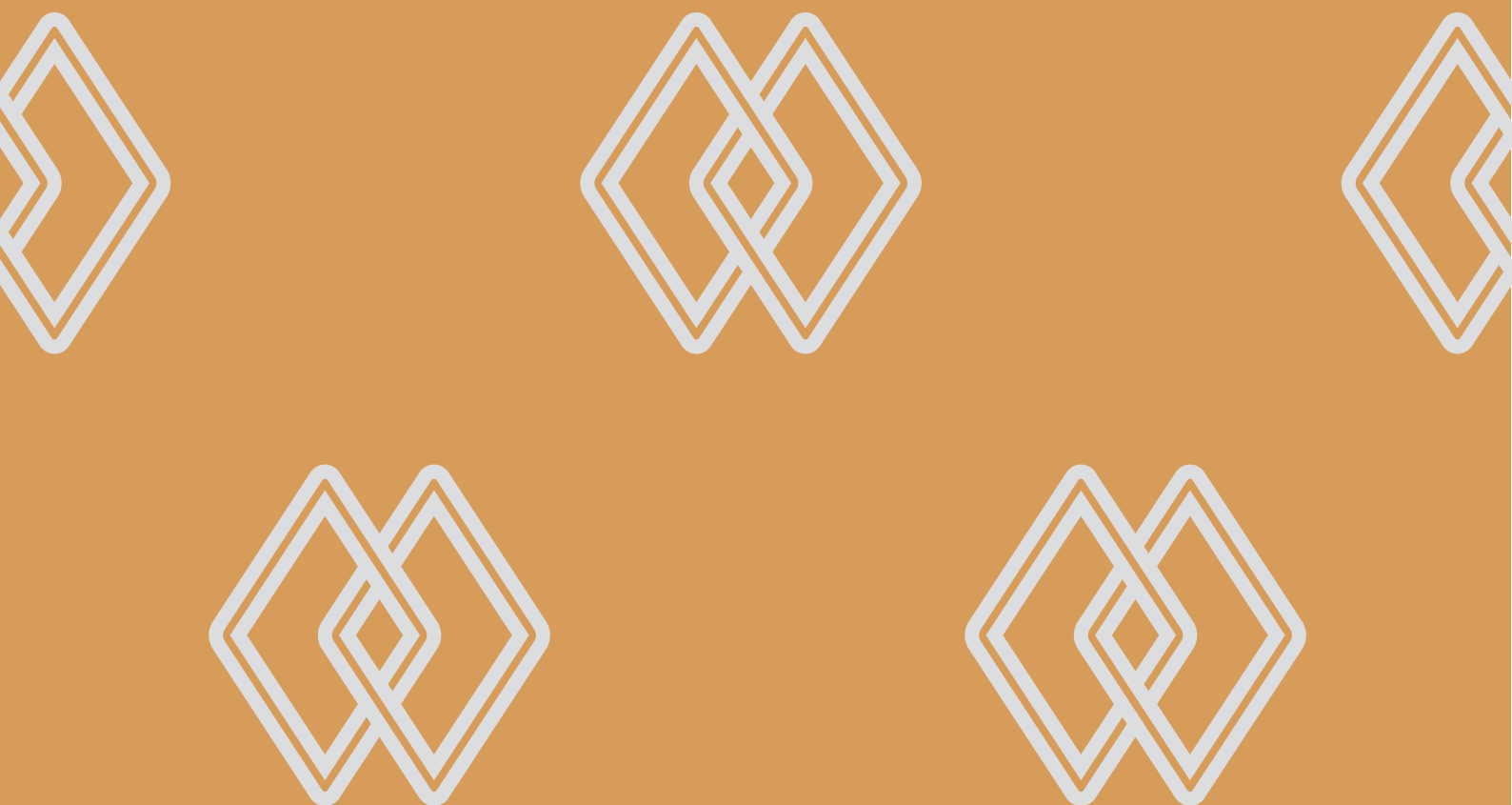
Conclusion

There are a number of similarities in the experiences of the four people presented above, despite the differences in their nationality, institutional roles and disciplinary cluster. First, Cleopas and Jack are struggling to complete their PhDs alongside work, while Felix is struggling to begin. Each felt that they were spending too much time on work duties, at the expense of their studies and family. They all miss their families when they travel for work, and this is particularly the case for Cleopas, whose work location is separate from where his family lives. Overall, these four felt challenged to strike a balance between their studies, work and family.

All four noted the lack of institutional support, ranging from the inability of senior staff to mentor them to simple matters like not getting reference letters for conference travel applications. This lack of support, alongside a lack of training, makes it difficult for them to properly establish themselves as researchers.

Funding is also a significant challenge for each of them – whether it be research funds or salaries. The former is difficult to address given they feel they lack some expertise for applying but also support to do so in the first place. This makes their low salaries even more problematic as they try to self-fund education or travel. Despite all this, they have hopes for the future. Of the two in universities, Felix is open to a range of possible options, depending on what happens over the next few years, and Cleopas plans to remain in the academy. On the other hand, both Jack and Moses, who presently work in research institutions, not universities, plan to move into the private sector to head their own research initiatives.





3. Humanities and Social Sciences

Introduction

This chapter revolves around interviews with two Humanities and seven Social Sciences scholars, all with PhDs. We have grouped them together since these disciplinary clusters are distinct from the STEMM fields, for example, they generally encompass more females than males, and it takes longer to complete a PhD within them.

While each story is unique, we have created three clusters, the first two groups representing individuals who are teaching and/or doing research in academia. The first cluster, 'home-always,' refers to those who have never been in diaspora: Hunter, Janet, and Judy. 'Diaspora, inside and outside Africa' is the second group, and includes those who have worked or studied either within or outside Africa at some point: Amos, Anna and Dorothy. The final cluster brings together three unique experiences: a) Amina, unemployed, left her job and home country just days before the interview; b) Dorcas, is in academia but was hired to support student learning, rather than teach and/or do research, and c) Elizabeth, who works in the public sector.

Stories

Home always

HUNTER, 38, started his PhD in humanities in 2007, in his home country in western Africa. He graduated in 2012, and now has a permanent senior lecturer post in a public university. Looking back, he would have appreciated more PhD financial support, which would have helped him finish earlier. He also lacked access to an online library. Fortunately, his supervisor was ‘constantly’ going to Europe and ‘when he came back home, he offered me some material [for free], and that is mostly what I used for completing my PhD.’

He has five children between the ages of one and six, but says that ‘it isn’t family at all’ that limits his mobility. Instead, ‘institutions that are there to support research in the country aren’t doing well.’ For example, he cannot afford to use his salary to travel. Also, Hunter lives in a country with both majority and minority language groups, which are regionally based. He is in the minority group. ‘We don’t have a voice as [they] do, even though we belong to the same nation.’ He feels that this linguistic/cultural difference impacts all aspects of life. Early in his career, he was working as a teaching assistant in the majority region. He would be reminded by others that he was a foreigner and was charged more for housing as he was from elsewhere. Overall, this hampers both his research and personal freedom. As he says, we have to ‘integrate... society and overcome those challenges.’

Hunter began work in his present university in 2011 as an assistant lecturer and since then has been promoted to senior lecturer; he is now working towards associate professor. In early 2018, he was named head of service for research and cooperation. This means his teaching hours were cut in half. But there is still a lack of time and he sometimes has to forego teaching due to administrative duties. Hunter loves research and teaching, particularly helping students become important people in society and all they can imagine for themselves. Still, the lack of material and financial teaching resources limits both his and his students’ potential to excel. As for research, they lack office space, but the government provides a ‘substantial’ research allowance every three months, and the university provides some money as well. This helps in carrying out research.

Overall, Hunter is content in his job. He knows what is expected of him, but he is still trying to get a handle on his new duties. Between teaching and administration, he now has less time to maintain a steady pace for his research. Also the possibility for mobility is hampered as he can only receive permission to leave for short periods of time.

His biggest concern is isolation: ‘[Y]ou hardly have people [with] who[m] you can collaborate.’ He feels seniors don’t share their knowledge about networks or invite early-career researchers into their research groups – which is frustrating in terms of motivation. Also, people may not share news of career opportunities, which reduces any sense of a meritocracy. He once approached senior colleagues seeking a recommendation for a funding application abroad: ‘[N]one of them showed up and none of them were ready to connect me to anybody.’

Until now, Hunter hasn’t had research funding beyond the government allowance. He is very pleased to have recently been successful with an application to spend six weeks to two months in North America. He is looking forward to going there soon, as this will be his first experience of travelling abroad. ‘I [will] come back and be more useful to my country.’ Having good funding means costs won’t be coming out of his pocket – the reason for his lack of travel to date.

As to the future, ‘if I succeed in getting enough means I will establish my own [educational] organisation.’ One idea is to create an institution solely based on training and offering skills for citizens to become more entrepreneurial. Or, he might invest in technology training, using non-traditional education methods. Of course, there are challenges – investing in his country has a lot of bottlenecks and taxes and government support can be timid. But he is considering how to overcome them.

JANET, 40, completed a PhD in humanities in 2015 in her home country in eastern Africa. She is a full-time permanent lecturer in a public university, though right now she is on research leave in a country in southern Africa. During her PhD studies, her supervisor harassed her. She would travel long distances to meet him and then he wouldn't meet with her. Once she waited over a year to receive feedback on a draft of her thesis. A friend said she needed to sleep with him [her supervisor] to progress: 'I told myself, if sleeping with this man will make me get a PhD, then let that PhD be.' Still she '[F]earing report[ing] him to the head of department... [as] it will make things even worse.'

Janet has three children, aged three to nine, and balancing her career while caring for them, especially early on, was a challenge without day-care. To be able to teach 'I've had cases where... I left the baby in the car... or with the soldier just for one hour.' Janet teaches, does research and service; for instance, she oversees exams in her department. She enjoys teaching, as she can make a difference in individuals' lives. Still, a lack of funding means teaching six courses per semester. Often there are more students in a course than room in the class. Further, there's no office space, no facilities like computers and internet access, so her environment isn't conducive to productivity. She uses her personal computer and 'most of us either work from our cars or from our houses.'

She enjoys research, but assessment duties reduce her time for it, and there is little funding. Still, doing assessment duties is good for promotion and is a plus for senior management posts. Most challenging is balancing responsibilities at work and home. Aside from three months' maternity leave, you are expected to 'deliver at the same level as them [males].'

For promotion to senior lecturer, her institution considers postgraduate students graduated, papers published, grants and management duties. She has colleagues who haven't met the requirements in ten years. Yet it is hard to advance, especially given that seniors are not willing to orient juniors regarding expectations. Still, what motivates her to remain is the flexibility. She can organise her own work, and she is just passionate about teaching: '[I]t's something I dreamt of becoming.'

Janet notes that in some institutions 'for you to get any position it depends on what ethnic group you come from' (she is from a minority group). Institutional power also plays a role. For instance, relatives of executives at the university are likely to receive funding for conference travel or be hired into an open position. Nevertheless, she hasn't really considered leaving the academic sector, but if an opportunity arose she would consider it.

As for her fellowship, getting it 'was a blessing,' she has gotten away from some of her work duties and had new experiences. She perceives research differently and feels more positive here in terms of her development. She is funded for conferences and 'rewarded' financially for published manuscripts. When she returns home, she hopes to sensitise colleagues to the need for research since generally there is a poor research culture. But she has left her small children in Kenya and she is feeling unsettled, which troubles her concentration; she's looking forward 'to the end of this year so that I can go back, because of the babies.'

When thinking forward five years in a society where there are so many needs, she would like to conduct research that would positively affect the minority community. From that group, 'I'm speaking as the only woman holding a PhD, so these people look upon me... to help solve problems, even political ones.' Of course, there are numerous challenges: as a 'mere woman... a married woman... can you concentrate on your children and your family' – 'what will you achieve?' Some roles are ascribed to women, so even as a professor you can't get away from that. 'So we really have to work extra hard... but god has given us some extra energy.'

JUDY, 33, began working in a public university in 2011 in her home country in western Africa, and is now a permanent assistant lecturer. She did her PhD in social sciences after being hired and graduated in 2017. Since it was bonded, she needed to remain in her country for three years afterwards. Despite the expectation of funding from her institution, she received none (but had a fee waiver), so ‘I still ended up having to take on loans which I’m still servicing.’ She would have improved her PhD with a funded exchange programme in order to do more thorough data analysis (she had an invitation, but lacked the funding). Still, graduating meant she was promoted.

She has three children aged between five and ten years, which have prevented her mobility as a researcher. ‘I must include plans for my children... that has limited my options.’ But her children are getting older now so movement won’t be such a challenge.

What she enjoys the most is doing research, discovering new things; it’s like ‘a hobby instead of a job.’ Likewise, as a teacher it is exciting to mentor and ‘build human capital.’ She has focused recently on integrating entrepreneurship into her courses, which is something rarely done in her country. However, teaching methods are changing and she isn’t trained properly, which affects the students.

Still, there are things ‘I am not happy with.’ She lacks funds for research unless it comes out of her own pocket. And the ‘salary is small,’ which puts even further pressure on her ambitions to do research. ‘I’m trying to buy a book, I can’t afford it. I can’t afford it.’ She lost out-of-pocket money when she paid for a conference while waiting for a decision on a funding application, which was later rejected. So, meeting new people and getting exposure is difficult: recently she couldn’t attend a symposium elsewhere in which she contributed a book chapter because it was too expensive. ‘It’s disheartening since you want to forge ahead, you just can’t.’

She has applied for grants without success. ‘As women if we are exposed to things like training we would be able try [make stronger applications]... but we are somewhat lagging behind on everything.’ She believes it’s because ‘[W]e aren’t giving [the funders] exactly what they want.’ Also, she feels that her lack of experience in the areas that are strongly funded is an impediment.

She has few concerns about promotion as she already has nearly 20 national and international publications. Next year, she should move, ‘god willing,’ to senior lecturer. But this is because ‘I actually work around the clock’ and around the obstacles: often there is no power in her office so she cannot do the work she plans to do. She is also challenged by senior colleagues who think that women are ‘flying too high.’ She overlooks such things, to keep her ‘zeal strong enough for the job.’ One day she will be able to do research that will contribute to human development and life.

While the new administration ‘is sticking with the rules,’ earlier she experienced unfairness. The previous institute director didn’t reduce her workload during the PhD as was expected. Yet, ‘in spite of all [my challenges], I managed to finish in record time,’ including taking some leave to finish – triggered by health concerns. As for gender, there are no structural barriers in the promotion process: ‘if you have what it takes, you move to the next level.’

She has always wanted an opportunity to study outside the country – and tried earlier after graduating but wasn’t successful. Also as a woman, taking any research leave away from home is difficult since funding is needed for the children and there are few fellowships that factor in children.

Looking to the future, Judy is thinking of being a policy leader in the sub-Saharan region – to make policies that support development, especially regarding climate in Africa – and her bond will expire next year. She is hoping perhaps there will be something in the World Bank or African Development Bank. She needs the full support of her spouse, but also mentoring, exposure, more training – and fewer challenges from senior colleagues.

Diaspora inside and outside Africa

AMOS, 39, moved from his home country in southern Africa to another country in the region to do his PhD in social sciences, which he completed in 2015. He tracked down PhD funding online and finished within three years. He then decided to do a postdoc fellowship abroad. He applied for several and was successful with one; accordingly, he is now doing research in northern Europe in a public university. His supervisor didn't help in this regard, though '[S]he was brilliant as a supervisor.'

He and his partner have a one-year-old child who was born while abroad. Since health insurance is free, 'I don't have to worry about that.' While his wife could work if she wanted under the visa (not allowed in the country where he did his PhD), she is paid to stay home and look after their daughter. But, 'English isn't the first language here' and you need to adapt to the weather. Still, overall, his family is cared for, so he has no worries in that regard.

For his fellowship, he presents his findings to different stakeholders, writes articles, and presents at conferences. He also teaches postgraduates since he had never taught before (though this is not required) and examines master's theses. What is most enjoyable is the research independence: it is different from the PhD since one has a mentor who doesn't dictate what one should do: 'I own my own research.' It is also rewarding to have such a prestigious award with excellent funding: flying to Africa, going to conferences, paying RAs, and buying consumables like laptops, desktops, etc.

The challenges are separation from his home country, though he hasn't actually lived there since he left to pursue his master's degree over a decade ago. He is also co-authoring articles and that takes time when one has to consult and the others are from different disciplines; they are all in Africa. He has no real productivity targets institutionally but 'should as least publish two articles' to grow his career, to show he has done something with the fellowship. Also, conferences are an opportunity to network and maybe find the next job. What really helps him is a composite of factors, such as enjoying the freedom and having the space, including a library – all of which are free, unlike in parts of Africa.

As for research funding, he is happy with what he has, but feels it would be hard to change fields and be successful despite having an interest in other disciplines. He did this between his PhD and his fellowship, turning down an opportunity to work for a principle investigator in his PhD area because he wanted independence. He hasn't experienced discrimination, but thinks globally there is discrimination against young researchers, for instance, supervisors' expectations of being co-author even if not involved in the work. Since you need sole author papers for tenure, this is 'pure daylight discrimination.' He is very bitter about this; his supervisor wants her name on papers from his PhD studies.

His next career move is on his mind as his fellowship is ending. Knowing the academic challenges in Africa, he won't go there but hasn't secured anything else yet. His wife is a qualified health care worker and has job offers in Oceania and western Europe. So, one of those is where they will head. In either case, his wife's visa will enable him to apply for jobs, and if the 'worst comes to worst', he will move out of research to something totally different.

He would 'definitely' return to selected countries in Africa: 'I'm not asking for much but a permanent job with a permanent salary.' He has learned that there is plenty he could use there: he now understands that training helps in being a supervisor, writing grant applications, starting one's own research centre, and recruiting students. Already, he has counselled African students online. He doesn't know what the future holds, but wants to be 'my own boss.' Over the past two years, he has saved money from his fellowship, which would take years to build up in Africa: 'With that kind of finance my plan is to say, "Okay, I [can] start a business of some sort... a consultancy from my own office."'

ANNA, 37, is from southern Africa and received her PhD in social sciences in 2015 in southern Europe. Her master's degree was also done in western Europe. Since living outside southern Africa, she notes that she hasn't missed the 'racial subtext... [which] can be quite complicated and draining.' After earning her PhD, she became an assistant professor in a public university in western Europe and has just gotten tenure and permanence position. She chooses to work four days a week, which is an option open to caregivers in the country with 'no stigma' attached.

Anna has two young children; both less than five years of age. Her husband is also working and they feel they have a high quality of life in this country: 'a better environment to raise our children in.' Still, there are times, like now, when she feels tired having young children and working. Further, it is difficult to imagine doing fieldwork where her children would have no daycare or school.

Her duties are officially 60 percent teaching (including administration and supervision) and 40 percent research. Though teaching requires more time, it is energising and provides structure. She does a lot of desk research since teaching and family limit fieldwork. She really enjoys designing new research. Most challenging is having the discipline to balance everything: students, colleagues, job, and family.

Generally, she feels well resourced, but challenges remain. On the one hand, her small programme makes it difficult to match needed areas of expertise and deal with absences. On the other hand, there is the 'emotional labour' involved in 'telling a colleague their course is no longer required or failing a student'; and there are only six weeks in the year without teaching. She is coming to terms with having a stable academic job, which means 'not being able to do what I want, as I did when I was a PhD student.'

Anna feels the regular evaluation is fair. She is also expected to have one high quality peer-reviewed paper and positive evaluations of research proposals (even if not funded). They assess what she is motivated to do: get published, receive good student evaluations, see students develop, have colleagues notice her work, and to enjoy freedom and flexibility. However, she learnt nothing from the formal evaluation related to promotion.

As for funding, there are national, internal small-stakes, and European Union (EU) grants. She hasn't yet applied to the EU. What she would like is enough funding to buy out teaching for long periods of fieldwork, and arrange and fund childcare. She stays in her sector partly because of stability for the future: 'it's too risky' to move. However, occasionally she thinks about policy work because 'I feel like academia is too demanding.' She feels where she lives is the best country as regards avoiding discrimination related to children. It is a legal right for female and male parents to work part-time.

Being in her host country is advantageous for funding: having children extends the time you are considered an early-career researcher. She turned down a job elsewhere in Europe since the situation wasn't the same. In five years, she would like to have a big enough grant that could enable her to reduce her teaching load and do more publishing.

DOROTHY, 53, is from southern Africa, and completed a humanities master's in her home country almost two decades ago. Later, she moved to another country in southern Africa where she enrolled in a PhD programme in the same field and after six years, earned her PhD in 2015. Since then, she has remained in the same country, where she currently works as a part-time contract lecturer in a public university.

Dorothy initially left her home country to join her husband who had left to do his PhD in a neighbouring southern African country. He supported her in applying for a PhD programme there, given the nature of PhD visas: they are longer than other visas and have the option to work part-time. When she moved, she had to leave her two children, each of whom are now adults. 'It was very difficult for me, and... I just feel that maybe [we] could've done more if we had been together with our family – that fabric has broken sort of.' The children were eventually able to join, and now live at home with her and her husband.

Dorothy coordinates student support at the faculty of science, what we call an academic professional. 'Among the many tasks she is involved in is developing methods that improve undergraduates' academic performance. She organises and runs workshops on study skills, exam techniques, and time management for those students.

Although she says that remuneration and high social status were the main factors that influenced her decision to pursue a career in academia, she admits that '[T]he most enjoyable part is when a student comes into my office and there are tears in his or her face, and then after we have shared whatever it is and then student leaves this office satisfied.'

This can also be challenging at times, '[S]ome of these issues are so touchy that even when you leave [the] office it still rings in your mind what the student said and so on.' Another challenge stems from the lack of job security as a lecturer on a fixed-term contract: '[T]o just know that I don't know after three years, will my contract will be renewed or not.'

This puts her at odds when thinking of her future. She wants to be a professor one day. For this, she is aware that she needs a good publication record, which is still not one of her strengths. Aside from the day-to-day challenges associated with her job and the feeling of job insecurity, she prefers to look at the positive sides of her present state. The office where she works is conducive to working, with a welcoming atmosphere, supportive line manager, and spacious premises.

Initially, she hadn't thought that moving to another country would have such an impact on her life. She noticed there the other side of academic wealth, which she didn't know. 'So many resources, and unlike in my country, as a PhD student here you get a desktop, your own office, and you are considered part of the member of staff... the ability to travel as a PhD student [also], I presented in conferences, which I never did in my country.'

However, Dorothy experienced discriminatory practices. Especially when she attended some science meetings, which were difficult because 'I'm from the humanities' and the attitudes she felt from others made her feel that she was the odd one out. Furthermore, 'being a foreigner it makes matters worse because, you will find that even the treatment that you get especially from other people [of my race] who happen to be citizens in this country, so painful.'

Overall, she is still grateful that she has moved there. Both studying and working in the diaspora within Africa has been 'eye opening,' an experience that offered her academic comfort she wouldn't have found back in her home country. In the future, she hopes to establish a centre for success and support to help mentor students. She has been working with a colleague to establish a proposal for funding this.

13 Academic professionals are individuals working in the academic sector hired to do teaching- and research-related tasks; in this case, provide direct support for student learning.

The other three

AMINA, 38, is an educationalist from northern Africa who completed all her studies in her home country, including her PhD in 2017 in the humanities. Amina loved her teaching job of fourteen years, and contributing to training young generations in her home country. 'I feel at ease when I'm in class, when I'm connected to my students.'

However, a few days before the GloSYS interview she decided to leave her assistant professorship and migrate with her husband and three-year old child to a southern European country. They decided to leave because amongst other things '[W]hen I look at my small family, myself, my husband and my little baby, and... in about four years she has to go to school [but] the public school... isn't a good place [to be] for their studies.'

In her early career, Amina spent seven years in part-time teaching positions. She was finally promoted to assistant professor when she passed a national exam, which meant fewer teaching hours and a pay-rise. Back then, her work revolved mainly around teaching language skills to undergraduate students, doing research and attending local and international conferences. She particularly enjoyed interacting with students, and the chance to apply the findings of her research in actual teaching. She often engaged in research projects that satisfied her personal interests. However, she faced a number of challenges.

First, she felt that colleagues were inconsiderate of young mothers: '[W]e struggle at the beginning of the [academic] year to get a suitable timetable, because we have families ...so we try our best to have suitable teaching hours.' A second point was sometimes the lack of transparency in allocating research grants or funds for attending a conference. Third, she lacked resources such as offices, IT facilities and equipment, and parking lots at the university. Difficulty in accessing those that do exist was yet another barrier that slowed down Amina's productivity. 'Our libraries... even in the most sophisticated and developed [universities]... don't have access to international databases of papers, and journals.'

Finally, the budget that her institute allocated to research wasn't only insufficient, but 'there is 30 percent cut from last year to this year and it's getting worse, day after day.' Indeed, some students 'are struggling more than the teachers themselves.'

As for a PhD, it takes students up to 10 years to complete their degree since 'you're left alone.' One of the reasons is that '[T]he supervisors... aren't being very helpful and I do blame them, that's true, but I also understand that they have piles of other stuff to do.' Still, she notes many senior colleagues invest more time on money-making activities, such as translation and teaching more hours at private institutes. This meant it took her seven years to complete the PhD – though this was partly due to the political disruptions in her country for over three years, in that time 'I almost didn't think [for] my PhD.'

All these challenges and, at times, frustrations, motivated her and her families move to southern Europe. She fears that this response is widespread and worries about what this means: '[W]e have a serious problem of brain drain not only teachers but also doctors, engineers they are fleeing the country... because they have [access to] much better salaries.' She still hopes, to help: 'yes, I left my country but I still love it... I'm trying to help it, to help my family, to help my friends, to help research in [my home country] perhaps [just] from a distance.'

DORCAS, 41, is a social scientist from eastern Africa who completed her PhD in her home country in 2015, though she was funded by a western European country. She currently holds a temporary full-time position as a researcher in a public university in southern Africa.

For Dorcas, being together as a family is important. So when she applied for her present job which was to be based in western Europe, 'I negotiated to be able to live in [southern Africa]... because my husband was working here and I wanted to join him together with my family' – two children, the oldest of whom is 18.

She is on a three-year job contract with the university in western Europe. As a researcher, her job revolves mainly around conducting research, fieldwork, supervising students, writing articles, and co-organising and attending conferences.

Dorcas is a passionate researcher who loves academia and doing research. She decided on this career because of the opportunity for a) continuous learning and training; b) working internationally; and c) the social status associated with academic positions. She has been lucky securing a number of European funding grants that enabled her to do her PhD, as well as other grants.

As an African with a second citizenship in Europe, Dorcas was mobile early on. She was lucky to have that advantage, because 'there were no big high-school fees or it didn't apply' to her, when she moved to Europe for her graduate degree. She is also grateful to have had a lot of possibilities, such as allocated government aid 'to pay school fees or accommodation.'

She is still seeking a full-time permanent academic position. In the midst of a highly competitive work environment and scarcity of openings, this goal becomes far-fetched, especially as a 'female researcher with children.'

She once applied to a job position to which she was the best fit, meeting all the language, skills, and knowledge requirements. Yet, she was disqualified because they wanted a person full-time in the field and 'I couldn't do that because I have a family... as a woman with children and who doesn't want to be away from home all the time it's sometimes difficult.'

Today, Dorcas is almost sure that she cannot secure a permanent job at the university where she is now working. This is due to the scarcity of jobs and unfair competitive advantage of the seniors: '[T]he pool of people looking for a job is growing... and it's very difficult for a junior researcher to compete with the senior researcher who has a longer publication [record] in this and much more experience.'

Sometimes, even her name stands as a barrier against her ambitions. Having a European family name and an intercultural racial background often put her at a disadvantage. She still recalls not being selected for a job, which she feels was because her family name sounds European, and '[T]hey were encouraging non-European people to take the job.' It is true that her father has European roots, but she is an African, was born and grew up in Africa.

Despite all these challenges, Dorcas focuses on the present because she enjoys her work very much. She is 'lucky to be in a project that has almost no financial constraints,' which gives her the freedom to work from home, do research, write papers, and attend or co-organise conferences. She also has no teaching commitments, which is 'only positive because all I do is around research.'

Although she doesn't know what to expect after her current contract ends, she wants a permanent position and will consider leaving research as 'plan B' to secure that. She isn't open to moving at the present time, as her daughter is still in high school, but 'then later [we] could move again.'

ELIZABETH, 40, is a social scientist from northern Africa. She completed all her studies in her home country, including a PhD over seven years, which she completed in 2016. She feels very lucky being the only female in her family to have completed her education, because her ethnic group is quite conservative. She works as a full-time permanent administrator and a member of a commission at a public institute in her home country.

Elizabeth is mother to two children, both less than 10 years of age. ‘Most challeng[ing] is how to reconcile between your personal and professional life... especially if you are a mother.’ And later ‘especially for education... you care for whether they can get the same education you’ve got.’

What she enjoys most about her job is the independence, getting to meet people from different professional environments, and staying updated with the social environments around her. Besides administration, she also engages in research projects that align with her institution’s strategic action, which is why her employer pays for research resources, transportation and allowances when she does fieldwork.

Her position gives her the possibility to be ‘productive in the sense that I contribute directly to the development of academic sphere in my country.’ Furthermore, she is grateful to the public education system that offered her free education and a job: ‘[U]niversity has given me so many things... I have been in public education... and this has enabled me to be independent, to get in touch with different categories of people... I have learned how to adapt to different situations.’ This also explains why she believes that gaining high social status, respect, and recognition as an expert were the main factors that influenced her decision to continue her postgraduate studies.

She admits her frustration that when she was younger, she couldn’t move to North America on a PhD scholarship she was granted because her ethnic background is conservative and her family expected her rather to get married: ‘[T]he question of marriage was always a debate.’

Now that she is old enough – in the sense that she could travel – she suffers the lack of international mobility opportunities and having children. ‘There is no one who can care for them... I can’t leave my family.’ She wishes she had more time to do research and continuous learning and training. She admits that it isn’t easy to be both a research professional² and a mother at the same time, given the time and energy both activities entail. Yet she is grateful to her family, husband, and PhD supervisor who supported her along the way.

Another challenge associated with doing research in her country is the lack of funding. While education is free, universities don’t have any funds for post-doc researchers, let alone young professionals with a salary like her. This, she finds, is very discouraging, especially for ambitious researchers who would like to push the science agenda forward.

Elizabeth thinks that national development can be reached only when all forces are joined together, and when researchers and scientists are involved in the state’s decision making. She wants to apply knowledge to improve her society; and she wishes to have the ability to work internationally, but the lack of funding and opportunities stand as a barrier.

Looking to the future, Elizabeth is a realistic individual. She is very much aware of the challenges surrounding young researchers, like herself, in her country. But she is also grateful for the opportunities her education system offered her. She has considered changing sectors ‘but didn’t find the opportunity’ – one that would allow her to develop. She feels ‘determined’ to take her future in her own hands.

Conclusion

These nine individuals have never crossed paths; nor do they come from the same country. Nevertheless, digging beneath the surface of these narratives reveals fascinating similarities and differences as regards to both challenges and achievements as they negotiate their career trajectories. While five (Amina, Elizabeth, Hunter, Janet and Judy) completed their postgraduate studies in their home countries and have secured jobs there, four scholars (Anna, Amos, Dorcas, and Dorothy) completed at least one if not two postgraduate degrees in the diaspora, either inside or outside Africa, and remain there. Generally, they feel passionate about what they do.

Notably, just over half have permanent positions: four in the academic sector – Anna, Hunter, Janet, Judy; and one in the public sector – Elizabeth. The others – Amina, Dorcas, Dorothy and Amos – are living with the insecurity of temporary roles.

Further, while those in teaching-research roles aspire to do more research and publish, heavy teaching loads and administrative tasks often hamper this ambition. Further, doing research isn't easy for mothers, who cannot spend time in fieldwork nor afford childcare. To overcome this obstacle, some tried to engage in short-term fieldwork projects, or simply do deskwork.

There is a general sense that international mobility is essential for academic career growth and competitiveness, with those in the diaspora outside Africa, mainly in Europe, feeling particularly satisfied. However, four of them haven't had the chance to move beyond their countries, principally due to young children and a lack of funding. Those who have gone abroad are concerned about how to maintain family contact. A number note a) discrimination related to minority status – whether racial, ethnic or cultural, and b) interest in moving outside academia for the right opportunity (such as employment stability, income and professional development).

Finally, we highlight the positions held by Elizabeth, a research professional, and Dorothy, an academic professional. A significant portion of PhD holders in Organisation for Economic Co-operation and Development (OECD) economies, for instance, end up in jobs other than the traditional teaching-research ones – though such positions aren't necessarily easily visible. This could be a new job market to attract and retain African ECRs within Africa. Individuals in these positions often report, as do Dorothy and Elizabeth, to enjoy such work.



Section 2:

STEMM in Academia

4. Home always

Introduction

This chapter presents three individuals who have never moved to other countries for more than a few weeks. Alice is a lecturer at a public university in her home country in southern Africa, and since 2016 has been working in her first academic role. Charity works at a public university in her home country in northern Africa and has been an associate professor for the past five years. Nathaniel is a lecturer in his home country in southern Africa, and works in the same public university where he obtained his PhD. The main challenges for Charity, who is 47, are to get a professorship, and collaborate with international organisations, which she feels may be more difficult because she is no longer a ‘young’ researcher. Interestingly, Nathaniel, who is 19 years younger, also feels his age is a reason that he is treated differently to other colleagues within his institution; he is overloaded with work and prevented from getting opportunities to go abroad. Alice’s main challenge is that she doesn’t have the opportunity to develop her career because the research she is doing isn’t related to her research expertise or what she studied for.

Stories

Home always

ALICE, 34, completed her master's and PhD in her home country in southern Africa – both degrees in the life sciences. She has no children.¹ She obtained her PhD in 2015 and now works as a full-time lecturer in one of the public universities in her home country. Looking back on her PhD, she feels it would have benefited her more if she had been linked with international collaborators and had the opportunity to attend international conferences.

She joined her department in 2016 and is still under probation. She enjoys teaching more than research because she finds it easier: '[T]he research I am doing isn't related to my research expertise or what I studied.' So, not only does she lack room or space to practice what she studied, but it is difficult to help students do their research as she lacks experience and knowledge in the field she teaches in. Further, '[W]e always have to publish, publish, publish, which for me is rather challenging... this isn't my research area and all the articles that I have now... they're pretty much useless within the department.'

So, Alice wonders about changing institutions to 'do the research [she] studied for or is passionate about.' Still, in her current situation, 'I'm learning a lot: How you do research, you know what you put in the high critically... questions; how you would stretch your research because it's a new field.' She says: 'It's opening up my eyes to things I didn't know.'

'Generally, the support we get is enough for a person to carry on with the job' in terms of teaching and assisting students. So, she has 'excellent equipment that is comparable to [other] institutions, nationally and internationally.' Still, she would benefit from having other support, particularly student assistants who could assist her during hectic times, as well as a teaching load that was more evenly distributed since the 'teaching load that we have within our department is different for all of us.'

When she applied for the position she is in, there were three candidates. 'Of those three candidates... one was male... the other a white female' and herself. She feels that it is possible she was selected for the job even though she 'didn't have the [right] background,' because the department may have felt they needed to be 'diverse in this way.'

Alice has never been mobile beyond her home country, though she had an opportunity during her PhD, which she turned down because she didn't feel she was ready. Then, 'in my post-doc I never had an opportunity to move... [however] at the institute now we have funding calls for research visits and what not.' Despite the present opportunities, she is reluctant to apply, 'mainly for the fact I'm still under probation.' In addition, she is still trying to establish a research niche for herself: '[F]or one thing, I don't know the major league researchers in this field... or what my research area is and who else I can work with.'

In the future, she intends to focus mainly on her area of research as 'that's what I'm passionate about.' Whether this is in a university or a research organisation 'doesn't matter' as the main thing is getting to do research in her area. An obstacle she foresees is that specific research jobs where you can use your skills 'aren't easy to come by,' because 'there are very few available job positions' in her home country. In this situation 'you are forced to conform to what [institutions] want you to do, rather than the research that you want to do.' Still, she doesn't believe that discrimination 'is going to be a problem.'

CHARITY, 47, did her master's and PhD in her home country in northern Africa in life sciences. She obtained her PhD in 2007, taking six years. She is now working full-time as an associate professor in a public university in her home country. She had been an associate professor for the past five years and has recently become the director of a laboratory. 'It's a big position; I think they help me because I'm learning.'

Charity has three children ranging in age from eight to eleven, and she says 'I need to make them [into] good people for the community.' So, '[I]t's difficult to leave your children or your husband and tell them you are travelling.' Further, it's not only that 'it's difficult for women in our country' to put work first, but it also relates to her strong religious belief: 'God will ask me, "Why did you leave them and do your work?"' But 'I'm trying to do it.'

Charity finds teaching and writing very enjoyable – 'I love it very much... it's a very good thing God gave it to me.' She is proud of herself and her students when she can see she is opening their minds – which is very important for her. She receives 'general support' from the institution for teaching, including, for instance, a workshop on teaching. However, for research because the 'institute has no funding,' there are difficulties with sourcing equipment. 'You should pay for chemicals and equipment you use yourself.' This is difficult to do given the low salary that she receives.

In spite of the familial and funding challenges, seeing herself in a 'good position' motivates her to continue pushing for success. 'We have a small saying in [my home country]: you can do it without anything.' Still, in her teaching duties and for the quality of education she feels that reducing the number of students in the classes and support for teaching them how to use equipment properly would benefit everyone.

Charity feels that in her home country the 'mentality of the people' means that some 'positions are just for men.' Also, as noted earlier, 'women have some rules' that restrict their freedom to travel, especially if they have children.' She feels that these differing expectations for women and men are common in 'most African countries like mine.' Reflecting on the challenge of being a woman and mother who works in her country, she says 'we say that [for a] woman to work and to be successful, she does miracles.'

Charity has never gone abroad for more than two weeks. However, based on two workshops, one in North America and the other in western Europe, she feels mobility is very important to communicate with people and discover other personalities. She says the trips changed her way of thinking: 'I think it was the most significant thing in my life.'

Her ambition is to secure a position as a professor. However, it is difficult to network with other organisations that could facilitate this – and she feels her age may prevent her from securing such a position, 'because they need younger researchers.' Another challenge for her is being 'overloaded with my kids' so that she feels 'I need to make a balance between my career, my beliefs and how I want to be.' Once she attains a professorship, she also hopes to connect with international organisations to apply her skills to help fight hunger and provide education for women.

NATHANIEL, 28, has only ever lived in his home country in southern Africa. He has no children. He completed his master's and PhD degrees in the natural sciences in 2014 and 2017, respectively. He felt fortunate to complete his PhD in three years. He worked full-time during his PhD and the overlap between his work and thesis was integral to his fast progress – though difficult to manage at times. He is currently working as a lecturer at the same university.

Lecturing is a major component of his role, with classes of up to 250 students, as is doing research. The teaching component of his role takes up more time than he is a 'awarded for on paper' and it can be quite tiring. The teaching and supervisory components of his role limit his ability to do and publish research, which is both expected of him and is a desire of his as a researcher. However, he still enjoys teaching and the flexibility he has in terms of his working hours. He receives support in his teaching responsibilities and enjoys working with his colleagues, though he feels the department is 'very understaffed.'

Nathaniel also feels the institution makes it difficult for young researchers. The teaching and supervisory load seems particularly excessive for young researchers, and scarce support exists for them to participate in exchange programs or other professional development sabbaticals. 'Those kinds of opportunities aren't readily provided, in my experience.' Considering all of this, he feels that the expectations on him for evaluation and promotion are 'unattainable or unfair for someone of my level.'

Further, Nathaniel notes 'there are so few... full professors in the whole country' in his specific discipline that he lacks senior colleagues who are willing to share ideas and experiences, 'so there is really a lack of mentorship.' These are contributing factors to the difficulties they have retaining young researchers in his discipline. For instance, due to industry demand those coming out of an honorary bachelor's can easily get a job in industry and are reluctant to continue in academia since they 'think about the money that "I'm missing out on."'

Reflecting on his experience prior to earning a PhD, he only identified one funding opportunity specifically for people holding a master's. Now in his current role, there are still limited funding options for research, which makes it challenging to secure funding as an emerging researcher. His main source of funding is a government funding body; however, the funds are generally inadequate for all research and travel-related activities. This is despite the fact that his research requires minimal access to expensive equipment, laboratories or other infrastructure.

However, Nathaniel's institution provides support for travel to conferences and offers teacher training courses to staff, which are free of charge. In order to address his funding concern, he is considering changing his research focus to attract funding from industry.

A further problem is that international journals make it difficult to publish: '[T]he authors from African countries they seem to reject papers outright without sending it for peer review.' He also notes, as a point of context, that there is sometimes an attitude of reserving roles for people of certain racial backgrounds, or for women, in his home country. 'The university is trying [for]... a slightly more diverse profile to shy away from the historic white male idea.'

Nathaniel has limited experience with international mobility, which he attributes to issues of securing funds but also with restrictions on travel for Africans: 'I need a visa to go almost anywhere. I need a visa to go to some of my African countries.' He notes that the cost of visas for western Europe and North America are prohibiting factors to his mobility.

Nathaniel would like to have a research stay to expand his research capacity and network, and is considering places outside Africa. Were he to get the opportunity, he would still return home to be a role model for other upcoming researchers. 'To get back to the discipline, to future students who can see that people can make it abroad and come back.'

Conclusion

The chapter encapsulates the challenges of three natural scientists who have always lived in their home countries – aside from a research stay abroad for a few weeks. Three commonalities emerge. First, all have PhD degrees and work in public universities – though in different seniority levels. Second, they lack research funding, which affects their productivity – even for Nathaniel, who doesn't require extensive laboratory equipment. Third, none has ever worked abroad, which they all recognise as a challenge to their visibility as researchers and career development. Each has different reasons for their lack of mobility. For Alice, it is being under probation and having no research niche. For Charity, it relates to the difficulty of leaving her children and societal expectations of women and mothers. For Nathaniel, it relates mostly to a lack of institutional support, and cost-prohibitive visa requirements. Still, all three feel it would enrich their careers – but their desire to go is only with the intent to return home.



5. Diaspora Inside and Outside Africa

Introduction

Many of the individuals in this book have travelled outside their home country for periods of time for their education or to expand their skills, and then returned home. This chapter, however, features nine individuals who are presently living away from their home countries. Olivia is living elsewhere in Africa. The other eight are outside Africa: Daniel, Shadreck, and Tanya in North America, Benjamin in eastern Asia, Nelisiwe in western Europe, Sam and Valentina in Oceania, and Simon in western Europe. Collectively, these researchers did their PhDs in a range of countries in and outside of Africa, and are now in a range of positions and locations.

Olivia, Sam, and Shadreck are on postdoc contracts in the countries they did their PhDs. Benjamin and Simon are also postdocs, but not in their PhD host countries. Tanya has an academic post in her home country but is presently on a research stay abroad, as is Nelisiwe. Valentina, who also has an academic post at home, is on a multi-year senior lecturer fellowship abroad. Finally, Daniel has just taken up an assistant professor post in his host country. In other words, only four of them have secure posts. We conclude the chapter by drawing out the common themes influencing their career trajectories.

Stories

BENJAMIN, 33, is from southern Africa. He went to North America for his PhD (it was bonded) in physical sciences, graduating in 2016. He spent more than a year taking courses before starting, since he lacked high school biology; he returned home briefly afterwards. Despite being bonded for two years to his home university, he was only offered a temporary position from which he couldn't apply for funding. Since he was told one month that '**they don't have money to pay me**' and the economy was worsening, he couldn't support his family. So he applied 'to more than 2,000 institutes,' got three replies and took a two-year post in a public university in eastern Asia.

Benjamin has two children, four and six, and his family has travelled with him: '**It helps me to have my family... my previous supervisor... told me that I waste a lot of time with my family [and] I told him that I don't go to the lab on weekends, that's the time I spend with my kids.**'

Benjamin spends 40% of his time on research, with the remainder of his time supervising master's students, as well as helping them and PhD students with writing papers: '**It's the area [of work] that I love the most;**' and he knows he has done something of value when a master's student publishes in a 4-star journal. He also does a bit of teaching since it will be good for his future. Still, the work with students can be challenging since he has to use simplified English as the students don't have much fluency in the language.

His challenge for research is collecting samples because there is '**a lot of paperwork**' in the local language. Further, he suffers a chronic disease, which makes strenuous work in the field difficult, so mostly he does lab work. Despite bringing in funding for the equipment he needs, '**[T]he institute isn't willing to use the funds to buy equipment.**' So his supervisor arranged to rent independent labs. He finds his supervisor is always ready to step in when he has challenges.

As for productivity, he has already met the two-year requirement: two papers in high-impact journals and at least three in low-impact journals. His responsibilities, including rewriting manuscripts for others, help increase his output. But he wants to finish his research despite the challenge of collaborating with people in other universities globally.

He can't apply for grants since he can't write in the local language. He found a grant specifically '**for people in diaspora, but I couldn't apply... because they wanted someone with the connection with the lab in Africa.**' He couldn't find a lab partner there since '**research wasn't yet a priority.**' Right now his major concern is that only six months' remain in his post and he has been applying for assistant professor posts, with each taking a '**week to prepare.**'

Benjamin's experiences of unfairness relate to being African. When he was interviewed for a job in North America, the interviewer said they had never hired Africans before '**because most [are] not qualified enough to work in his lab.**' In his present country, it is similar: '**I try to avoid going to conferences... there is this assumption that we aren't good enough [even] before you say anything.**' Fortunately, he feels well supported by his supervisor, though he doesn't understand African problems.

In five years, he'd like to be teaching and mentoring. But jobs are scarce in Africa so if he finds a job elsewhere, he will create connections back home. It would help him to have a network of African researchers who contribute ideas to tackle African problems. '**If we could... bring together our ideas, we could do... good research which can help us to get better jobs.**' Right now he really wants a partner in Africa and to have the experience of writing a grant.

DANIEL, 48, completed his PhD in 2016 in applied science in North America. He had all the PhD resources that he needed, both funding and data. He moved there six years prior from eastern Africa with his family and is still there now. He recently began working as a full-time assistant professor in a public university there. He has five children, aged from four to eighteen.¹

Daniel's main tasks are teaching, research, supervision and academic community engagement. The job called for expertise in two distinct specialisations (which is rare but he had it), at least three publications (he had many more), the ability to teach and supervise, and collaborate with other professors. He has just started the job so hasn't yet applied for research funding.

Teaching is 'one of the things that I love most... I love impacting knowledge... helping the community understand science.' When it's a new area it's also a way to learn more of what you don't understand: 'You're a student yourself.' Teaching is assessed by whether his teaching is up to standard, and he is supervising graduate students, publishing, engaging in community involvement, and collaborating with seniors in the field.

The number of required teaching hours leaves time for both teaching preparation and research, so there are no negatives. The real challenge is getting students willing to do the research since 90% will not be employed in the field 'simply because they pay better.' He has all the institutional support he needs for both teaching and research: good labs, up-to-date equipment, software and computers. He also benefits from advice from seniors as to how to do certain things, and from access to a research office and internal start-up funds. And he also draws on his external network.

Daniel has trained in so many different places, all of which have helped him progress because he has broadened his expertise. While he hasn't experienced unfairness, he comments 'when you're in an environment where you weren't born... everybody... want[s] to know how come this person came to this place... what is special about him?'

In 2000, Daniel completed a bonded two-year master's programme in western Europe, where he acquired knowledge that enabled him to 'make a difference' when he returned to Africa; in part because he was hired into a science leadership position in the government – but the salary was very low. He also spent some time in southern Africa on a research visit before returning to his home country. Though he thinks mobility helps 'you progress once you reach back home' it still means 'you're forced to leave your country... [and] so many things you care about.'

As time passed, he decided to progress his career by moving into the academic sector, despite dealing with many new tasks and responsibilities. He saw the 'future of [his field] was in [North America]' with research going in many directions, so he went there. He now has the career he wanted, and plans to return home when he has the experience he needs, specifically, more publications with a group he collaborates with.

As for the future, 'I hope to be an associate professor [in] the next five, probably full professor in the next seven years.' The challenge is getting enough publications 'so I'm hoping to get good students who are ready to work [as] that's where the productivity comes in.'

NELISIWE, 39, moved on a scholarship from one western African country to another for her PhD in applied science, and graduated in 2014. Her four years were positive: interacting with others and using a well-equipped lab. She also felt her bonding was fair: a study leave with pay, promising to return for four years. The one negative was missing her family. She is now a senior lecturer in a public university in her home country, though at the moment she is in western Europe completing a four-month language course before starting an externally-funded three-year research leave.

Nelisiwe has two children, each under five years of age. She married the year she received her PhD scholarship. She didn't want to put off having children due to her age, so she had them both during her studies and had to hire a nanny and house help – quite an expense. While pregnant the second time, she proceeded to do field work, taking her first child and her mother with her 'since the baby was... breastfeeding.' While this period was difficult, 'I thank God everything went well.'

As a senior lecturer, Nelisiwe teaches undergraduates and postgraduates, and conducts and assesses exams. She also supervises postgraduate students, and does junior mentoring in an African organisation supporting female scientists in her field. Teaching is enjoyable, though support structures are lacking: unreliable internet and electricity, no computer, poor lab facilities, and endless marking given there are so many students. For research, she can draw on an online library and an annual internal funding call.

For promotion, they expect papers, conference and workshop attendance, supervised postgraduates, and successful projects. She describes these criteria as 'a yardstick to knowing whether you are pro-active.' In the last exercise, she was promoted to senior lecturer. She needed two articles, one of them as first author. It took her two years after her PhD to achieve this so she could apply. Promotion 'really gave me joy' since as a senior lecturer, it is pretty difficult to 'kick you out from the university.'

While the lack of resources makes it difficult to write articles and seek external funding, supervising students enhances her output since encouraging them to write adds to her publications. It is also straightforward to get approval for externally-funded study leaves such as the one she is on now. But teaching and marking take time from other things. And her lab is 'nothing to write home about so we can't do the kind of research we can do in advanced countries.' She gets around this by doing collaborative work, sending samples for analysis, or getting funding to such visits.

She remains in the job because 'I love what I'm doing; it's my purpose for living – trying to impact positively on... students and motivate them to remain in [the field].' So she has never thought of leaving the sector.

She learns about research funding online and thinks they're making things easier for women: 'I have received so many grants that I always encourage others to apply.' She has only once not been eligible to apply. She notes there are areas that attract more funding but she sees it as a minor problem.

She doesn't report personal unfairness, but 'international scientists don't actually see the African scientist... and they will not allow you to handle some of the equipment yourself.'

She embraces opportunities for mobility: '[I]f you are just static in one place you might not be able to flow with the trend.' She learned a lot during her PhD abroad and since returning she has used her new perspective to improve the quality of her teaching and supervision. Recently, she went on a four-month exchange to test samples in the same western European university where she will now spend three years. There she completed two publications and the fellowship proposal she is starting. There was superb internet and no distractions, since she had no family responsibilities, so there is time to be productive.

In five years, she hopes to still be doing she loves – her present work. The major challenge is being present for her children: 'I've left them all this while in pursuit of advancement in my career.' Thankfully, her present funding – unusually – provides funding for family visits.

OLIVIA, 33, left her home country in southern Africa to do a master's and then a PhD in life sciences in another southern African country, graduating in 2015. Since her programme was new, she worked in undergraduate labs, so she didn't advance as quickly as she might have. Further, since her programme was bonded (but had no time requirement), she returned home for six months and then accepted her present post-PhD contract – in a different university but the same country as where she did her PhD.

Her child is less than a year old, so 'I can't really travel far.' The lack of childcare, such as at conferences, means 'I'm not as mobile as I would like to be.'

Olivia works on her supervisor's grant, co-supervises an honours project, guest lectures for honours students, and manages the inventory of consumables. She is 'passionate about [research]... [and] being in the lab, and getting the results I want.' But she also enjoys students: introducing them to science and inspiring them into a science career. Most challenging is time-management. She is guided by the success of experiments that are time sensitive, so she often works late. Still, she has all the support she needs: an office, a computer, lab, consumables and colleagues. The same support is true of teaching.

Both teaching and research help her learn – everything connects quite easily – so they have no negative impact on her output.

The university expects two papers a year, which is unrealistic for her field given the long time required to get enough data. Still, this isn't the only issue since her supervisor and others are co-authors; she sometimes waits a long time for their approval. That's why it took her two years after graduating to publish from her PhD; her PhD supervisor was too busy. What the university requires is 'disengaged from the... reality of what a researcher is facing.'

Olivia receives newsletters, and colleagues keep her posted to keep updated about funding. She has had no experience of being ineligible. But her research area is difficult to fund since 'there is a very strong lobby across the world' against her kind of research.

While she loves her work, monthly she asks herself why she didn't become a chartered accountant since her salary is 'just enough to survive,' so she can never save or invest money. Her accountant friends are 'sitting pretty' earning five times more than her. But she has a dream: 'If I can be a successful female scientist, then... other young ladies will take up scientific careers.'

She reports some inequity. When she finished her PhD, she wanted to stay at the same university as a researcher, but the policy gave nationals priority. And she has received xenophobic comments, but takes them in stride: 'You cannot run from race.'

She feels that sometimes she experiences harassment because of her gender: '[T]here's always hints and insinuations [to]... provide them with some kind of favour.' She remarks that 'male colleagues... didn't have to go through that.' In some ways, it is similar with having children, with senior females questioning her decision to have children as an academic. While she recently turned down a chance for a short visit to a western European university since her child was newly born, things are improving. But institutional buy-in is essential for things like childcare, and funding a helper to go to conferences.

She moved away from her home country because she couldn't achieve her career goals there. The economic and political uncertainty meant that research in her area wasn't developing. Where she is, the research facilities are more advanced and she has a lab with everything she needs, as well as help with career progression. 'Life is more convenient here than back home.' Still, culture shock, xenophobia, and racialised tensions create challenges.

In five years, she would love to be a university lecturer and PI (Principal Investigator) with her own lab and supervising students. She wants to contribute to developing more scientists from southern African countries. And, if she is in her home country, she would like to use her connections to start a postgraduate programme there. The challenges, wherever she is in southern Africa, will be less mobility due to family, and the downward economic trend.

SAM, 37, completed his master's in 2012 in his home country in western Africa and then took leave from a lecturer post to move to Oceania for a PhD in applied science; he graduated in 2017. He is now working in that same public university on a postdoc contract, at least until the end of the year – since his home country is destabilised and university staff are having trouble getting paid their salaries there. *‘There’s no money and the staff are refusing to work... anybody who doesn’t come back to work is sacked.’*

He has two children, both less than three years of age and this has impacted his mobility. *‘I haven’t really moved much because of family... those who were able to travel [did] because there’s funds.’*

He is pleased with the knowledge and skills he developed during his PhD studies, but he ponders *‘if you’re a younger researcher now... where will you express your new skills?’* Where will you put them to use when you go back? His home country doesn’t have the labs in which to use his skills, or the power or technicians. Still, he has recently applied for western European funding and if he gets it, he will return home. He also feels that older colleagues in his home country aren’t welcoming. *‘When you go back this is what professors may say, “Okay, you’re a small boy or you’re a small kid... just because you studied abroad... [and] you’re a young researcher”’*

As for getting funding, for his PhD he was awarded a scholarship in his home country, but they didn’t actually provide the money since he was still on probation as a lecturer – a rule they established after he was awarded the scholarship. So he applied elsewhere and ended up in Oceania. During his PhD studies, he earned two internal research grants open to PhD students and also some industry funding.

Collectively, this provided enough. Further, his supervisor was well connected and able to get extra funding, so it wasn’t a problem. In fact, he got more than he had as a lecturer (in his home country).

While he has been less mobile since his children arrived, he says there are loads of opportunities, though sometimes *‘he didn’t go because of visa issues’* related to his passport from his home country.

If Sam stays abroad – wherever that may be – he would need a reliable job in research or academia. If he returns home, the conditions need to be more conducive. He says his present scholarship and living allowance are higher than his salary would be back home. The high inflation is why *‘lecturers have gone on strike... and students suffer.’* And he knows that he would earn a lot less than his colleagues in other parts of the world.

So, what does the future hold? He feels that there are more opportunities to grow career-wise in Africa, rather than compete in the Western world. If he could get a good grant with enough money to do the research he wants, he could imagine going home. He loves teaching, so he would want to teach, helping students to succeed and inspiring them. What he would really like to see in the next five years is for *‘governments to come together and... fund the young researchers... the future of Africa... [since] only a few... are willing to go back [when]... there’s no money [and] government is destabilised in some countries.’*

SHADRECK, 36, completed his PhD in western Europe in 2015, after earning his master's in his home country in western Africa in 2012. For both degrees, he specialised in life sciences. Looking back to his PhD he thinks he could've finished quicker if he'd had the chance to learn the language of his host country beforehand. At present, Shadreck lives in North America and is a postdoctoral fellow at a private university.

Shadreck doesn't have children but he always misses home. 'You miss your family, you miss your environment where you grew up.' While balancing his work and personal life is also challenging, in part because in his PhD specialised in a different area to that of his post-doc, it takes a lot of time for him to grasp some concepts.

For his current work his main tasks and responsibilities include carrying out research and managing the lab. What he enjoys about his work is the fact that he is independent: '[M]y supervisor gives us the opportunity to think outside the box.' As a result, most of the time he can 'test and try the idea if it works out.' He likes what he is doing because he believes research is his calling. 'It's not just me [benefiting] but also my home country and other scientists... from my expert[ise], so that's also a huge motivation.'

Productivity is measured by publication in 'reputable scientific journal[s]'. Shadreck thinks that the support he gets from his supervisor makes him productive because the supervisor always asks about his progress and challenges. When he writes an email, his supervisor responds quickly. All of this means '[Y]ou [don't] have to wait for a week or a month before a decision [can] be taken.' He also thinks that having access to all the articles online and the overall infrastructure helps him be more productive.

Shadreck learns of funding opportunities through websites and job alert emails he has subscribed to. Although he makes a lot of applications he isn't necessarily successful. And, without funding it is difficult to succeed especially when one is abroad. He isn't eligible for many fellowships because they aren't open to Africans already in the diaspora – mostly to citizens of the country or to researchers outside the country who want to migrate there. However, going back home has its own challenges like a lack of research infrastructure, poor electricity service, and a lack of funding. Each of these make it difficult for Shadreck to practise the skills he has learnt abroad.

Shadreck thinks that the time he spent in western Europe working on a PhD and then in North America as a postdoc has equipped him with many skills which he wouldn't have acquired had he remained in his home country. For now he thinks returning home isn't a good idea because he wouldn't be able to practise what he learned – '[I]t's a waste of time' – because of the infrastructural challenges back home. 'It's still like keeping me outside. I would [have] loved... to go back to my home country [to] establish my lab' immediately after finishing the PhD.

For the future, Shadreck wants to get 'a tenure position and have my independent lab.' However, he feels that can only be possible if he publishes in reputable journals.

SIMON, 35, was born in southern Africa, earned his PhD in western Europe, completing it in 2014 after completing his master's in the same country in 2010. For both degrees he specialised in physical science. At present, Simon is a senior scientist at a public university in another western European country.

'Officially I'm not a postdoc anymore. I'm a senior scientist but it's basically a postdoc because I don't have a permanent position.'

Simon's wife joined him in Europe before he began his PhD and they were able 'to settle down' whilst he did it; they now have a child three years of age. '[W]e are far away from family,' but 'you find new friends.' He enjoys having a day each week to work from home as it means more time for being with the family. He has challenges in terms of 'adjusting to a new country, new life style, new home and new occupation,' particularly since houses there are very expensive.

In his present job, he does research within a lab group and searches for funding for his students and for equipment. He is also supposed to teach and publish articles. Simon enjoys research, teaching and supervising students because he has the resources required to carry out his responsibilities. 'It's a tertiary teaching university, [I] have a lot pressure to make sure that the teaching facilities are up to date.'

For instance, there is a research office within the institution that assists him with aligning applications for funding to the funding organisation's requirements.

Productivity is measured through teaching, managing projects and doing research. For research, he is expected to attend conferences and produce three to four international publications each year. He should also submit two funding proposals per year and take on administrative tasks.

Simon hears about funding opportunities through networking, but it is hard to receive funding without a permanent contract. Consequently, he usually does everything to apply for the funding and then asks someone with a permanent contract to submit it. This further complicates the broader challenge: '[It is] always a little bit difficult to be able to get funding, success rates are very low.' Simon is considering moving to a different sector if he remains on contract. He thinks being outside the research environment could offer him new experiences.

In terms of mobility, Simon thinks he has learned a lot of skills and has gained a lot of experience that he imagines, one day, he will be able to apply in his home country. However, he has lived abroad since he was 18, so 'I don't even know how I would fit in the society... I will have to figure it out, and to be always a servant of people.' Staying abroad could be difficult though too, '[I]n the beginning it wasn't easy because I had to get a visa... [and] this is all over Europe... every time [I want to move], I'm in this position to [of needing] a visa again.'

Looking to the future, Simon wants to be a professor. He also wants to be working within a research group and supervising at least three PhD students – for all three, funding will remain a challenge. If he transitions to industry, he wants a permanent position. Transitioning means: You 'have [to] think strategically... [and] outside of the box... but people think I don't have the appropriate skills to work in a company, so this is one major challenge towards transitioning to outside [academia].'

TANYA, 33, completed her PhD in health sciences in 2013 in her home country in western Africa and has a role there as a full-time senior lecturer in a public university. She turned down a chance to do her PhD abroad, doing it instead at home since her mother was ill. She did, however, go abroad after her PhD to North America for several months despite 'the negative part [that] I had to leave my husband [behind] because the programme wasn't willing to sponsor dependents.' She is now visiting the same lab again (in North America) for three months.

Tanya and her partner don't have children at present, however, 'there is a very supportive environment usually when women have kids.' This includes maternity leave, a day-care centre in the institution and support from colleagues.

Tanya teaches courses which are taken by nearly all health-based students. She would like smaller classes to do more hands-on work with students. She also does research, supervises undergraduate and postgraduates projects, and does community service. Mentoring students is the most enjoyable: 'I use my position as an opportunity to help guide the students.' One thing she takes particular pride in is finding student internships in research labs outside the country.

But, teaching '15 different classes' in the semester makes it hard to find time for research and when the semester is over, 'you're too tired.' Overall, 'I spend a lot of time in doing other things and then I have to squeeze in my research.' Still, while 'they do their best to provide equipment and resources, but usually it's [targeted] towards specific types of research. So, if you don't find yourself in that area then you tend to struggle.' For her, this means finding the 'very expensive equipment' she needs elsewhere, which is why she is in North America: 'I find myself having to leave my country just to be able to get basic research done.'

For research, Tanya needs to publish and since the departments are ranked, there is 'unofficial pressure on you to churn out a lot of publications.' What helps is having her own office, so 'I can easily just lock myself up in my office' – as well as incentives like an extra allowance at the end of year. The last major evaluation she had was for promotion to senior lecturer. She did well, scoring high on all three areas, and hopes this will also be the case next time.

Tanya applies regularly for the funding opportunities she sees on the internet and through emails. The major exclusion criteria (such as years since completing PhD) sometimes prevent her but then others (such as, for females) are good opportunities to target. Still, she needs to be cautious since her research involves animals, which some funders are cautious about; in these cases, she reworks the proposal to avoid using animals.

She sees some men still struggling to accept women as equals. For instance, her faculty just elected its first female dean; it 'took a lot of campaigning... to convince people that... [she] was the best.' And in committees, 'if you are the only woman,' they still expect you to take the minutes. Recently, she refused: 'I pointed at another guy... the secretary for this committee. And they didn't understand why I did that.'

She took her first trip to North America after her PhD, in part because 'I didn't have any exposure to any other thing apart from what I was used to in my home.' She saw how differently they do things and learnt some skills that brought new dynamism to her work. She still uses the skills; her research proposals are more attractive, and it's easier to contact colleagues abroad.

In five years, she hopes to be an associate professor and in fifteen a full professor. Then, she will retire and work in health policy: 'I am battling with the decision of going back to school... [to] get another PhD in a policy related subject' to be positioned to move outside academia. As well, as a scientist it is important 'to evolve as you go.' So 'I keep scouting around to find people who can help me find my direction from this point.'

VALENTINA, 42, completed her PhD in physical sciences in 2009 in her home country in southern Africa and remains a senior lecturer in a public university there – though she is currently in Oceania for a multi-year secondment. Since she lacked PhD supervisory support, ‘what really saved me was the fact that I was awarded a visiting graduate fellowship in [North America]... that really changed my whole view on my research and research in general.’ Since graduation, she has largely been abroad on research fellowships, which can be difficult for personal reasons: ‘You’re sort of leaving what you know and your friends, your support system.’

She spends most of her time doing research, and around 20 percent lecturing, doing administration and supervising PhDs. She believes ‘it’s important... to convey [her love of science] to the next generation.’ At this point, she feels fortunate doing mostly research and acknowledges, ‘I worked really hard to get one of these fellowships.’ She had received a similar fellowship in her home country, but still had to do a lot of teaching. ‘So I looked for opportunities... overseas where I could go back into the research-only environment... before assuming all the other duties that come with being an academic ... I had good research that I wanted to do, so it was frustrating that I wasn’t getting a chance to do it.’

In her present post, she has everything she needs to be productive. She needs to publish at least two first- or second-author publications per year in high-impact journals. She comments particularly on the excellent internet connectivity and access to journals which she couldn’t take for granted back home.

While there is no pressure to overwork, it’s difficult to stay competitive without putting in the hours. ‘It’s definitely a self-imposed pressure... the fact that I’ve been given a prestigious fellowship and really need to deliver.’ As well, ‘as a female researcher there is always this pressure to prove yourself,’ especially when institutions are trying to address equity. There is ‘this feeling that women are getting academic jobs because they are women and not because they’re capable... [so] we have to prove... [we’re] not just an equity hire.’ Her own experiences of discrimination in this regard include her first postdoc in North America. She was young and in an otherwise all-male collaboration: ‘It was very difficult for people to take me seriously and to listen to my ideas, they were very dismissive.’ And there were ‘plenty of examples... of being given “pink tasks” in her home country.’

After graduating from her PhD, she did a postdoc in North America, then one in Oceania, then one in her home country, before returning to Oceania for this fellowship. While moving means leaving friends and support systems, ‘it’s been a key ingredient to my success because at each one of those moves, I was exposed to new research environments, and new people which gave me an opportunity to learn new things, and develop new collaborations, and you don’t really leave collaboration... you create more projects.’

A further complication of moving is visa requirements. For instance, in her first postdoc in North America, she wasn’t allowed to apply for a new visa until she had returned home for two years, which complicated her career as she couldn’t use some of her connections there. She also had a relationship with someone there, ‘and so suddenly I had to leave.’ At this point, she expects to stay in Oceania: ‘I’m very tired of moving... and I have an ongoing position.’

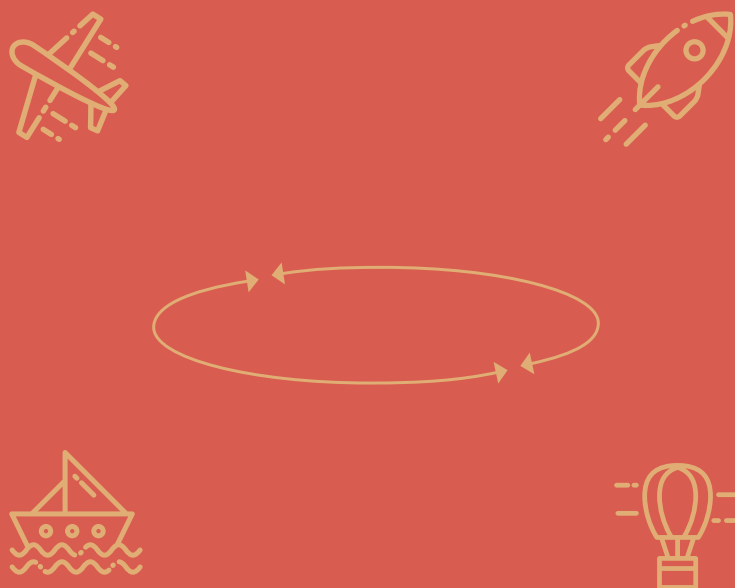
In five years, she hopes to have ‘create[d]... a name for myself in a particular area of research that I’m interested in and use that to grow a research group that can then be sustained moving forward.’

The major challenge is the funding climate as there is only one research council where she is. So, even successful people get small amounts despite the quality of the proposals. So, she’s thinking about ‘how to stand out from the crowd’ and how she can do this strategically. ‘That’s the sort of thing [I] lay awake at night and think about.’

Conclusion

The nine individuals featured in this chapter are all living outside of their home countries, either within or outside Africa. The decision to leave their home country was often related to broadening their research skills, but employment and infrastructure challenges also played a role. As a result, most of them established international collaborations by expanding their networks, and gained access to well-equipped research environments. They also generally indicated their love for teaching, with reasons ranging from their desire to develop young minds, their commitment to their community, and how engaging with students generated new research questions.

Still, being abroad, even outside Africa, doesn't fix all issues. Aside from absence from family, access to funding opportunities can also be difficult in their host countries. Lack of fluency in the native language is also a constraint – this relates to teaching, supervision and applying for local funding. Discrimination was also an experience a number faced: dealing with those holding misconceptions about their ability – as African researchers – was particularly notable. Further, while most were happy that they are on grants, they are uncertain if they will be able to attract other grants once these finish, which is critical when most are still not in permanent positions. Several weren't sure they could ever return home and find satisfying academic jobs.



6. Away and Returned – PhD Outside of Africa

Introduction

Here we introduce nine early-career researchers who completed their STEMM-based PhDs in a country outside Africa before returning home (though Cecilia and Gerald only did part of their PhDs whilst away). Six of these researchers did their master's in their home country, two did them outside, and Cecilia was able to do her PhD without having completed a master's. All are happy to have secured funding to study abroad, though for Jacob it was difficult to provide for his family that he left behind. Cecilia – the only woman with children – notes her mobility was limited by having children. Further, low remuneration is an underlying issue, particularly for Fiona, Gerald and Stephen – who is presently considering leaving academia. Eveline is the only one to have left academia for a time. Discrimination presents as an issue along differing dimensions – particularly for Fiona whose age, gender and lack of children were all subject of her sense of being mistreated whilst in her home country.

Stories

CECILIA, 33, earned her PhD in the natural sciences in 2015. She now works as a full-time lecturer in a public university in her home country in eastern Africa. She completed part of her PhD studies in her home country and another part in a collaborating university in western Europe, made possible by the collaboration between her own institution and the host institution. She went abroad on two occasions: once for three months, and once for less time. She went mainly to make use of the lab facilities due to the lack of these in her home institution. She has, however, not been abroad since completing her PhD.

Cecilia has a child, which has limited her mobility, particularly at the end of her PhD as she was considering post-doc positions in western Europe and the Americas. *'It didn't really make sense to move. One option was, of course, to leave my child, which I didn't want to [do].'* Now that her child is older, she thinks it is easier to travel than before but hasn't made any concrete plan about this.

Cecilia noted that her duties involve teaching, research and administration, *'but in reality most of that time actually goes to teaching and administration.'* As a consequence, she feels that in taking an academic job, one's research work suffers because there is *'very little time left for anything else.'* A further challenge of conducting research is the lack of mentorship and guidance for submitting high-quality grant applications. She noted *'there is definitely less female scientists or people I can look up to within the university.'*

Cecilia is dissatisfied with her working conditions. Firstly, she says *'the pay – compared to the amount of work and the effort you put in – is definitely not enough.'* However, she also noted that she knew upfront about the poor remuneration when she was signing her job contract. Instead, *'[T]he most frustrating [thing] is the lack of infrastructure'* to support her as a researcher. She felt that even while not getting enough pay, simply having adequate support and research infrastructure would ensure that she is *'not just a teacher'* and enable her to *'complete for grants.'* Her challenges include class sizes, non-availability of laboratories, and a lack of research funding opportunities and support for researchers in the university. She also pointed out that her university lacks a *'proper research office'* that can communicate funding calls to staff and assist them in responding to calls to ensure successful application. In other words, though there is one, their attitude is *'Oh! We support your application and [take] 15% of your research money if it comes in – for administrative costs.'*

Cecilia has applied for funding and recently secured a one-year post-doctoral fellowship supported by an international funding organisation, noting that *'it's a very small project.'* Even with this position, the university declined her request to have six months away from her teaching responsibilities, so she feels as though she is *'holding two full-time positions at the moment.'* She hopes to have the chance to apply for other types of funding, but needs to improve her publications portfolio to be competitive.

Cecilia feels that, because of her age, some of her older colleagues don't duly respect her. *'Being young, your opinion don't really count.'* She considers this *'a problem with the system and having older people in places of power.'*

In the future, she hopes to move to another country for *'one or two years of dedicated research.'* In addition, she hopes to obtain funding to carry out research within the university as she thinks that the *'capacity for research is starting to improve'* there.

EVELINE, who did not provide her year of birth, obtained her master's degree and PhD in the area of food sciences in North America in 2007 and 2011, respectively. During that time, access to laboratories and conferences, and the ability to publish in high-impact journals were 'major things that have [helped] me progress in my career.' She is now a lecturer at a public university in her home country in southern Africa.

Eveline is married, and has strong connections to her home country and family, which contributed to her decision to return home after completing her PhD. 'It was time for me to come back and maybe contribute [something] back to the society and my family.' She doesn't currently have any children though the possibility is a reason for her to stay in academia: 'Maybe, in the future, if I'm thinking of having kids, I don't know whether working for the private sector would be the smartest choice – in that case it wouldn't fit my lifestyle.'

Her responsibilities as a lecturer are service, research and teaching (up to 270 hours per year). She has a 'good non-academic support base' to carry out her teaching duties, but with 'all this teaching, there is no time for doing research.' As for research, '[M]ost of the equipment is either obsolete or they have some parts which are broken, and therefore cannot be run properly.' However, she is still motivated to remain in her job because of the 'very collegial' working environment.

Eveline is occasionally ineligible to apply for funding due to a language barrier or because her country is ineligible. As well, her field is 'not considered a priority field by the government or local funding agencies.' Still, new research 'funding is being made available at the university,' which may allow her to be more productive.

Promotion is based on quantitative assessments of teaching, research and services. She has applied twice for promotion and her quantitative assessment was found to exceed the threshold but she was still unsuccessful. She feels this is unfair as '[T]hey were trying to compare my [present publications with] when I was doing my PhD... in a first world country... and laboratory that had different equipment.'

Also, 'although you may have exceeded the threshold, it doesn't matter... because at the end it depends on their subjective evaluation.' So, the candidate is 'left in the dark' with respect to the outcome, such that 'you could be repeating the same mistakes, if there are any,' further hindering the pathway to promotion. In addition, there is a 'major disparity' in assessment across committees and faculties, in part because the promotion guidelines lack clarity, so 'everybody interprets the guidelines in their own way.'

Eveline went to North America to work on her master's and PhD degrees, after completing her undergraduate degree in western Europe. Besides returning home immediately after to be nearer her family, she also wanted to avoid becoming overqualified in her home country – which would make it harder to find a job as they 'wouldn't cater for these types of qualifications.' When she returned she took an industry-based job, to have a 'break' from academia. 'Different types of responsibilities, different day-to-day activities and I loved it. But then, after two years I found that it was getting too predictable.' At that point, she secured her current position.

Studying and working in North America was a rewarding experience for Eveline. However, in addition to the distance from family, there were cultural contrasts that meant she had to 'try to fit in,' which was less comfortable. In returning home, she was able to teach what she learned, but experienced a contrast in the teaching climate with a greater distance between students and professors. As far as applying knowledge, she can teach what she learned, but applying what she learned in research is difficult. For instance, the lack of infrastructure means she can't sustain her publishing record.

In looking forward five years, she may stay in academia or move back to the private sector as a research scientist – though the latter may not be sensible if she has children.

FIONA, 41, completed her master's in 2006 in her home country in eastern Africa and her PhD in western Europe in 2013, specialising in life sciences. She believes adequate funding would have helped her to advance more quickly. Presently, Fiona is a full-time lecturer in a public university in her country and chair of her department.

Fiona doesn't have any children but is close to her family and friends, so being abroad '[Y]ou miss home a lot.' She also feels a strong duty to her home country, so she felt compelled to return home because '[M]y knowledge and experience was required more because we're still a developing country.'

Her main tasks and responsibilities include teaching, research and administrative duties. She likes teaching because it gives her time to interact with young people who 'really inspire you and motivate you into developing a lot of research ideas... The second thing that I love about working in the university is the academic freedom.' She also likes research because she has very supportive bosses around her.

She works in a new university and feels the institution has the potential to grow. However, one challenge, which she thinks is temporary, is the lack of funding and research infrastructure. She needs specialised equipment for parts of her research, which she usually cannot access and so works mostly on the theoretical aspects. She notes her age has also hindered her from getting funding because, '[T]hey usually have an age limit... now I've clocked 40... you're not considered young anymore.' She also feels it is a 'really low paying job,' so is considering looking for a job with a higher salary. However, the lifestyle benefits of working in a smaller city are difficult to give up.

Fiona feels she has been unfairly treated as a woman in her home country, in part by a former boss who wanted sexual favours from her. 'I don't believe I need to sleep with a professor so as to succeed.' She noticed though that if one doesn't do what they want 'they frustrate your efforts.' Despite the threats, Fiona remained principled and didn't give in, yet feels that her actions have been detrimental to her career. Further to this, if one works well with a male boss '[I]t is always assumed that you're having an affair with them.' She also feels unfairly treated in terms of traditional gender roles, 'when there is no administrative assistant in a meeting and you are the only female you are expected to write minutes.'

Besides the time she spent in western Europe working on her PhD, Fiona has spent two years in eastern Asia. She feels that she has grown in her career because of these experiences. The exposure to useful equipment, excellent supervisors and mentors – which she thinks her home country lacks – all contributed to this. She had issues with language barriers abroad though, particularly in terms of writing to attract grants. The challenge of communication contributed to her feeling that she 'lacked a sense of... complete belonging for as long as I was out there.'

As to the future, Fiona wants to move from lecturer and chair of her department to an associate professor. Moreover, she wants to be carrying out the kind of research that is relevant and helpful to her country. Despite her ambitions, the lack of research infrastructure and funding might hinder her from pursuing her dreams.

GERALD, 41, obtained his master's degree in 2006 in his home country in western Africa, and his PhD in 2016 in southeastern Asia. Both qualifications were in engineering and technology. He was initially doing a self-funded PhD in his home country: 'I was trying my best to complete the programme in my university.' However, 'that wasn't easy' for him and after several years he realised it wouldn't be possible.

He applied for and accepted a scholarship to go abroad to a country world-renowned for research in his field. The transition was smooth since he felt prepared from the experience based on his PhD work – including having published around five papers from that research. Still, 'I learned a lot and have built my skills and career,' completing his PhD in three years.

Through this experience, he also joined a collaborative research team, which actively publishes papers together. It was also good to be exposed to a foreign culture, and to meet other Africans in the diaspora.

Since Gerald is married with a one-year old child, and also has two other children in his household,¹ this contributed to his decision to return home as he was feeling separated from them. Upon his return, he has had difficulty continuing his research because of a 'lack of laboratory equipment, electricity is a problem, water is a problem... even to reply to emails; it isn't easy.'

Before going abroad to complete his PhD, Gerald was an assistant lecturer in his present institution. Upon his return, he was made a full-time lecturer. He has been lecturing now for almost 10 years. His duties are to provide advice to practitioners on his area of expertise, engage in research and to lecture – he has 'lots of courses [to] teach.'

Prior to his employment in academia, he worked in the private sector for several years, but didn't find it easy to meet his own career goals because of the financial and job insecurity: '[T]o pay for the corruption, the [contractors] aren't going to give the salary' to their employees. As a result, he decided to pursue a career at the university. 'If I can go to the university, I can have a future in my career. So it means that I can grow.' In his current role, he still has concerns about his salary, in particular the cost of housing and the lack of credit access through banks.

Gerald also has challenges in his present job with access to funding. Though he has been able to receive conference grants on several occasions and was able to secure a scholarship to finance his PhD, the funds and grants are usually 'very insufficient.' On one occasion, funding he was promised was only partially disbursed, while on two other occasions – while discussing research opportunities abroad – the contact institutions had been unable to clearly detail how much funding was available. Still, he has managed short visits for conferences to Europe and Asia.

Gerald is concerned about 'university governance' and the poor research infrastructure at his university. 'When I received my PhD, I realised that all of the projects that I wanted to continue here in my country aren't possible because the facilities aren't there.' However, he is still motivated to remain in his job because he enjoys community development work and the institution still has a 'very positive reputation' in his country. He commended his university for granting him leave to do his PhD study abroad.

Gerald intends to carry out a research stay in a university in North America soon, but he is still unsure if it is financially viable. In any case, he intends to return home. 'I can go and come back... my challenge is to help my people.' He also hopes for government to finance research and for universities to have infrastructure and good working conditions, so that research is 'not only [in] labs, or for publishing houses, but should be used to [make] change.'

JACOB, 37, completed his PhD in 2012 in western Europe. He had completed his master's in 2009 in his home country in western Africa. For both degrees he specialised in life sciences. Looking back, he would have appreciated more financial support, particularly for his family. 'You move to another country without your family... [and] you have to provide money back home.' At present, Jacob is a lecturer at a public university in his home country.

Jacob doesn't have children, though he is certainly considering it. 'I have decided to delay having children so that I can move. So the choice between my family and career can be a big challenge.'

Jacob enjoys teaching students and research, because 'I'm hopeful to make a change.' Still, his research output is limited by his teaching duties. His classes contain up to 300 students, each of which he has to examine and grade separately. 'Your research career basically comes to a halt and all you are doing is teaching, examining and marking scripts.'

This becomes a major challenge since promotion is solely based on research. 'You can never be promoted if you don't have a good research output.' Yet, even if he had the time, there is a lack of research equipment, and funding for more, which is problematic as his research area requires specialised equipment. Even the equipment he does have is difficult to maintain: '[O]nce they break down, it is difficult to get someone to fix it.' One strategy is to try and travel to access equipment – still he feels the system is 'highly unfair.'

The lack of internet at his institution is also a major hindrance to doing research. 'Most of the time it's down and if its working, it's very slow.' Jacob has bought his own internet modem to use at work. 'I do whatever it takes [to] go beyond the challenges and limits to produce results.' The overall result of these challenges is that he ends up doing research that is difficult to publish: '[W]hen you aren't using modern technology to do research then nobody really wants to publish your work.' Another component of this is that 'journals charge as much as \$2000' to publish work. He feels that for departments with fewer students, and less dependency on research equipment, it is easier for someone to be promoted. And the lack of publications impacts his success in gaining funding since he doesn't 'have the publication record,' which is important in a competitive funding environment. Additionally, securing funding from his home country's government 'is almost a lost battle.'

As regards changing his career direction, his friends in the private sector 'earn a lot more than I do,' and this is one reason he is considering leaving academia – also because doing well in academia means one has to travel, even just to access research equipment. He feels that in industry, 'I'd [be] earning more and I'd [be] stationed with my family.'

In the future, Jacob wants to go to western Europe to do further studies to strengthen the research part of his responsibilities. He hopes to be leading a research group that is 'well-funded and doing research on key areas of [life sciences] in my country.' He also wants to train postgraduate students so that he contributes to growing the research base in Africa – though all of this is contingent on funding.

JEREMIAH, 42, completed his PhD in 2017 in eastern Asia. Before that, he completed his master's degree in his home country in eastern Africa in 2012. For both degrees, he specialised in medical and health sciences. Prior to his PhD, Jeremiah worked in a government position. During this time, he went to North America and northeast Asia for research purposes. Since he 'never wanted to be bonded,' prior to moving for his PhD, he resigned from his role. 'I didn't want to be held up in a specific place when my education had opened up opportunities for me.' The time abroad doing his PhD was pivotal for him: '[I]t changed my career path. I learned a lot of science, work ethic and it's grown my horizons.' At present, he is Dean of his faculty at a private university in his home country.

Jeremiah has two children, ten and eleven. He doesn't feel they have negatively affected his mobility. In fact, he 'had children... when I moved to [Asia]' for his PhD. And now, 'I expect my family especially the children to have... gained some degree of independence to allow me to pursue my own career goals.'

Jeremiah's responsibilities include administrative, teaching and research duties. He enjoys teaching a lot because he likes 'developing young and upcoming minds.' Although they get some kind of support for teaching activities from the government, he is challenged by the 'ill equipped' laboratories and lack of funding for research.

Number of publications is the major measure of productivity for Jeremiah, yet there is a lack of infrastructure, collaborations and time. The administrative duties in his role often prevent him from fulfilling his research duties – and goals – so he tries to establish collaborations to compensate. He doesn't expect much from his institution because 'it is primarily a profit-making organisation.' However, if the institution forms collaborations this will help to further his career.

He feels earning a PhD strengthened his knowledge in academia and developed his mentoring skills. 'I'm now mentoring researchers due to the knowledge I acquired in [Asia].' However, he felt that while abroad he didn't get enough opportunities to collaborate and network.

In five years, Jeremiah expects to have acquired a professorship. He also wants to become a consultant in his field because he 'would like to gain more knowledge and impart more knowledge', and this role would enable this. He feels that the research industry in his home country grows very slowly and that this may hinder his progress. 'I don't expect it to have picked up [or] met my expectations in the next five years.' Another goal he has is 'trying to position myself as a mentor for research' since he has strong hopes for young scientists in Africa.

PATRICK, 40, has three children aged eleven to six and is living in his home country in western Africa. He completed a master's in health sciences in 2010 in his home country. He then sought an opportunity to earn his PhD in the same discipline in western Europe to overcome the lack of access to equipment and technology he had experienced. Integral to his success in securing funding was a prior opportunity for brief training in Europe focussed on grant writing skills. He went there for five years, returning home in 2017. 'Comparing it with what I have here,' his access to equipment and research resources was considerably better. But his master's degree hadn't prepared him sufficiently, so he had to spend time just catching up to other students on the subject matter and skills to complete the necessary research tasks.

Patrick now works as a lecturer and researcher at a public university teaching undergraduate and post-graduate students. He feels his teaching limits his capacity to do research at times; however, teaching sometimes prompts research questions that warrant further enquiry. Overall, he feels a balance between teaching and research is required, '[T]hen you can make progress.'

In the institution where he works, they receive some support in terms of equipment, but there is an expectation for the academics to pay for some of it. Their laptops were 'subsidised and then we paid them off over a while.' Furthermore, both the academics and students are frustrated by the poor access to internet within the institution, which he feels causes them (in teaching) to rely on textbooks that are 'a little bit obsolete.'

Patrick feels similarly about his responsibilities as a researcher. He is frustrated by the reality for him that 'most of the trainings that have I received are rotting away in my head because I cannot use them.' This is because of a lack of the necessary equipment and resources for what is considered basic research techniques elsewhere.

These limitations on his capacity to do research inhibit his capacity to publish in internationally renowned journals: 'You do some good research but you cannot publish in very good journals.' Yet, such publishing is a determining element in being promoted.

Patrick has resigned himself to moving abroad to seek employment in a country with better research opportunities 'because we don't have the facilities here.' He feels it regrettable that he is contemplating this: 'It is better to be at home than to be abroad.' He has decided to avoid the country where he did his PhD since, while there, he experienced 'rejection' that was racially grounded, as well as being excluded from funding opportunities that were 'for Europeans only.' He is looking instead to North America, where he says, 'I don't expect such (experiences) from a place like that.'

SHANE, 31, is living in his home country in southern Africa where he works as a senior lecturer in life sciences at a public university. He returned there in 2014, after three years in western Europe completing a PhD. This followed the master's degree he completed in 2010 in his home country, with both degrees being in the life sciences. Shane was satisfied with the financial support he received during the PhD, namely a scholarship funded by universities in his home country and in Europe. Though the PhD position was bonded, he says he always intended to return home 'after my PhD as I'm too close to my family.' At the same time, 'I don't have a wife and children that I have to support. So my career goals isn't so much in terms of those tangible jobs security issues.'

In his role, the intensive nature of the lecturing and consistency of the assignment submissions make it difficult for him to maintain steady focus on his research projects; he instead finds that he regularly shifts attention between these tasks, which impacts productivity.

As a relatively young researcher – albeit a senior lecturer – Shane feels that a lack of direct leadership and access to mentorship from more experienced colleagues affects his development as a researcher. This is 'in terms of people who have already achieved what I hope to in the next 10 to 20 years.' He feels that the situation is a consequence of the government's policy setting, which encouraged many of the country's senior academic professionals to retire simultaneously.

Shane has difficulty attracting and retaining high-quality students to post-graduate courses. This is because the institution is a 'mid-ranking university by our own country's standards' and many of the students it attracts are ill-prepared (by their bachelor's degree) for rigorous post-graduate education.

This is a challenge as a teacher, in terms of setting a curriculum to accommodate these students, and as an individual who values working with highly-skilled colleagues – such as he did in western Europe. Reflecting on this he says '[I]t's harder to stay at the cutting edge of research because you're on your own.'

Shane hasn't found it necessary to apply for large grants to conduct research. As his research is relatively low-cost, he focuses instead on securing smaller amounts for conference attendance or field-based research work. Conferences are a particularly important way for him to maintain motivation and overcome the isolation he experiences. The university has an internal research department and course development services, though he feels the assistance they provide is 'generic and they can't help with my specific problems.'

Shane was recently promoted to senior lecturer, though the promotional process was very opaque. He is very appreciative to have a full-time and well-remunerated role, both things he is reluctant to give up when considering moving to another industry: '[A]t the moment it is more security that's keeping me here.'

The security is particularly important to him as he feels people of his racial background aren't favoured for employment in academic positions in his home country. Still, in Europe he would have less job security because 'I think the competition is slightly less here than in Europe.'

Shane felt very privileged to do his PhD in western Europe. For him, the exposure to internationally renowned researchers, other PhD and post-doctoral colleagues, access to workshops and seminars and the like contributed to his sense that they 'motivated each other.' Now in his home country he struggles with a sense of 'feeling very isolated and doing this alone.'

Prior to going to western Europe to complete his PhD, Shane had the opportunity to participate in an esteemed scholarship programme in North America. After deliberating, he declined the offer and took a sabbatical in his home country instead. He did this to get a break from academia and establish some certainty over what he wanted to pursue next. In the end it 'has worked out for the best', as it meant that he was able to accept the opportunity to do a PhD in western Europe some time later.

Looking to the future, '[W]here I really hope to focus on the next five years is on producing research that is international quality.' He feels this would help safeguard him against the political and economic situation in his home country, but even his ability to develop his career in this way may be hindered by those factors too.

STEPHEN, 36, is living in his home country in eastern Africa where he works as a lecturer and researcher in agriculture and veterinary sciences at a public university. He completed a master's degree in 2008 in western Africa, and soon after moved to a country in western Europe to complete a PhD, graduating after five years in 2015. For both degrees, '[I]n my country and even in the region there are no reputable programs' in his research area, so moving meant he had access to equipment and resources not possible at home. For both degrees, he received some funding in part by the government in the host country.

Though Stephen wasn't married before he left his home country, his desire to be married was part of the reason he returned home after his PhD despite the offer of a post-PhD researcher position in eastern Asia: 'I didn't want to stay away again from my relatives and also I wanted to get married... Going without getting married, it wasn't good. So, I declined the offer.'

In his current role, Stephen has a manageable teaching load, does research and community outreach. He enjoys all of these: 'I think I was born to be in this profession.' However, the mismanagement of the higher education system within his home country and 'very heavy administration... discourages potential research partners' and makes it difficult to secure resources and conduct research.

Further, in his institution the library resources, journal access and opportunities for professional development are limited. He seeks 'free online courses as an alternative' to the latter issue. Exacerbating these issues is '[T]hose journals we're asked to publish in are expensive.' Furthermore, he lacks training and mentoring from people experienced in designing and implementing research projects that are publishable in such journals. Still, Stephen feels that he has moral support from the leadership team, sufficient support in his teaching duties, good internet access and an internal research office that provides small grants on a competitive basis.

Stephen has applied for funding from many external organisations – mostly international. He has had varying degrees of success with these applications, in part owing to the difficulty of securing funding for 'research involving human beings.'

As to promotion, Stephen's application to become a senior lecturer was denied because he hadn't completed professional development training related to teaching. As he knew this was a requirement before applying, he feels 'that it was fair.' However, he feels the promotional criteria, including number of publications, are 'not adapted to our working environment.'

Stephen's time completing a master's degree and PhD outside his home country were important for his development as a researcher and lecturer. He particularly noted the networking opportunities, quality of education and research, and markedly improved access to research equipment. He uses some of the skills he developed in his current role, including helping his government develop policies related to his research area. 'It was an interesting opportunity because I had to work on research linked to my country.' However, a lack of research equipment prevents him from being able to utilise and share all of the skills he learned.

Though he has considered leaving academia – having already applied for a job in the private sector – he has a sense that the situation is improving and that his goals for the future are attainable. 'I'm going to be patient and I'll stay.' He would like to become an associate professor and be recognised as a leader in his research area. He would also like his institution to develop partnerships with other institutions so researchers can go there for short periods to do research. Finally, 'I really wish to be treated with dignity, which means that [the] salary issue [should] be improved.'

Conclusion

All of the researchers presented in this chapter experienced challenges with research infrastructure and funding in their home countries, which contributed to their decision to go abroad to pursue their PhDs. Infrastructure problems included a lack of useful equipment, as well as broken or obsolete equipment, and a lack of funding hindered their purchases of needed laboratory equipment and prevented them from attending conferences. Also lacking were mentorship and research collaboration in their home countries.

Mobility enabled them to overcome some of the challenges. Still, for both males and females, the possibility of having children or a desire to have children or be with their relatives influenced their decision-making about their careers. For instance, a number returned home as they felt not only a duty to improve their respective countries, but most wanted to re-join (or start) their families.

For most of the researchers, returning home after their PhD was connected in some way to family and friends, or a desire to contribute to their home countries. For each of them, returning home presented similar challenges. They no longer have access to hi-tech equipment, seminars and workshops, and collaborations that they had while abroad. This frustrated their efforts to publish in high impact journals. They also experienced poor remuneration. In other words, their work environment restricted their growth. Given the chance, most of them would (or still do) go abroad to enhance their careers.



7. Away and Returned – PhD Inside of Africa

Introduction

This chapter presents the experiences of four STEMM researchers within academia who acquired their PhDs in Africa – though not in their home countries. They all completed their PhDs in southern Africa and are now living in their home countries again. Fredrick and Trevor are from western Africa, while Cathrin and Timothy are from southern African countries different to where they studied.

Cathrin, while open to moving, expresses concern about leaving her four children – though they are getting older. Timothy is more easily able to consider moving, albeit with his family given he has a very young child. Trevor is separated from his family who live in western Europe, given the conditions at home. An important factor in any future mobility for him is finding ways to be re-united. As for Fredrick, he is also interested in future research visits abroad, since not doing so would mean not doing research, despite this taking him away from his family.

Cathrin, Fredrick and Timothy each express concerns about unequal treatment, but in different respects. Cathrin describes a culture of unequal opportunity for women that results in male colleagues being favoured for promotion despite women being equally qualified. Fredrick notes ‘godfatherism’ in advancement, and Timothy relays that his youthful appearance sometimes leads others to see him as a student.

In spite of these challenges, only Cathrin has taken genuine steps toward leaving academia – though she still hopes to attain a professorship. The others share visions of establishing their own laboratories and becoming professors in their respective fields.

Stories

CATHRIN, 35, left her home country to do her PhD in applied sciences in another country in southern Africa, the same where she had completed her master's earlier. She went due to a lack of funding opportunities in her home country. She finished her PhD in 2016, feeling well supported: *'I can't say I had challenges.'* She returned home and now works full-time as an assistant professor in a public university. Her partner is also striving to advance his career.

She had four children in four years – from three through seven. Doing her PhD meant leaving her first two at home – and while she was away she had two more. It wouldn't have been possible without extended family support, especially from her mother. And her mother continues to assist her, so she isn't worried about her children when she is away, but misses them. *'You're torn between your child and your work.'* Now that they are older, she finds it easier than before to think of travelling.

She is expected to teach, do research – *'[I]t's something that I love'* – and community service. An important emphasis as to research is publishing, presenting, and doing collaborative research with industries, and local and international colleagues. Flexibility of working hours helps a lot, and she also likes the independence: *'I can work any time of the day.'* While she would like more teaching support such as projectors in every class, her major challenge is research resources. Her country is lagging behind in hi-tech equipment and library subscriptions compared to where she did her PhD. She is expected to seek such resources through a university network she is part of.

Cathrin has been successful about 50 percent of the time in getting national and international funds (including a fellowship), noting it is important to seek funding for whatever the *'current'* topic is. She shares research opportunities with her local colleagues and *'often tells people the importance of being visible... on ResearchGate [and] Google Scholar.'* She remains in her job since she wants to make a difference, to improve society, and can do that through researching issues that impact society negatively.

Still, Cathrin has noticed that opportunities are given to men irrespective of women's same qualifications and better performance – alongside caring for children. As she says, while women go home, *'[T]he guys after work, they're going to the bar, [and] they network and make decisions there.'* This is a concern for her as she has *'realised they actually tend to promote the males in comparison to the females.'* Consequently, she looks for her own opportunities for career advancement, noting that money is a core factor since salaries are low. In considering moving to another sector, she says *'it must have the research component'*, so this means looking in the public sector, such as ministries, where she has already had an interview.

Cathrin doesn't want to be a *'localised'* academic, so she works with a group in her PhD university; this has expanded her access to funds. But mobility has its downsides: she has had to leave her children and miss their growth. Still, she went to Europe for three months recently where she learned of a cheaper model for her research and applied it when she returned. She has maintained those links and feels she is growing as a researcher. *'If there are conferences that are happening in [Europe] then they tell me, and most of the time they are funded.'* However, she also turned down an eight-month stay in a country nearby, measuring the learning value against the fact that too much moving can be disruptive.

She felt she had gained enough from her previous mobility to stay in the same place for a while and then consider a long-term move in two to three years.

She hopes for a professorship, wishing it was like a PhD with an exam rather than something other people decide they want to give you or not. She will push for it, irrespective of the obstacles, such as there being many more senior males than females in her field. To achieve this, she needs the right network, the right people to mentor her, and funding.

FREDRICK¹ completed his master's degree in his home country in 2005 in western Africa, then went abroad to do his PhD. In 2012, he completed a bonded PhD programme in natural sciences in a southern African university, where he was in a world-class research facility and received financial support from them. He noted that opportunities to attend conferences outside Africa and help with writing would have helped him advance faster. Still, doing his PhD abroad meant the 'level of support was definitely better than if I had to do the programme in [my home country].' He did 'good work which resulted into eight publications.'

Fredrick has been pleased to travel during his career, though '[T]hose kinds of journeys take you away from your family... so that means one has to adjust... for that period.' He is currently working as a full-time senior lecturer in a public university in his country.

Fredrick enjoys research and also 'loves' teaching. Nonetheless, he is challenged by the significant number of students. He also pointed out that there is little investment in education. The 'facilities that have been there for many years, are still what we have,' leading to the 'inability to effectively train students.' Inadequate funding and poor research infrastructure are also challenges despite the wealth of his country. Poor electricity supply, the non-provision of alternative energy sources, internet problems, and being saddled with too many responsibilities also affect his development.

According to Fredrick, institutional support from his university is 'superficial and insufficient,' and not tailored to individuals' needs. He is displeased that they are only given markers and dusters to teach and limited further support, though some exists for the accreditation period. He further noted that he has colleagues and professors sharing offices, such that '[U]ntil last year I was also in a room that was partitioned into five.'

Fredrick is evaluated based on teaching and research and noted that the university is mainly interested in publications. Despite this, it hasn't provided 'an enabling environment for publication.' Further, '[T]here is no incentives for teaching' in the evaluation criteria, and thus, 'there really isn't any added advantage for you being a good teacher.' Despite these challenges, he is motivated to remain in his job due to its flexibility, and the joy of helping his students. Seeing their achievements gives him 'some level of excitement on the job.'

He is also displeased that the recruitment of some university staff is laden with politics. He noted that 'godfatherism and politics' are involved in recruitment, leading to the employment of those who are 'not really cut out for the system' and are 'constantly a problem in the wheel of progress.'

He noted that national funding sources are scarce, so he mostly seeks international funding. He has benefited from a few international funding opportunities, particularly those in western Europe. Still, he finds it difficult to obtain funds for some parts of his research since it isn't an 'interest' area globally. He has also secured funding more locally, and notes being ineligible to apply to an important national funder because he wasn't senior enough, and lacked field-specific senior collaborators.

Aside from his experience abroad for his PhD, he has been to western Europe for a three-month research stay: '[I]n three months of work we were able to publish one article.'

In the future, he 'would love to have risen to the peak' of his career and access grants that can help him create a positive effect in society. He is also hopeful of establishing a world-class research laboratory and creating an enabling environment to do good research. However, he foresees an inability to do research that can be published in good journals, given inadequate facilities and insufficient funds. He notes, other obstacles to his goals include delays with being promoted and general bureaucracy.

18 When no age is provided, this information is missing.

TIMOTHY, 32, did his master's in his home country in southern Africa in 2012 and then his PhD in natural sciences in another country in southern Africa in 2017. Since he didn't have funding he had to continue teaching to remain on the payroll in order to be able to afford to do his PhD. He believes funding would have definitely helped him finish quicker.

Timothy has one child who is a year old, but having a family doesn't impact on his career in terms of mobility and balancing social and work life. When he moved away to do his PhD, his family moved some time later to join him. He feels fortunate to have a relative who has also completed a PhD, saying he was 'blessed because you had someone in your family to be like a mentor.'

He is now a permanent full-time lecturer in a public university in his home country, though he began working there as a temporary lecturer. Being permanent means he can now apply for grants from the university and do research on his own – which wasn't previously possible. His main work includes research, teaching, community engagement and administrative duties. He enjoys community engagement because he likes to 'bring information to the public.' Likewise, he enjoys teaching because he is able to impart information to people. He is less fond of research, in part because of the constraints on actually doing research. Time is one such constraint because teaching and research both demand so much time. Overall, he says 'I think my passion is research, teaching and distributing information.'

Timothy faces challenges with securing funding. He would like to do research that is 'meaningful' to people, and publishable in accredited journals. But, 'in some cases, you may not even have the infrastructure to do such research.' This is also related to funding, as people and organisations that administer funding have a narrow and false perception of his area of research. Furthermore, collaborations are difficult, even between local institutions. '[People] say "We do our own things at university A. You do your things at university B".' This makes it feel 'like we are [in] competition.' However, he is pleased that the institution provides them with an online library, with 'most the top journals,' as well as interactive boards and projectors in classrooms and a stable internet connection.

Timothy feels his funding and access to resources at the institution is limited because of his discipline since there is a persistent misunderstanding from others about what they do, so he is sometimes faced with an attitude of "Why would we allocate funds for such?" He also thinks that his physical appearance causes some disrespect from both his colleagues and students. 'I look even younger than I am ... the first perception that people have of you is that you're a student.'

Going abroad for his PhD helped Trevor to gain confidence: 'That was the first time I could present in a conference.' He also found mentors in his field who helped him to apply his skills and connect to networks that improve his access to funding. He also went to western Europe for several months, which also helped him to learn new skills, and further his network. 'It was quite interesting because I had never had the platform where everyone around me [is] in my field [and] understands what we do.'

Discussing his future career, Timothy wants to be 'transforming science.' He feels that most scientific knowledge and findings are inaccessible to many people: 'We need now to break it down to simpler terms, to a person in the street.' Funding remains a problem in doing this so he thinks of developing a project proposal for funding. People in his institution have said: "This is a wonderful idea ...but who will fund this?"

TREVOR, 33, lives in his home country in western Africa where he returned after obtaining a master's in western Europe and a PhD in southern Africa. He was awarded each of these in the natural sciences in 2011 and 2015, respectively. During each of these stays, he felt that he received better support in his host country than he would have in his home country. *'The work and conditions for staff... in those places, is more preferable.'* When he returned home he found a position as a lecturer and researcher in the natural sciences.

Trevor has three children under the age of two, who remain living with his wife in the same country where he did his master's. *'It isn't easy to be separated from one's family,'* but they decided together it was best for them to stay there: *'Because of the conditions [here], I am not able to say "okay come"'*. He finds it very difficult to be living away from them.

Trevor is employed in a relatively new institution, which means that he has a reduced teaching load. However, soon he will be teaching classes almost all week. The institution doesn't have post-graduate courses, so he only has undergraduates to supervise and assist him with research activities.

As an undergraduate, his supervisor imparted to him a lot of knowledge and experience – and continues to do so. Inspired by this, he enjoys teaching and involving students in research as he enjoys sharing knowledge. He finds it difficult to teach them practical skills owing to the lack of equipment and financing for such. *'I'm always limited to teaching only theory... I'm such a practical person, I'd love to be able to show them.'*

Trevor has difficulties with accessing funding within his country and institution. The lack of suitable research equipment in his institution further limits his ability to conduct research independently. To overcome this, he seeks collaborations with international researchers and institutions. He notes that he has submitted over 50 applications for funding in three years, yet only two applications have been successful. The two projects are with separate teams, one based in northern Europe and the other in southern Africa. In each case, the collaborators are the principal investigators. In the first project, the Europeans send *'the working materials that we need to carry out the study'* and then he collects and ships back the samples – which he pays for himself – to the collaborating team for further analysis.

He feels that most funding research comes from outside of Africa, and though generous, it is insufficient, and both difficult to identify and secure. *'Before we even get to know something like this is available the whole system is dead.'*

Trevor describes his income as *'not satisfactory at all,'* and self-funding research activities creates further financial pressure. He says, *'[B]y the time I remove what I need to feed, what I need to give to my family, I haven't got enough to be able to say: "yes, I have something left to do research."'*

Despite the challenges, Trevor is grateful to have a full-time position in his home country. He enjoys the flexibility he has in his work schedule and is pleased that presently he doesn't have an overbearing teaching load. He also appreciates the job security because there are very few secure jobs to apply for.

This is less problematic in the countries where he completed his master's and PhD. Though he isn't currently applying for other jobs, he does remain informed about what other opportunities exist as he wants a position that will help facilitate his career.

Trevor is very open to seeking opportunities outside of his home country, or even outside Africa. His previous experiences abroad have revealed to him the opportunities that are available. Going outside his home country is of particular interest because *'I know what I will get and what will be made available'* in terms of access to funding, equipment and working conditions – though his primary concern is having his family together again.

Conclusion

For researchers in STEMM globally, access to equipment is particularly critical. These four STEMM participants report limited access to such research equipment, which they view as limiting their progress. They also share a concern with the lack of and difficulty of gaining research funding. So there is an implicit motivation for them to go elsewhere for further study or research – and through such visits develop collaborations for future work. Further, each described the opportunity to study outside of their home countries as a privilege – recognising that such opportunities are limited.

As for future mobility, all are open to visits abroad, though there are concerns regarding their families. Finally, we noted that experiences with unfairness (or discrimination) come in various forms, from gender through to favouritism and on to appearance.





8. Away and Returned – PhD Home with Diaspora for Other Purpose

Introduction

This chapter tells the stories of eight researchers who did their PhDs in their home countries. Their experience of the diaspora is rooted in research stays or visits at different points in their academic careers. Bernard has had research visits in three different African countries over the past 10 years. Edna had one stay in western Europe during her PhD and Faith has had opportunities for visits to two western European countries. Ivy had opportunities for two visits, one in southern Africa during her PhD and another in North America. Kimberley has also been to North America, as has Sheila (during her PhD) along with another stay in western Europe. Christine's international experience has come through conferences, and for Sylvia it involves a research stay in western Europe.

As you read, you may note the influence that even short stays away from home appear to have on researchers and their careers. The challenge on returning is that it isn't always possible to implement what has been learned. Even though they gain know-how from abroad there are limited laboratory facilities for their own research or for post-graduate students. As with the other chapters, we conclude the chapter by presenting what we see as interesting themes.

Stories

BERNARD, 42, completed his PhD in physical sciences in 2015, starting immediately after completing his master's, both in his home country in western Africa. He works 25 hours a week in a university on a research contract and would like more hours. He also experiences considerable job insecurity. He has four children, each under the age of 10, with two of them living at home.

Bernard's job is research (though he occasionally teaches at another university) and he has been able to publish six first-author papers. While he has an office and a computer and can get reagents as required, he feels quite constrained. He sees his superior every day since they work together. And, as a young scientist, he needs to propose ideas and wait for agreement from his supervisor, for instance, if he wants to travel anywhere or arrange a conference. *'It's too difficult... we haven't got independence... we must wait [for agreement]... it's complicated.'*

Bernard still considers it important to persist. *'My first motivation is to help our country, help people.'* He feels frustrated, though, when he sees what is being achieved in Europe and elsewhere: *'why [can't] we progress, why... will [we] not develop, why not?'* He feels in this context he doesn't have the possibility to excel and be more competitive. *'We say young scientists [in our country]... are progressed, they have good publications, [but] it's... so far from the reality.'*

He has a performance evaluation every year. He prepares a report demonstrating his research productivity; this can include publications, getting a grant, or a new discovery. This is reviewed by a committee and can lead to promotion. He has had two promotions in the past five years.

He has applied for five grants, including some in English, and has been successful in two (not the English ones). He notes *'a lot of discrimination, the first is young scientists [are] not... excellent[ly] treated'* in his home country. Also, *'our language is blocked [elsewhere]... if I participate in a project [and] speak [my language] it's a big discrimination to be... accepted.'*

He has visited three different countries in Africa for research purposes in the past 10 years, for instance for collaborations, and to access more modern equipment. He has also travelled in Africa for conferences. He recognises the benefits in international mobility for researchers, though strongly believes it should be always with the view of returning home: *'[I]f you go to the foreign nation, [you] must come [back] to help our country, help out people... [that] haven't had this chance.'*

In five years' time, he would like to be promoting science in his country, giving people access to develop science. He doesn't wish to shift out of academia or research because *'I inspire through my speciality.'* However, the country wants everyone to be young scientists, but the conditions are *'too difficult.'* Specifically, to move forward, he needs collaboration, because *'[Y]ou can't do science alone.'* Also, he hopes at some point to build a big lab, but would need a lot of funding for that.



CHRISTINE, 40, earned both her Master's degree and PhD in health science from her home country in western Africa, in 2005 and 2011, respectively. The PhD took her six years to complete, partially due to a lack of funding and mentorship: 'I never knew there were opportunities [for funding] for women... my PhD supervisor was a male... it's something that actually drives me crazy at times, [that] I never had a mentor.' She has worked in as a lecturer in her home country for the past three years.

Christine has four children, the youngest almost 10 years of age. She comments that as a woman, children can be an obstacle: 'I'm grateful to God that my children are grown up... I'm a bit flexible now... my last girl... is old enough to take care of herself.'

Her job entails teaching and research, which she enjoys, especially when you can help guide students. 'From my own angle I enjoy counselling women.' Her institution doesn't provide much support, either financial or infra-structural, just very basic equipment for teaching. Furthermore, there is no other institutional or funding support mechanism in the country. For instance, the last time she managed to receive research funding was two years before finishing her PhD when she got an award, which allowed her to do some preliminary studies for her PhD along with her research group members.

Christine finds it very challenging to do research, although her country is rich in the health resources that she studies. The lack of equipment, technologies and funding makes it impossible for her research to yield tangible results. This barrier obliges her and her peers to seek access to resources internationally, which is another challenge. Further to the shortage of existing funding, Christine finds it hard to even know about existing opportunities since these aren't fairly publicised in her institute, which is connected to mentorship and supervision: 'I had never had someone that said... "this is the way to write, send for grants, this is the way about it."'

All these obstacles impact her research and publication productivity, which is a problem when her institution bases its evaluation on the number of publications that faculty members produce. '[Given] we're limited in equipment, there's no way you will really achieve' expectations. This was one reason she didn't get her expected promotion last year; she is hoping to get promoted this year as she now meets the publication number requirement.

Lack of equipment and funding isn't Christine's only challenge. There is also the teaching load, exams, grading, and the entire administrative burden that goes with it, which leaves her with no time or energy to do research. 'You can't really have time to say I'm spending this teaching break – one month, two months – in the lab.'

Thanks to her personal savings, she manages to participate in international conferences and stay updated in her field. She has been to North America, southern Africa and southern Europe for brief research or training visits. These international experiences let her measure the distance between what her international peers are doing and her limiting conditions – and she tells her students: 'Look we're not doing enough.'

Although Christine has never experienced discrimination based on gender or religious affiliation, she admits that she experienced tough times during her early years of motherhood. For instance, tailoring her PhD studies to fit with her young and growing family. She also notes that ethnicity can be a divisive factor 'if you're not in the jurisdiction of where you're from.'

Despite the various challenges, Christine holds on to hope and doesn't let the harsh work environment stop her from pursuing her career, and influencing the young generation of her home country. In five years, she hopes to have funding for her research proposal: 'We can't all fold our hands... it's the ability to encourage the younger ones that's actually keeping me [going] so that they wouldn't just give up.' Now that her children are grown up, she is preparing an application for sabbatical to go abroad.

EDNA, 42, completed her PhD in 2010 – after eight years of work – in physical sciences in her home country in western Africa. She completed part of the research for her PhD in western Europe as she secured a scholarship. ‘I was able to get hooked up to people that have facilities... and collaborate with people in my field outside the country.’ She is now a full-time permanent senior lecturer in a public university in her home country.

Edna has children and balancing life and work can be difficult. She particularly recalls a research stay in western Europe during her PhD when her daughter was hospitalised: ‘I... abandon[ed] [my research] and rush[ed] back home to nurse my child in the hospital... it was very traumatic... it took my husband’s persuasion for me to go back and complete [my PhD research].’

Her tasks include teaching undergraduates and postgraduates, supervising final year student projects, and coordinating an undergraduate programme. This ‘very big load gives little or no time for research,’ yet research is what is most enjoyable (including supervising students) – and getting results published. But, sometimes, she is ‘too exhausted to sit down to write a paper... you’ve already given all your energy to teaching.’ This leads to missing funding deadlines, yet getting funding is essential for analysis and equipment. On top of that, teaching is stressful: lecture halls seat 500 students, and often the audio and projector systems do not work.

Generally, Edna lacks reagents and equipment – given electricity surges that destroy equipment, and no funding for repairs. This also affects self-funded students who can’t afford the reagents. It is difficult to get published using outdated research techniques. She and her students also lack travel grants to visit labs with the needed equipment. For women, there’s also balancing family and work: ‘You have to take care of... your children and be there for them so you wouldn’t want to always be travelling.’ Still, she remains motivated by collaborating with leading people in her field, especially the ones she meets during her PhD research stay. She can delve into new areas, and arrange research stays for her students.

Productivity is rewarded in a promotion exercise every three years; the only criterion is publications on an accredited list – ‘[N]obody looks at your teaching.’ She had to submit 12 papers, plus a note about her teaching from the department head for her promotion to senior lecturer. She considers it an unfair practice that the university retrospectively applies decisions about ‘blacklisted journals’ so that previous publications are suddenly ineligible to be counted for promotion purposes. However, since she has been collaborating internationally over the past five years, she’s published in top-rated journals and has had good marks when she’s been assessed. And she’s been able to apply for grants with these colleagues, twice successfully. She feels that applications seem to be more successful when they are inter-disciplinary. What would benefit her career is more exposure, opportunities to travel to conferences, to meet people and collaborate. Also welcome would be exchange visits and training about writing grants, which she could use to help her students.

Edna’s travel experience was very positive aside from her child’s illness; going ‘without your family that’s the downside.’ She did quality research and had access to all the journals. But the lack of access to the same equipment at home limits her from applying her research skills. Still, she draws on her experience to explain possibilities to postgraduates. Her research stay was bonded, which for her was fine. It’s ‘very sad’ others haven’t returned – a ‘bit of a brain drain.’ If she were to go elsewhere, ‘I would always [return]... and give back to my primary institution.’

Despite all the challenges, she has never thought of changing labour sectors but would love a sabbatical for a year and learn something outside what she is used to. Five years from now, she would like to be a professor, have a ‘vibrant research group... I’m hoping to get big grants [so] I can have my own laboratory’ so her students and she can do quality research. ‘The challenges... boil down to funding’ which will remain a problem until ‘the university or the government or the nation make it a priority.’



FAITH, 38, completed her master's in 2006 and then her PhD in physical sciences in 2015 (after six years), both in her home country in eastern Africa. She appreciates her university having supported her for both degrees, but wishes she had learned to write research proposals earlier; only now she is finally doing so. She is a lecturer in a public university in her home country.

She has three children, aged four to ten, and also has two other children living in the household. 'I'm a mother... I have a family so... [it's] very hard when ...you leave them alone.' Still she has done so and notes while away you 'don't know what they are doing.'

She teaches undergraduates and postgraduates, supervises research projects, coordinates a master's programme and publishes as well. She enjoys all she is doing, especially teaching since 'transferring what I have learned to someone else... enlightens my spirit.'

She feels supported, for instance, by free internet so she can advance her teaching, and projectors and blackboards are also available. But it's challenging to hold practical classes since the labs lack equipment and chemicals. It's also hard to supervise without a funded research project: 'If you don't have projects with funds, [you] will not be able to supervise students.' So, she participates in colleagues' research to be able to do so: by 'working with them I can be productive.'

Productivity is assessed in terms of number of students graduated, publications, research proposals written and grants awarded. With a master's, you can be an assistant lecturer. When you have your PhD and two publications, you apply for lecturer. Employees are expected to apply every two years, so if 'I spend five years without being promoted to another rank, that means I'm actually not productive.'

Her responsibilities positively affect her output. For instance, with students, 'you give them the idea and they participate in the research I'm doing – it positively affects my research capacity.' Still, sometimes the workload can be 'overwhelming... but at the end of the day I manage.'

Her main career obstacle is insufficient funding. And she is also not recognised as a main supervisor since she isn't yet a senior lecturer. The person with the higher rank is always the main supervisor, 'though I'm the one that knows all about the research.' Once she is promoted, this will change. Despite the obstacles, she stays: 'I love the job' since 'teaching is part of me.' She has also had training opportunities, like university support for her degrees. She has never thought of switching sectors.

As for funding, she learns about opportunities through the university and her collaborations. While she hasn't been successful in getting substantial funding, she has succeeded with small amounts. What makes getting funding difficult is that funders often want to have a direct impact on the community, yet impact is often long-term and thus harder to measure.

She hasn't experienced unfairness, in fact, she notes that the university will 'favour a woman because... we are actually just five ladies out of twenty-five [in her department]... because [of so few] women' in her field.

She has had two experiences of mobility: the first was in western Europe for a research collaboration that enabled access to an analysis process. There were no negatives. In fact, not only did she complete the research, she also formed a long-term relationship. She also went to another western European country for a bonded training workshop – again, only positives as she was learning so much. The only hard thing was being a mother, being pregnant, and leaving her family behind. If she knows mobility will help her develop skills that she needs, she will go. She once declined moving to southern Africa for a PhD scholarship because of pregnancy: '[I]t was very hard for me, I had to stay and then I left the scholarship.' She applies the skills she learnt with her research students, for instance, through the training she provides, and the new course for students she has now.

In five years, Faith imagines herself as a senior lecturer, an independent researcher, with a funded research grant, and having graduated enough students to become a professor. The biggest challenges are receiving funding and infrastructure such as equipment and reagents.

IVY, 41, did her master's and PhD in health sciences in her home country in western Africa, completing them in 2009 and 2017, respectively. Currently, she is a lecturer at a public university in her home country. Looking back, she would have appreciated if she could've had more PhD funding and a well-equipped laboratory in order to finish earlier. She had to look for funding to finish her PhD and managed to secure it for less than a year to study in southern Africa.

Ivy has one child who is two years old, and two other children in her household. She doesn't cite them as a hindrance to her being mobile; rather, the major challenge to being mobile is lack of funding.

Recently, Ivy was promoted from lecturer to senior lecturer and now she is working towards promotion to associate professor. Her main responsibilities are teaching and doing research. She enjoys teaching as it is at least doable despite lacking some resources since you can improvise. Research is more challenging though, given '[W]e lack equipment [and] finance to buy consumables and other related materials.' The university gives them a minimal research allowance which comes quarterly, but it is only enough to access articles online. Besides a lack of funding, Ivy notes a lack of training to remain updated on recent technology. She lamented: 'I can go for one to two years and not have a refresher course.'

In her country, there is a majority and minority linguistic population, as well as tribalism. As a minority language speaker, she believes her career has been negatively affected. She notes she once '... applied for a job, I think because of my ethnicity I didn't get it.' These experiences are de-motivating despite flexible work hours and a love for her country. So, she will leave her job 'if something big and better at the international level' presents itself – but this will still be in a research or academic setting.

For now, she stays in her home country and in academia 'not [for] the pay package... it's just for the love of it and patriotism.'

The longest period when Ivy stayed out of the country was the six months in southern Africa; this was related to her PhD. She spent a similar amount of time in western Europe for training in her field, and went for two weeks to North America for a short course which she couldn't do in her own country.

This was all a little easier than now because at that time 'I didn't have a child and wasn't married.' This mobility has been important for her training, but also for access to equipment.

Looking to the future, if she stays in her home country, Ivy hopes for a professorship in the next four years. 'I want to be qualified and referred to as an icon in [my field] within my country.' Further, she wants to have a research laboratory that will be a reference laboratory, receiving students from all over the world to do research. However, funding remains a big challenge in achieving this goal of international-level status.



KIMBERLEY, 39, currently lives and works in her home country in western Africa in a private university. She completed a master's in 2010 and a PhD in 2014, both in life sciences in her home country, despite challenges. 'If I had [had] access to funding... I would have progressed more quickly... [also]... to a good research environment, I mean equipment, not having power outages.'

Kimberley is a mother of two children, both less than six years of age. 'I need time to be with my family' which means 'construct[ing] my time well.' She is still trying to learn how to manage her time better and strike a balance between work and family life.

Kimberley's main duties include teaching undergraduates, doing research and administrative tasks. She appreciates an environment that helps her be productive: 'good access to internet... equipment in the lab for my research' and doing research is what she enjoys the most about her job. Conversely, teaching too many classes remains a challenge, especially since there is 'really no training', and the only support is an online platform to load material for students to access. This is exacerbated by her lack of mentorship: 'I don't have people to mentor [me] in my area of expertise.'

She also has to attend various faculty meetings, some of which are good for her leadership skills. 'My major obstacle [is] getting funds, [it's] highly competitive and because of that you're not able to do the kind of research you might want to do.' At the same time, she actually has little experience applying for funding opportunities outside the institution where she works and would like mentoring, since without it, you are 'learning on your own and learning from scratch.'

Kimberley stays in her job, 'despite the obstacles... I still like the research environment.' Even the fact that she sometimes feels excluded doesn't discourage her. For instance, sometimes '[T]hey try to exclude you from [things] because they'd be like, "Oh this is a woman she has to take care of her kids."'

She is grateful for the opportunity she had for a seven-month research leave in North America last year. It was a chance to 'learn more from the people that were already leaders.' Still, she admits she had to struggle at the beginning in order to improve her academic performance: '[I]t was just that people's level of research was a bit higher than us, so [you] have to bring yourself up to the level where they are... to understand the kind of things they were doing.' Overall, the positives for her were learning new things, which she has been able to bring back to her home country and share with her students. Still, it was tough for her to leave her family behind.

In five years, Kimberley aspires to position herself as a leader in her field. She continues to learn about writing applications and wants to have sustainable funding that would allow her to have her own lab where she can do her own research, and publish more. 'One of the challenges would be writing grants that are acceptable. I'm still trying to train in that area.'



SHEILA, 50, completed both her master's and PhD in her home country in eastern Africa in 1998 and 2008, respectively. She had difficulties with her PhD: 'I was removed from the project because... there was a researcher from [North America] who rubbished all I had done... everything I had been working on for three years.' She was able to secure alternative funding but it wasn't enough to cover all costs, so she did the PhD part-time whilst continuing to work in the university.

Sheila has two children, both of whom are now in their 20s. Having children limited her mobility earlier when they were still young.

Sheila started at her institution as a teaching assistant and got promoted to become an assistant lecturer. After completing her PhD she became a senior lecturer and has been waiting for three years to be promoted to associate professor, 'more or less because of ethnicity.' Her main tasks and responsibilities are teaching, research and administration work. She 'loves' teaching and research: 'I like it when students graduate and come to me to say thank you.'

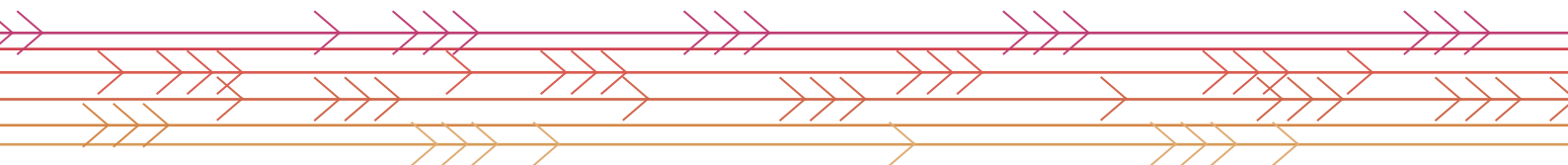
The library they have access to is outdated and research is a challenge when it comes to the practical aspects, given minimal laboratories and equipment. This affects not only her own research but also research for post-graduate students under her supervision. She thinks those students end up taking longer than necessary to complete their studies because of this. 'Sometimes I need to go to the field with students and there are no resources for these trips.'

Her biggest worry is the unfair treatment she has experienced. For instance, she started her PhD research working in a large and funded project in collaboration with researchers from abroad. But her research work was terminated when one collaborator declared her research as substandard and wanted her to start all over again. She refused since she says, 'I ha[d] been on that work for three years.' She saw it as racism. Moreover, she is overdue for promotion. 'They shortlist list me yearly but when it comes to reviewing, they don't review my work.' She feels this is due to her not belonging to the same ethnic group as the vice chancellor.

As a result, she has considered leaving academia, but hopes this time they will consider promoting her. While she is happy about most aspects used to measure productivity, she finds one aspect unfair: the number of conferences attended. It is difficult to fulfil because the university doesn't provide funding for it and 'some of us because of age don't have many opportunities to get funding' elsewhere. She says there is also a general lack of research infrastructure and funding within her country.

She sees value in international placements for research and training, though hasn't always been able to utilise opportunities when they are present. For instance, she was committed to finishing her PhD and went to North America for six months to do courses that she couldn't do in her home country – but she missed her children terribly. She has twice declined longer mobility offers because of them, though has accepted short visits for conferences and workshops. She found the courses helped her refine her proposal and now she is teaching and supervising research based on the knowledge she gained.

In future, Sheila wants to become a full professor and attract research funds. She also wants to spend a lot of her time mentoring students. However, she foresees stiff competition in applying for research funding. She thinks women have too many roles in their lives; however, she is determined to work extra hard to prove that she is capable.



SYLVIA, who did not indicate her age, did her PhD in life sciences in southern Africa where she now permanently resides. She graduated in 2014, after seven years. Sylvia thinks she was very fortunate to have ‘very supportive’ supervisors and funding for her PhD. ‘I got the offer for the best [funding]. So, I didn’t seek funding anywhere else.’ She is currently a post-doc fellow in a public university in the same country.

She believes that having no children has saved her time to concentrate on the PhD; ‘I am single, I don’t have a family and I can dedicate all my time to my work.’ Moreover, because she is single she feels that she has no hindrances to mobility so she takes any opportunity that comes her way.

Sylvia was born outside Africa, though after her PhD she has decided to stay permanently in southern Africa because of the political instability in her home country. Sylvia’s current fellowship is funded by an organisation outside Africa. She got the fellowship because it was related to her PhD work and also ‘my boss wrote that I’m loyal, I’m hard working... so I must get that position.’

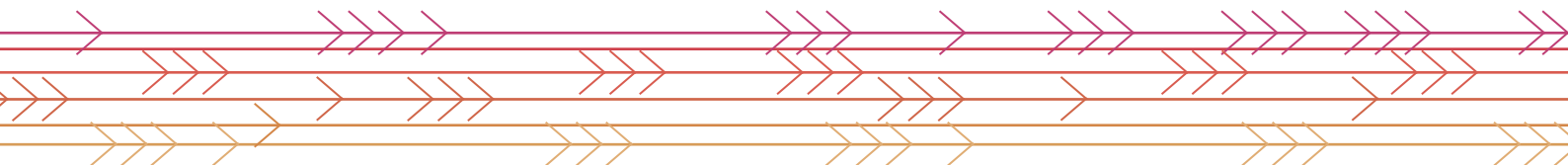
Her main tasks and responsibilities are to mentor, supervise and write articles. Although she enjoys her job, she feels ‘[T]here’s no job security’ because her position is not permanent. The other challenge is that within the university they ‘treat post-docs as students’, so her authority among the students she teaches and other staff is limited – yet she does similar work to those who are full-time lecturers. ‘My opinion isn’t valued’ and ‘I can’t be a primary supervisor of a master’s degree... they give them (the students) to permanent staff.’ Sylvia is having trouble finding a permanent position, as a result she has been on a post-doctoral fellowship for a long time: ‘There are more people than there job opportunities... I haven’t been able to find the permanent position... it’s the third postdoc that I’m doing now.’

Adding to her concerns about securing a permanent position and job security is that she regards her salary as comparably low to her peers in industry. ‘I’m comparing the salary that we get from here to industry, we get half or third of that. And the stress is higher, the work hours... much higher.’ The positive for Sylvia is that she enjoys doing her work because the work place is ‘very friendly.’ Adding to this, she respects her boss and has funding for experiments, ‘that makes me comfortable.’ She still feels that she would benefit from more regular feedback from her supervisor – ‘negative or positive’ – because without it her productivity is sometimes affected. ‘Sometimes I don’t get any feedback... it makes me feel that I’m nobody.’ Still, overall, she feels that the university and supervisors have made it enjoyable for her to work where she does.

To show productivity, she should publish at least two articles per year, something she feels she doesn’t have problems with. She thinks as long as one has resources and time it’s not a problem to accomplish work – in part because she doesn’t have to teach.

Sylvia has been to western Europe to do the experimental part of the project she is doing now in southern Africa, each time for less than six months. She thinks mobility allows her exposure to the world of academia. ‘It helped to open my mind more... you do meet a lot of people and make collaboration with them... [and] co-author.’

In future, Sylvia wishes to have acquired a permanent position, particularly in academia. She also wishes, after acquiring the job, that she would be supervising masters’ students because right now she is prohibited from doing so. If she continues in a temporary contract she wouldn’t have any other choice but to leave academia, though, ‘I love this job but I need the financial security too for my future.’ She wants this security simply for herself – ‘I don’t have plans to have a family.’



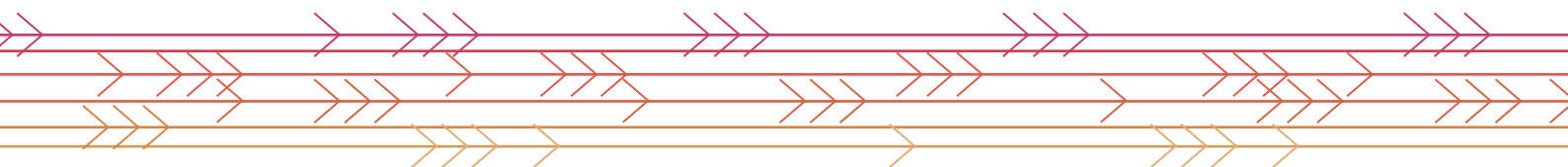
Conclusion

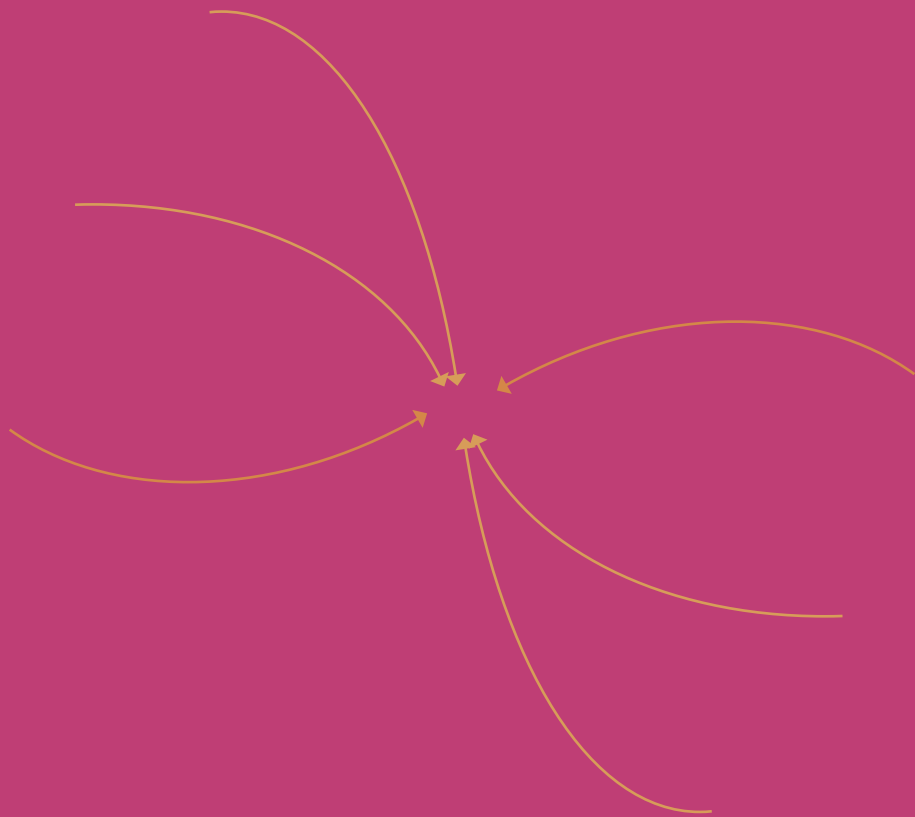
Most of the researchers featured in this chapter had brief visits internationally to attend short courses and conferences. They did their PhDs in their home countries, with three leaving for less than a year during their degrees: Sheila to North America for a coursework component which couldn't be done in her home country; Ivy to southern Africa, using short-term funding to ensure she finished (given infrastructure issues at home); and Edna to western Europe.

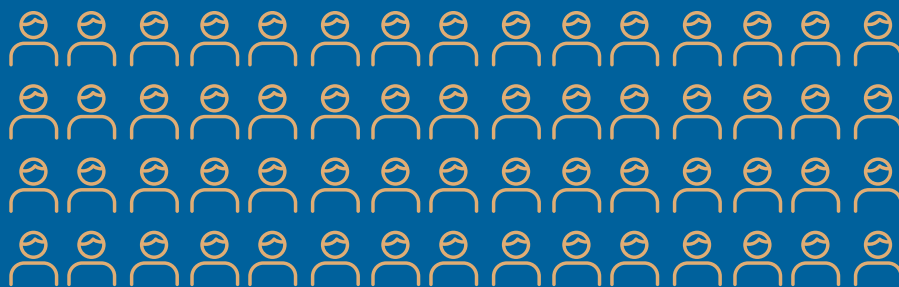
With the exception of Sylvia, all referred to challenges with accessing infrastructure. The challenges ranged from a lack of teaching material to a lack of laboratories and equipment to do research, and the latter situation encouraged them to seek short periods abroad. All interviewees raised the issue of funding as an obstacle to their career paths – again with the exception of Sylvia.

Seven of the eight are females. The major issue for most of them is balancing between family and work, particularly mobility, for instance, not leaving their families for long periods. For example, Faith declined the offer to study in another African country when she became pregnant, and Sheila declined the offer to go abroad when her children were still very young. This wasn't the case for Sylvia, who doesn't have family – she is struggling to secure a permanent position (and job security). The group didn't report many issues of gender discrimination, except for Kimberly, who felt excluded as a woman with children to care for. The other kinds of discrimination experienced ranged from tribalism (for Bernard based on language) and racism, and unfairness in one's position.

Most are motivated by their desire to mentor younger researchers, to advance their country and for their love of research. Further motivations include attaining a professorship (Edna, Ivy, Kimberly and Sheila), building their own labs (Kimberly, Ivy and Bernard), attracting funding (Faith, Christine and Sheila), and securing a permanent job (Sylvia).







Section 3:

STEMM Outside Academia

9. Public Sector

Introduction

This chapter presents eight early career STEMM researchers who share the experience of working in the public sector, generally in some form of research institution or research funding agency. While five are from the northern region, they are still quite distinct in their mobility patterns. Caroline did both her degrees in her home country, with the exception of a brief stay outside Africa during her master's. Gertrude is in a similar situation, living at home after having completed both degrees there – though she spent time outside Africa during her PhD. Ethan, who also works in his home country, travelled abroad only after doing his master's and PhD at home. As to the other two, Kenneth did both degrees at home but is now outside Africa on a two-year research fellowship. Emily, also abroad, did her PhD outside Africa and returned later to do a fellowship.

As to the other three, Clara from southern Africa did her master's and PhD outside of her home country and has now returned, whereas both Dominique and Stanford are currently outside Africa after both doing their master's at home and their PhDs elsewhere. Collectively, their reasons for seeking opportunities abroad include a lack of research infrastructure and funding in their home countries. Other ways their experiences are varied include experiences of discrimination – from gender to race through language and level of experience in the field.

Stories

CAROLINE, 44, started working in her public research institution in her home country in northern Africa in 1999 on a student contract. She did her master's, which she completed in 2005, in the field of biotechnology sciences. During that degree, she spent several months in western Europe and this led to her PhD – and an offer to stay but as she was bonded she returned home. It was difficult to reintegrate in her home institution after the experience: '[Abroad], I give half effort [and] I get four or five times the result so, what I did [there] in three months [here takes] more than three years to do.'

'When I wanted to continue with my PhD, they promised... to give me the chance but unfortunately I was really engaged in the work... so, I [did]... my studies, in parallel' while working and finished the degree in 2010. At this point, she was promoted to research associate and works full-time doing research.

She is 'renting a house alone' 100 kilometres away from her extended family and often feels homesick. She really looks forward to visiting them in her holidays, which has, at least once, been an issue with her work supervisor.

Caroline's duties are to plan experiments, supervise students, and publish papers, but she is sometimes 'obliged even to do the kitchen work.' She has also never been given a desk to work from, so works in the laboratory. While she enjoys the team, she feels that her employer doesn't motivate employees, which generates the feeling of being unfairly treated. They 'only want results' and 'don't care about [our] problems.' As well, she and her colleagues are never thanked for obtaining good results, but are blamed for failure. Further, she works almost 12 hours per day, though officially it is eight hours. She is also demotivated by a lack personal support and mentors, and low salary – all of which she believes is why scientists are migrating abroad.

She also feels alienated from her boss's projects as her boss only involves another colleague. This alienation makes her feel like 'a prisoner because I can't learn any new thing.' She has also been denied a two months' vacation request, noting that her supervisor 'doesn't like to give me holidays.' She feels that her boss is 'destroying' her, 'but... will never succeed.' She has tried leaving her job and had asked her director about this, but he simply refused, saying that her experience is needed in the laboratory.

So, while she has thought of migrating, she doesn't want to leave her permanent job or be jobless as it is against her principles. However, she might reconsider if such unfair practices continue.

Still, she loves her research – '[M]y mother... says that my cells are my children' – and particularly likes it when she carries out experiments that get [good] results. The joy that someone will read her paper and cite her name – 'even... 100 years after I die' – motivates her to stay in the role. She feels she needs more training in terms of project writing, dissertation and communication skills to help her continue her research. It is also not easy to find funding: you need to 'be senior to be eligible' for big funds.

In addition to her time in western Europe for part of her master's, Caroline has gone on several courses abroad for a week or two and spent last year on a research fellowship in southern Europe. In the latter, she learned new skills that 'unfortunately, I can't apply in my country because we don't have the technology... but it was a good experience in general' since it is an opportunity for research collaboration with other colleagues and creates possibilities for large projects.

In the future, Caroline wants to do important research of her own 'but... this needs a lot of funds and... I need training [and]... to be called [on] by other people to be part of [a] project.' Still, she holds out hope.

CLARA, 29, left her home country in southern Africa to pursue her PhD degree in another country in the region. She got her PhD in 2017 in health sciences, and was self-funded, and had to return home since her visa required that. She had good support from her supervisor and university but noted that securing funding would have helped her finish her PhD faster. She now works fulltime as a research assistant, a professional job which doesn't involve research, in a public research institution in her home country – but she is on contract which creates uncertainty.

Clara decided to move elsewhere within southern Africa for her PhD as her husband had made the same move already for similar reasons. She is pregnant now and living in her home country again, feeling that it will be much easier with her family nearby. Besides, here *'the social life is much better.'*

Clara is in charge of comparing, sorting and screening fund applications, as well as finding reviewers for the applications. She is happy to be connected to research, meeting scientists and reading different proposals. But she thinks she is overqualified for the role, given her competences. The career pathway is also challenging: *'It's very hard for people... to move up the ladder... even though I've got a PhD, I don't know how long it will take me... to become a research officer [rather than] a research assistant.'*

Furthermore, Clara feels that she will not get more research experience or an opportunity to publish articles, and this will likely be a hindrance to her career. Considering this and that she is presently earning less than a Bachelor degree holder, she has considered moving sectors. *'I feel like... I was wasting my time [since]... 'friends that have just a bachelor's... became managers within 5 years and I'm still stuck.'* Nevertheless, she hasn't moved sectors because she doesn't feel any connection to other fields of work.

She notes it is very hard to get funding in her role and in her country. She has been ineligible for some funds because she isn't working in the required type of institution. And, she has been ineligible for other types of funding because the donor(s) felt that her country is performing well in STEMM and thus excluded it from the eligibility list.

She feels that as a female *'people tend to think you are weak'* and that *'males are more productive.'* She is pregnant at the moment but hasn't informed her director because she is on contract, so feels insecure about the future and how her pregnancy is going to affect her. She is even concerned as to whether she will get maternity leave: *'I feel it's... a little bit unfair because... I'm being told to choose between my career and being a mother.'* She would like to achieve her career goals without having to choose between career and family.

In addition to her PhD experience abroad, Clara had a scholarship stay in Oceania during her Bachelor's, and a year's stay in western Europe to pursue her master's degree. This has exposed her to different cultures. While the culture was very accepting in Oceania, she felt some racism in the western European country and sometimes felt unwelcome in the southern African country, where *'you are always a foreigner.'* Nevertheless, the experiences have been very rewarding as she has been exposed to different types of communication and teaching. This also allowed her to obtain research experience, especially as *'there wasn't anything taught about research'* in her home country.

As for the future, she hopes for a job in a research laboratory to be able to apply all her skills. *'I want to become a research scientist and to be doing actual research work, lab work... publishing papers [that's] what I've always wanted to do.'* She feels an obstacle to achieving this is the lack of opportunities in her home country. Mentoring from a senior academic would benefit her career: *'Basically, I understand that I'm not yet at their position [so I want] to work and learn from them.'*

DOMINIQUE, 36, resigned from his government position in his home country in western Africa in 2014 after completing his master's programme there. He then moved to eastern Asia to do his PhD in natural sciences, signing an agreement with a university before leaving that bonded him to return and work with them upon completion. He completed his PhD in 2017 – 'to God be the glory' – but has remained at his PhD university as a post-PhD researcher, rather than returning home – only possible due to a change of policy in the bonded programme. He felt he received the support required to complete the PhD, noting that he did so within three years. This was shorter than expected and was partly because he had a fully-funded position.

In 2017, Dominique and his wife, who is with him in Asia, had their first child. He feels very privileged to have them with him, and considers any additional pressures arising out of having a family as 'normal things.' In fact, 'I see [family] as a blessing because they're always there.'

He conducts research at his university, including writing research proposals. He finds research particularly enjoyable because it is intellectually challenging and also rewarding when tangible results are secured. Still, he experiences some frustration as the projects that have funding dictate his focus, and they don't always align with the research he would like to do. There is also a strong focus on meeting project timelines and publication targets, sometimes to the detriment of the quality of the research, but deadlines are also important for pushing him to reach his full capacity. Though this pressure comes mostly from his direct supervisor, they still have a constructive relationship.

Dominique regularly has problems communicating with some colleagues in his host country as they aren't always fluent in a mutual language. He perceives it as particularly difficult for Africans in the diaspora to access funded training opportunities intended for African scientists because such opportunities typically require having an affiliation with a university in Africa. His attitude to overcoming these challenges is key to his success: 'I only have one choice and the only choice is to succeed.'

True to this statement and despite the challenges, Dominique has been successful in securing funding from both organisations he has applied to in his host country. However, he also notes that he is ineligible for numerous funding calls in his host country due to his position as a post-PhD researcher.

Further to this, Dominique remarks that in his host country '[T]here are certain positions that, as a foreigner, are hard to attain.' However, he is reluctant to describe this as unfair as it is similar in his home country, whereby people are given preference for jobs based on the region of the country that they come from: 'I see this as a normal thing and it happens everywhere.'

His home and host country contrast in other respects though, namely with regard to the quality and access to high-tech research facilities. He feels that applied or natural scientists working or studying only in Africa are disadvantaged with reference to their peers with experience outside Africa. This is because in many countries in Africa the 'research environment isn't enabling.' He feels that the advantage of being in eastern Asia is having the opportunity to develop more skills and regularly produce high-quality research.

Though he is a proponent of international experience and in the future would like to spend some time in North America, he has a strong bond to Africa. He sees his experiences internationally as enabling him as an individual, and helping him work toward his goal of 'expand[ing] my research knowledge and skills... and by the Lord's grace get a higher position... whereby I will do research that I actually want to do.' He could also move into a research position in industry. This would naturally be in his home country, because '[W]e're all Africans and someday we will return back home.' He feels all of this would be enabled by the establishment of a network of African scientists in the diaspora, to improve their access to one another and opportunities for advancement.

EMILY, 37, completed her master's in 2007 in her home country in northern Africa in physical sciences. She then completed her PhD in 2015 in western Europe. She thinks she could've completed her PhD quicker if her supervisor had given her more support, especially regarding her research path. Since going abroad for her PhD she hasn't returned home to work, receiving funding from different sources for her research and working in more than one European country. At the moment, she is sponsored by a funding agency in western Europe, in collaboration with another funding agency in her home country. She has an affiliation to a public research institute in her home country.

Emily has a child who is five years old, but he isn't with her in Europe: 'I miss my son very much, I couldn't bring him with me here.' Emily is thankful for her mother, '[W]ithout her I [would] not do anything, she is caring for my son, she is helping me read with him... over the internet.'

Emily's main tasks and responsibilities are in biomedical engineering, and include carrying out experiments associated with biomedical applications. She also lectures post-graduate students on how to create research proposals. Emily enjoys the challenging work in her job, including conceiving and developing novel products, applications and ideas. She feels supported by the institution she is hosted by because she can access 'lots of supplies, equipment and instruments in the lab, but in [my home country] the situation is different.'

To demonstrate that she is productive, Emily is supposed to publish research, offer courses to post-graduate students, attend and present at conferences, and conduct workshops. However, she thinks publishing is very difficult because she also has to meet the expectations of her supervisor in order to convince them to recommend her work for publication.

Moreover, in her effort to be productive she has failed to strike a balance between her work and her social life. 'Until this moment I can't manage [work] time all the time... and this affects my personal life.' She thinks her host institution in western Europe is more developed than her home institution in terms of supplies and equipment in the laboratory. 'This is why you need to search for a funding agency to help you to study abroad.'

Emily feels that a major challenge for getting traction for science in her home country is the question of how to make science beneficial to people. This regards people in her home country who are 'not feeling that sciences helps them.' So Emily is thinking of how she can make science relevant to people, with a special focus on the UN Sustainable Development Goals.

This is Emily's second research stay in western Europe. First, she went to pursue her PhD, and now she is on a fellowship programme. Going abroad has helped her to access useful equipment as well as funding for her research. Experience abroad has also taught her a lot about equality and social justice. However, she feels that at home 'you can find someone to help you. [Abroad] you're alone, you have to do everything by yourself and it's a little bit stressful.'

Working abroad has exposed Emily to some mistreatment in her work environment, though she is unsure what motivates the action: 'I don't know exactly whether this is from my religion, my race, my generation, even from my skin colour, or if this person [is] not working nicely with all people.' She feels it may be related to '[T]he media all the time sending messages' about people from her home country.

In her homeland, Emily feels that '[B]ecause I'm female all the time [we're] facing difficulty.' Emily also thinks that in her home country '[T]hey ignore young scientists, they're thinking all the time about professors and young scientists are totally ignored.'

Emily's future intention is to ground herself in academia, along with her group of students, and build up her laboratory. She would like to have more than one project as she feels that through this she may be able to help the society she lives in. This may be hindered because '[T]here is no collaboration between the public research institutes and third parties' in her home country. Without this collaboration, she feels her hopes of benefiting the community through sciences might be difficult to achieve.

ETHAN, 36, completed his master's and PhD in his home country in northern Africa in 2009 and 2012, respectively. He did both in the life sciences and finished feeling that he received good support, including funding for both programs from a government body. Further, he felt that he had adequate funding to buy equipment and attend professional development programs. Nevertheless, he – and the quality of his PhD – would have benefited from more financial support to participate in training courses in 'other disciplines to benefit my study and my mind set.' He works full-time in a public research institute as an assistant professor in his home country.

Like Ethan, his immediate family have benefited from higher education, including his father and his sisters. Reflecting on this, he says that his home country is 'safe and has kind people.' His partner and he have had two children together, a four and nine year old, and 'family isn't an obstacle' to his career progression in science. Still, when he spent time in 2017 on a research stay in eastern Asia through a bilateral agreement between the governments in his home and destination countries, he commented: 'I was alone without my family, maybe that is the only negative,' since '[T]he positives are more than 99 percent... in my mind.'

In his role as a professor, he is expected to form collaborations with other research institutes both domestically and internationally. He enjoys this because he is very passionate about science and it aligns with his strong belief that 'science is complementary,' both in a disciplinary and geographical sense. He is enabled in his role by his leader and the favourable policy environment at his institute for collaborations, as well as through the support of a government-affiliated research and technology organisation.

Ethan considers accessing funding for 'travel to Europe or to any country,' as well as personal development courses as the major barrier to his own career progress. Furthermore, he feels the policies of his home government and institution are presently prohibiting the development of young scientists. However, he notes that after some recent developments '[I]t is more likely to get policies for young researchers and scientists' in his home country.

In response to the funding challenge, he usually seeks funding opportunities online. He has applied to several organisations for funding, either as a sole applicant or in collaboration with others. He feels the funding environment is limited in his home country in comparison to certain countries in Europe, and also Africa and Asia. Recognising this, he often seeks international partners for applications to improve the chance of success and to give him access to funding opportunities in places outside his home country. Thus far, he has been successful with one international collaborative application from four.

Owing to his passion for science and improving the lives of people in his community, he hasn't considered moving out of science, and is encouraged by his own successes so far.

During his research experience abroad last year he established a network of collaborators. This network facilitates collaborations between institutes and companies in his home country and in Asia, because 'science isn't only in one country.' Another tangible benefit of his time abroad included developing the ability to audit and accredit laboratories in his home country, thus improving the quality of science and research in these institutes. To build on these early opportunities, he is keen to seek further international research opportunities to continue yielding benefits for the people, researchers and institutes in his home country.

To realise these goals, he himself hopes to become a professor into the future, and continue to push 'policy makers to support young researchers to be established in the right way.' He feels this is achievable by building his professional network domestically and internationally, and facilitating collaborative partnerships that yield benefits for his home country. However, it is also contingent on securing the necessary funding for his own development and for the development of the research industry in his country.

GERTRUDE¹ is a researcher from northern Africa working in a public institution in her home country. In 1997, she completed her master's degree in life sciences in her home country. Later, she travelled to western Europe as part of her PhD (her home and host institutions had an agreement) to analyse samples she collected in her home country; she completed her degree in 2009. Gertrude thinks that she could've finished her PhD quicker if she 'had a supervisor on site' and enough funding. At present, Gertrude is an assistant lecturer in a research institute in her home country.

Although Gertrude doesn't have her own children, she feels an obligation to look after other family members, saying '[I]f I choose to stay here it's because I have my family and I have family constraints.' Gertrude is the head of the chemistry laboratory, which involves overseeing the studies and experiments conducted in the field. She also has to do research projects and supervise students who are doing their master's degree. She likes her job because it is multi-disciplinary, and requires consideration of social and socio-economic factors. She enjoys 'meeting outstanding people and experts in different domains' because she can 'learn from them and get experience to make career progress.' She also enjoys the project-based work, which introduces 'new partners and new challenges' in each project. However, she is sometimes demotivated by the fact that it's not always easy to find solutions.

Gertrude's institution also lacks funding to buy equipment for the laboratory. Because of the bureaucracy of the institution, she feels that she has limited control over equipment purchases, and so '[T]he call for tender goes for the cheapest [equipment]'. Still, she is expected to attract grants, and to conduct research and development projects to help farmers, stakeholders and decision makers. Despite knowing these expectations, Gertrude feels that the promotion criteria aren't well defined, and that there is inconsistency in the process, such that 'we cannot plan [for] which aspect we should focus [on].'

As a woman, Gertrude feels that 'sometimes in our society men are more encouraged than women to have a scientific career.' Contrary to this social perception, Gertrude says her family 'was very supportive and pushed [me] to pursue my master's and PhD'. Secondly, as a young researcher, Gertrude feels that senior researchers take opportunities away from the younger researchers, saying '[Y]ou aren't allowed to manage your own project... even though you are the one who brought it.' She felt this to be very unfair and it affects her confidence. However, she does consider her gender and age an advantage in some respects: '[B]eing a woman and a young researcher was a feature actually, it was an asset for me to get funding... as well as being from the developing world.'

Since finishing her PhD, she has had opportunities to attend many conferences and network with other researchers, thereby gaining information about funding and forming collaborative international partnerships. These networks are becoming increasingly important to Gertrude's access to funding and productivity, especially because within her home country '[F]unding has become very limited this last year and this is affecting our productivity.' Applying for funding 'is very laborious' but for Gertrude it is important for sourcing equipment – 'I cannot work if I don't have equipment.'

Gertrude's time in western Europe as part of her PhD research was a 'successful experience' because 'when we go there we know that we are working and everything is easier.' It was, however, difficult to adjust to the culture for her. Overall, she thinks mobility has helped her career, in part because '[W]hen you come back to your home country you're recognised for what you have done.' She now feels that the lack of necessary equipment in her home country delays her progress.

In future, Gertrude wants to develop an analytic platform and also to be promoted to professor. She intends to improve the laboratory in her home country, along with her team: 'This is our laboratory and we need to improve it.' However, developing her laboratory in alignment with international standards can be challenging, as it requires 'substantial funds to build this from scratch.' As with the goal to attain professorship, the challenge of lacking a well-defined path to promotion may also hinder her.

19 This information was missing.

KENNETH, who is over 40 and has one child, completed his master's and PhD in health sciences in his home country in northern Africa in 2004 and 2008, respectively. 'Thanks to my supervisor at the time' – someone he still works with – he completed training and some research at a public institute in western Europe during his PhD. He feels that having additional scholarships would have assisted him secure further training opportunities, and notes that this is still an issue for PhD students that he supervises.

Kenneth has been working at a public research institute since completing his PhD in life sciences 10 years ago. He says, 'based on my scientific records' that he recently moved from being a 'researcher' to an 'associate researcher', and has since become the head of one of the institute's laboratories. Also in this time, he spent two years in north-east Asia completing a bonded post-doc.

Kenneth is mostly expected to conduct research and supervise PhD students. However, he sometimes lectures at universities on a volunteer basis because it fits with his motivation: 'To share my experience, to train younger students... I want to do something for the younger students and for my country, for also my continent of Africa.' In his role, he feels supported by the positive and collaborative team-work within the institution.

Kenneth's biggest challenge is gaining access to adequate funding for his research programs. His institute provides some support, but the 'support cannot cover all of [the] research activities.' He notes that in his home country there are numerous languages spoken, and his level of fluency is different in each. This is a challenge as he feels that he has a limited ability to write articulate proposals and '[T]his weakness in language... is an obstacle for us to get an American grant, for example.'

Kenneth also feels that research proposals are more likely to be successful if they are made in collaboration, particularly with researchers in international institutions. As such, he regularly seeks partners in western Europe, North America and eastern Asia. His home country's government doesn't provide good support for research funding and networking activities. Generally, he feels that 'funding opportunities are very scarce.'

Not to be perturbed, he and his collaborators seek opportunities through email, social media and specific websites. Together they have applied for funding from his own institution, and government and non-government organisations in Europe and eastern Asia. Further, Kenneth notes that funding is difficult to obtain for non-communicable diseases and communicable diseases that are no longer 'a public health issue for other countries in Europe, the US, Japan or other countries.'

A highlight in Kenneth's career has been spending two years in eastern Asia in a bonded postdoc position. While there, he published high-quality articles and gained experience with cutting-edge technology in areas of research he was previously unfamiliar with. He says that, '[D]uring these two years I learnt so many things in science... and I established a good network of [other] researchers.' He secured the position after finding the funding opportunity in the host country online and blindly contacting numerous institutes seeking their sponsorship to apply, a requisite of the application. The language barrier was a difficulty, particularly 'in daily life.'

Kenneth is very open to seeking more training and research opportunities abroad. The benefit of doing so is evident to him in the developments he has been able to make in his home institution since returning from abroad in 2015. He has been able to facilitate for other colleagues to travel to his host institution and others in south-eastern Asia as well. Further, Kenneth and his colleagues in his home country have been able to open an area of research in their institution that he once thought was 'kept only for rich countries or private companies.'

Kenneth wishes to continue working as a scientist as he is 'in love with research.' He would like to become a director of a research institute and feels that it is crucial to secure further training 'mainly in countries speaking English because this is very important to researchers.' Furthermore, access to a suitable mentor, increased funding and equipment access would all aid him in this pursuit.

STANFORD, 33, works full-time at a public research institute as a postdoc fellow in Oceania. He completed his master's in his home country in eastern Africa in 2013. He then went on to do his PhD in Oceania and completed in 2017. In both degrees, he majored in life sciences. He thinks he could've advanced quicker if there were a support structure for academic writing and funding for African students.

Stanford has two children, the youngest is one year old. He chose to move to Oceania on a PhD scholarship because '[M]y country was becoming unsafe and unstable on so many grounds.' He moved together with his children and wife, who experienced a traumatic medical complication after they arrived, putting her into a 'state of depression.' He feels that the move from Africa contributed to this, because '[T]here is a lot of sacrifice [when] you are far from home... you have to forfeit so many things.'

In his working life, Stanford's main responsibility is to manage research projects. In his main project, he focuses on mobilising new drugs to treat disease. He also has to write and publish articles based on his PhD work. From his academic thesis, he has to attract grants to publish manuscripts.

Stanford is interested in discovering new drugs that are useful for treating diseases in Africa but also across the globe. He feels that diseases present a 'big problem in Africa and being able to contribute to the cause is very important.' He is satisfied with the support the institution offers to do this. He notes, '[T]he institution provides the laboratory space, reading materials and eBooks, and a conducive environment to do research.' He also benefits from the institution's partnerships with other institutions in the host country. Moreover, access to the internet and other resources, such as peer-reviewed journals, help him to progress his career.

However, Stanford feels that '[T]here aren't so many opportunities targeting Africans or Africans in the diaspora,' and that this hinders them from pursuing their education further. This includes funding in the host country, which he says is 'quite stringent if you're not a permanent resident – you don't really have many choices.'

Furthermore, he feels that a serious level of discrimination hinders him from progressing. He feels that his supervisor and others consider him less competent than other people in his position 'because of this preconceived prejudice that Africans cannot write.' This negatively affects him because he feels that '[T]he supervisor or the boss has top authority over every step you take.' Stanford explained that his supervisor sometimes takes his work and gives it to a student from the host country to expand and publish. Though he tries to prove himself competent, he feels the attitude is engrained and sometimes it is expressed explicitly in 'verbal insults because, you know, you're from Africa.'

For Stanford, the 'length of the application process' and 'the amount of money needed in terms of tickets and health insurance ... makes it quite difficult' for people from Africa to move to his host country. However, he is excited about the future prospect of 'going back to Africa [to] implement some of the things that help.'

For his future progression, Stanford would like to advocate for a support structure or more funding for African research. He envisages '[E]ncouraging [and] advocating for more funding for Africa, and targeting young people to do research.' He also wants to 'advocate for [the] advancement of women in STEMM, especially those in research and PhDs.' Ultimately, he would like to go back to Africa to transfer what he has learned abroad.

Conclusion

All the participants in this chapter work in STEMM in the public sector and have challenges with seeking funding. It is common among the participants to seek collaborations internationally to open up access to financial resources abroad. Further to this, a major reason each of them sought to go abroad (outside Africa) was the need to access high-tech equipment, except for Stanford, who added political instability in his home country as a major driver. All felt that mobility played a significant role in their careers, particularly for establishing networks (and collaborations), and accessing equipment. Some have since returned home but those who are still in the diaspora, such as Caroline, talk about the challenge of returning to Africa, where a lack of necessary equipment remains a barrier to doing research.

Discrimination is an issue for the females, which they feel is usually covert and possibly linked to numerous things, such as their gender, age, and less frequently their religion (Emily). With the exception of Stanford, discrimination isn't commonly reported among males. Most of the participants report issues of language in two distinct dimensions: firstly, there is a group of those in the diaspora, such as Dominique, for whom their native language isn't spoken. Secondly, a number of participants from northern Africa, such as Kenneth, reported problems with completing funding applications in English (the language often favoured by international funding organisations). Most participants have children whom they don't view as barriers to mobility; however, for most it was difficult to be away from their families. Despite the challenges, participants have a strong belief that their futures are bright, and most of them hope to establish their own laboratories.





10. Private, Para-public, and Unemployed

Introduction

In this chapter you will meet Agnes and Jason in the private sector, Charles and Victor in the para-public sector, and Grace, Ian and Monica, who are presently seeking work. As you read, you may note that Agnes and Jason have demanding and enjoyable jobs in the private sector. Still, they remain somewhat attracted to academia because of its flexibility and freedom. Charles and Victor are happy in their para-public sector jobs. Their institutions are pan-national and there is good infrastructure, but they are still dealing with job insecurity. Grace, Ian and Monica are currently seeking employment after completing their PhDs. They have taken different paths in their search for work but are still struggling to leverage their PhDs skills and knowledge for securing employment. We conclude the chapter by drawing out what we view as common themes influencing these individuals' career trajectories.

Stories

Private sector

Agnes and Jason are in the private sector but hold quite different jobs: Agnes is a manager in an engineering services company that is interested in research, and Jason is the head of a division focused on production, but still doing some research. (Since both did their PhDs abroad, you might also want to see Chapter 6: Away and Returned – PhD Outside Africa.)

AGNES, 38, did her master's in her home country in southern Africa and then completed her PhD in applied sciences in western Europe in 2013 before returning home. She found the EU-funded programme to be very well structured.

Agnes is working full-time in the private sector as a professional, a manager of a division in an applied sciences and engineering company. The company doesn't do research and development but engages globally through work for the European Union (EU), United Kingdom, World Bank, etc.

She has a two-year old and notes that having a child has an impact on work and an impact on others' perceptions of the time you have to invest in work. Still, while the organisation is becoming more 'family oriented' such as putting in daycare, '[I]n [my] business... if there's a deadline... you can't postpone it due to the fact that your child is sick.'

Agnes oversees all aspects of her division, including health, safety and client engagement. Since she is relatively senior she has some flexibility as to how she spends her time, but is expected as a first priority to generate income. That is, to create and work on profitable projects and to use her reputation in her field to attract such projects. As well, she feels that the skills she developed in Europe during her PhD are well used. This means contacts with universities in the country, collaborating as the external industry partner since funding agencies want a 'diverse team of... academic research institutions as well as industry so that you get closer to... practical implementation.' While this involves her in supervision of research projects and publications, the latter comes lower on her work priorities.

To keep on top of such funding opportunities, she has three contacts and also checks the web regularly. She has applied internationally and nationally for funding, always checking first that her type of firm (large) is eligible because often the focus is on small and medium-sized enterprises. As part of an EU-funded project she spent time in western Europe twice and feels she is able to use some of the skills now. She notes the impact of the political and economic situation on work and research: research funding goes more towards basic education than other topics, and research/industry often depend on international resources in order to move forward. 'We often wait for things to be developed somewhere else in the world and then we adopt it here rather than doing our own research.'

She stays in the job first because there are few jobs available, and second because she now has invested quite a lot in her job. Further, despite thinking of working in academia since there's less pressure and more freedom for research (which she doesn't have now), she is put off 'because of the salaries being very poor in academia.'

She notes that despite legislation, gender bias remains prevalent in the country though progress is being made; she describes herself as fortunate for being promoted. As regards racial bias, this is legislated as important in hiring, but 'we would like to have everybody just being evaluated on merit.' In her field (engineering) mentoring is required; she was mentored and is now trained and is mentoring others.

She wanted international experience for her PhD since '[T]he more... diverse exposure you get the better and obviously... good facilities.' The positives were the fact that in Europe, there are so many countries close together with 'a lot of expertise' so it's easy to travel between the different countries: 'very nice... exposure and obviously... more funding available.' This meant that she was also able to spend time in other European countries in different institutions. In returning, she hasn't reflected that '[W]e're not necessarily far along enough... to implement everything that I've learned there.' But, what she learned has 'richly benefited the way that I work... and the relationships I've built.'

In thinking about the future, she'd just 'like to be a leading expert in my... discipline and I'd like to be doing more research related work.'

JASON, 44, completed his master's in 2003 in his home country in eastern Africa, before completing his PhD in 2009 in South America; this meant learning a new language. For both degrees he specialised in life sciences. He began working in a university after returning from abroad in 2009 because he wanted to give back to society, eventually reaching a senior lecturer position. Then in 2015 he began working in a multinational company in the veterinary and agricultural industry. He left academia because he was threatened by a professor over an article: “if you publish it you are out of here,” he was told. For him, it meant he had limited independence.

Jason has five children under the age of 12, and several of whom are quite young – which causes a lack of sleep at the moment. He and his wife waited to have children: ‘I’ve been married for 18 years and my first born is only 12... the reason is because my wife was studying, I was studying [and] if we were to get children, probably my wife wouldn’t have a PhD.’ Still, to finish her PhD, he had to convince his wife to leave their first child at three months of age with him: ‘I insisted that she goes, other people thought that I made a mistake but... I did the right thing because my daughter is fine [and] my wife... has a PhD.’

He is head of his division, and also sits on the committee for product development. He loves his job because ‘I have free hand to do research and develop the product that I find interesting from my research results.’ He is motivated by helping his company’s customers solve problems. He finds it challenging to hire people with ‘specialised skills’ though, as most of the knowledge and skill are ‘not even in the university syllabuses,’ so he needs to spend time training staff – and training adults is ‘difficult,’ he finds.

The focus of his company is on profit-making, so productivity is measured through key performance indicators which include labour numbers, power reduction, efficiency and product development. Unfortunately, management meetings take up a lot of his time. Administrative work is demanding and ‘I find this a little bit draining when it comes to doing research.’

For funding, Jason’s major source of information is networking with other scientists. However, he thinks it’s not easy to get a grant because it’s so competitive and it is hard to find the time to write a good one: ‘if one has a demanding job, you [won’t] become so good in grant writing.’

Jason went to South America for his PhD, then to North America, and northern and western Europe for shorter periods through funding as a post-PhD researcher. He is now able to use the skills he gained in training other employees and developing products. And, when he was still in academia he graduated many students with PhD and master’s. ‘I would say that I had 90% or 95% positive experience abroad. First is the level of training, equipment, [and] the social interaction with the professors was perfect.’

Despite his positive experiences abroad, Jason experienced discrimination particularly strongly in North America. He thinks ‘[B]eing an African, one is viewed as... primitive and not so much knowledgeable in terms of technology.’ He gave an example of a colleague who wanted to prevent him from working in the lab by trying to assign him to a work area and role that was intended for technicians, rather than scientists. And, in his home country he has been discriminated against because of his tribe: ‘[A]nyone seeing your name knows which tribe you come from.’ If you don’t come from the same tribe as your superior, you can be denied opportunities for promotion.

Jason is considering a return to academia ‘to develop programs that relate to the type of training that I received because it is lacking in our syllabus.’ He also wants to set up a business to be able to employ many people. In both ways, he will be giving back to the community. He thinks he might overcome the challenges of funding by doing projects that align with the United Nations Sustainable Development Goals.

Para-public sector

Charles and Victor are both working as research professionals, conducting research in pan-national research institutions.

CHARLES, 35, completed his PhD in health sciences in his home country in eastern Africa in 2016. He would have liked training on writing and presenting. He is now in another eastern African country for a two-year contract as an assistant scientist in a para-public research institution. If he meets expectations, he can be promoted and become a permanent employee.

Charles has two children, each under five years of age, who are with his wife in their home country. He can work more and longer without them being with him, but he misses the ‘close talking ... [and] shar[ing] with them.’ And, last month his son was sick and that made it hard to work.

Charles has four duties: managing projects, contributing to senior scientists’ proposals, publishing at least two papers per year, and participating in committees. He has always aspired to be a scientist, so he enjoys all aspects of his work, particularly the second and third – as well as participating in teams. He is learning so much every day. ‘It’s refreshing,’ in contrast with his previous work as a lecturer, and in a ministry in his home country.

There are two challenges: the first is being away from family. The second is the ‘huge job’ with deadlines and high expectations; so ‘you need to stretch and work day and night.’ But he feels well supported. He has a supervisor who is supportive and diligent. There are other juniors who know things he doesn’t, and excellent facilities – everything you need for research and opportunities to travel. He is surrounded by people who have knowledge to share, and good capacity building training.

His only concern is job insecurity given a slight risk of not being promoted and becoming permanent if he doesn’t meet expectations. This job will be the first time he will experience evaluation linked to promotion. As noted earlier, he will be evaluated on managing his projects effectively, publishing, contributing to proposals, and general participation. Winning awards is good but not a mandatory expectation. He hasn’t experienced any hindrances to his research output; in fact, he feels his work ‘can influence [me] to grow positively.’ So, he is happy with staying in the job.

As for learning about funding, the development office sends summaries every two weeks, and he networks with colleagues from previous projects. Further, there are internal competitive funds available. He has applied to a range of international funds with some success; he seeks co-investigators if the required expertise is outside his area. However, he has avoided applying, and isn’t expected to apply for big grants so far, given his lack of experience. He hopes for continued funding and mentorship and networking and access to basic research facilities – all of which are much better than in his home country.

While his institution is generally fair, he feels some people ‘may feel that maybe... you have limited capacity compared to others, but this isn’t based on ready facts, it’s based on perception.’

He left his home country because the institute wasn’t an ideal working place with good pay. ‘They pay very, very little, [it] isn’t even adequate to pay your monthly house rent.’ Further, his previous work, funded through a grant, had expired. He wants to share with people back home what he is learning, not only the technical skills, but the organisation and the way people interact. But going home is difficult since there is no democracy, peace, or security – so people are leaving due to the politics and ‘I don’t feel comfortable’ going back now. But, he is willing to go when things get better even if the pay is poor. In the meantime, he sometimes goes back as an adjunct professor and gives lectures.

As to the future, he wants to grow as a researcher, be a leading scientist, publish a lot of papers, have patents, be an editor or a reviewer for several journals, with maybe some outcomes that could benefit the public, and be an associate professor. At the same time, he has also considered shifting to governance and politics, which would mean doing a master’s in international peace. ‘I want to participate in the development [of] my country.’

VICTOR, 46, is from western Africa and completed his master's in another country in western Africa in 2004 – in the area of life sciences. He then moved to eastern Africa to complete his PhD in 2008 in the same discipline. It took him four years and he has remained there since. He has worked as a research professional for the last three years in a pan-national research organisation.

Victor has two children living in his home, one is his child and is around 10 years of age. He feels he can balance work and family but '[Y]ou always need to take time to explain to your family, to your wife, your children, why you do this, why you do that.' This is partly because 'I travel a lot', so he tries to create opportunities for them to join him when he travels at times.

His main tasks and responsibilities involve developing tools to assist agricultural and veterinary operators in different African countries. His other tasks include writing proposals, articles for publication and attend meetings. In terms of productivity, he needs to publish but '[Y]ou are measured by your ability to attract funds.' He feels that with all the resources they have it is a bit easier to publish in high impact journals because he produces quality work.

What he enjoys the most is the resources compared to the national system: 'They put you where you have contact with advanced technology [and] methods that if I compare to somebody in university in African context, [they] may not have access to that.' This is complemented by the relative ease of access to funding and also independence. That said, a key part of his job is writing grants because he needs to secure funding for the continuity of his job. So there is a constant sense of insecurity – 'because it's not a permanent position.' Currently he is on a two-year contract and feels he spends time writing proposals that aren't always successful, so soon he will start looking for a new job because his current funding term is due to expire soon.

Besides the job insecurity, he also experiences discrimination or 'discrepancies' in his workplace. He feels this is because '[There are] a lot of expatriates' in his organisation, and sometimes 'the pay [level] depends on where you come from.' This is made more difficult by his feeling that there are few African-based funding organisations, so people from outside Africa are able to secure jobs with greater ease. The consequence of this is that '[Y]ou see people leading [though] they don't understand' the context.'

Victor has also faced challenges in travelling in Africa due to issues with securing visas, even though he hasn't had such issues in Europe or North America. He feels this is why some African researchers move internationally, or even change nationalities. Reflecting on this, he says, 'I don't see how Africa can progress.'

Despite all this, Victor remains motivated because the areas he works in are key factors that will help '[T]he transformation of Africa [to] come true,' and so he wants to contribute. 'When you develop that... passion, it really gives you some momentum to keep going.'

Victor has been mobile since completing his PhD, both in Africa and beyond. He views these travels as opportunities to learn about new cultures, new ways to do things, for instance, grant proposal writing, and these skills he is using right now.

Looking to the future, Victor has dreams, despite knowing that a lack of funding could be a stumbling block. He wants to be 'a job creator no more a job seeker,' creating employment for other Africans. He has already set up a company and hopes to develop products that will help people in their daily lives, and create a foundation that will provide scholarships.

Unemployed

Grace, Ian and Monica are all looking for work after completing their PhDs in countries other than their home country. Ian and Monica are in the country they did their PhD, while Grace has returned home.

CHARLES, 35, completed his PhD in health sciences in his home country in eastern Africa in 2016. He **GRACE**, 35, got her PhD in physical sciences in 2017 in eastern Asia after six years of study. She had previously completed her master's in her home country in western Africa. She decided on doing the PhD (self-funded) because she couldn't get a job. But she had problems getting funding for equipment, so she looked outside her own country for a scholarship. Her supervisor told her '[I]t's your PhD; you have to do something you'll be able to defend.' This gave her a 'confidence boost.' Still, for the first three years, she had no data to show her supervisor. She had to stop bench work and rethink – '[W]hat exactly am I doing wrong' – for three months. She came up with something that her supervisor said wouldn't work but she thought it would. They agreed she could try and after three to four months she got some good results.

Grace finished her PhD and worked for six months afterwards on a research contract before returning home. She returned home to be with her fiancé since he had agreed to wait until she had finished her degree before they got married. Without this commitment she wouldn't have hurried back. Now a year on they have a child, so it's not possible to 'go international' for now.

During her time away Grace published seven papers. Since returning in addition to getting married and having a child, she has been job hunting. She recognises that it's 'quite difficult here getting the facilities and chemical reagents' to do research. While she has an organisation in mind that might hire her, she's not sure if they are interested. If not, then I have to 'reorganise my priorities to suit any organisation I am working with.'

In looking back at her experience as a researcher, she notes the most challenging aspect is finding some aspect that is novel, and recalls having to stop one project because someone else had already published research in the same vein.

As to seeking funding, she wasn't aware of funding opportunities when she was doing her PhD. Instead, she looked for labs with the right equipment and emailed them. Through snowballing, she found someone willing to have her for six months to use the equipment. Only later, did she apply for a scholarship. Now she now knows there are many sources of funding for travel, etc., but she hasn't applied since returning since she needs to be attached to an institution.

Grace feels there is little gender equality in society, so feels lucky that her parents encouraged her. As she says, even if an advertisement says gender neutral, '[W]e all know... the opportunity [will be] given to the male unlike the female.' She considers this to be connected to a broader cultural issue: 'African societies still place the male child before the female child and some employers think women will go on maternity leave – [so it is] especially difficult [for females] if newly married and at childbearing age.'

She left Africa for eastern Asia to do her PhD because she felt stuck in her home country. From her perspective, despite it being her first trip outside her home country, there were no negatives in this experience. She got international exposure, met people she had never met before, had all the resources she needed and was exposed to innovative minds. Also, she gained insight into another perspective on life apart from the African way of thinking. As she hasn't been employed since returning, she hasn't been able to apply much since returning, but tells others they should go abroad.

As to the future, she would like to be in research – with teaching as an aside. 'I want to do research that is useful to my community... and it might not be that exciting... to the international community but... relevant to my society.'

IAN, 43, is from southern Africa, and completed his master's in 2011 in his home country in physical sciences. Then he worked for a while before completing his PhD in 2015 in the same field, though in a different country in the same region. Ian isn't employed now and is considering returning to his home country despite having permanent residency in his PhD country.

Ian has three children under the age of 10, and doesn't feel they are a limitation in terms of mobility or doing his research, 'I have always balanced my academics with my family.'

Although Ian is now unemployed, he has had two post-PhD research positions, first in southern Africa and the other in western Europe. For the first, he got a two-year contract but only worked for one year because of an offer in western Europe from a colleague who had been a collaborator during his PhD. In both projects he liked the idea that he '... had freedom to come up with my own ideas and explore them.' Productivity in southern Africa was measured by number of articles published, and also targets on production were set. In Europe, it was targets that were set, though he managed to publish two articles while there.

However, the challenge remained to source funds, not only as an emerging researcher, but also because of the need to be attached to an institution to apply for funds. So he approached an institution with a research proposal, and together they applied. However, '[T]hey are now the principal researchers and I come in as the assistant, though the project is mine.' Ian also realised that it is harder to get funding for fundamental research, so he has since shifted to health applications since funders prefer research that is immediate and yields direct benefits. In his view, there is also the problem of having your ideas rejected by senior colleagues because they always want you to remain at the bottom. He is trying to address these issues by getting a job but this is also a huge challenge: 'I tried everywhere for a job but there were no openings.'

Ian also highlighted xenophobia as being a problem: '[T]here's this natural resistance towards certain people from certain countries.' For instance, as he finished his PhD, a post in his area in his institution was advertised. He thought he was the right person to get it but his supervisor hindered him from doing so, saying that he couldn't work independently. He thinks his supervisor was very selfish because he wanted Ian to remain in his group as an assistant researcher. He also notes it is very hard to get a job there since nationals are always given first preference. So, while he applied for twelve posts, he didn't get one interview. Another experience of difficulty was in Europe; he wanted to stay longer but opportunities were restricted to those with their degrees from Europe, so '[T]hey want to restrict opportunities to mainly those that are [from] Europe... so I found it difficult.'

In future, Ian wants 'to establish my own research group... doing my own independent work.' However, for now, he thinks that for now he has to look for a job, gain experience and start his own research. He believes funding will remain a barrier. He needs mentorship for applying for a grant because 'it is a skill' to learn that is not necessarily connected to being a good researcher: 'There are some people who aren't really good scientists but are good at acquiring funds.'

MONICA, 35, got her PhD in 2014 in environmental sciences in a southern African country that was not her home country. She moved there before her master's degree after her husband moved there to study.

While doing her master's, she started teaching in the department. Her teaching continued after she registered for a PhD. She felt unsupported by her PhD supervisors and that they wanted her to finish rather than help her develop her profile, and insisted on being co-authors when she presented at a conference (despite not giving feedback). They also told her that if she got help from others, they would report her to the university: They *'tr[ied] to bully me around.'* Other supervisory issues included new objections being raised when her research was well advanced, the supervisor trying to get Monica to do her [the supervisor's] research, and Monica waiting seven months for feedback on a thesis draft.

Monica is presently unemployed and has managed to get work two days per week, though it's not in her field. Fortunately, her husband has a well-paying job. They have one child under five years of age, who was born while she was completing her PhD. Her job is actually *'just helping out a friend'* who is running a non-governmental organisation (NGO) and needs someone to help monitor and evaluate projects.

After Monica's baby arrived, she was offered another teaching opportunity but couldn't take it as she was managing all the administration – visas, passports and certificates – for her newborn. Later, when she asked if she could teach, the manager told her they needed to hire nationals of a certain race, so his hands were tied. So, she called on a contact from her PhD, for whom she had done some research jobs, and got a two-year research contract. When she started, her new supervisor offered to help her publish, but she was afraid given what her PhD supervisors had said about reporting her. During this contract she approached her friend, the one she is now working for, to ask if she could be involved so she could learn how to start an NGO – she sees a possible career in creating an environmental NGO.

As for research funding, she received a small award during her PhD that helped her finish. She also applied when she was a researcher, but didn't have the required university affiliation. So now she is applying through an institution back home and knows that if she gets the money, the university there will make a post for her.

She has experienced considerable unfairness: she wasn't considered for a teaching post due to the residency requirements and she experienced intimidation and bullying during her PhD. Recently she took a stand: *'Now I say I'm a fighter, a freedom fighter.'* And she is working with colleagues in her home country to get her PhD papers out.

As to her broader experiences, many are related to race and gender. *'Women here aren't really trusted... men don't believe you can perform until they see what you can do.'* For instance, a 'guy' from South America with a two-year postdoc contract didn't manage to publish a thing, but they renewed his contract for two years. But she wasn't able to get any additional time when she asked. In fact, everything in the country is racially motivated – *'[R]ace works with their own race – and certain races are trusted more than others... You have to be hardcore in everything.'*

As for the future, she is confused. *'The main thing is survival; you expect a job when you finish and if you can't you have to find another place you can use your skills or at least find a living.'* So, she's thinking of returning home even though her husband's job will be in a different country: *'[T]he bottom line is I can't sit at home.'* But in her home country there is some hostility toward people whom have left: *'[E]ven on Facebook [people say] "If you get a job [back home] you are taking it from someone who didn't go away."'* So she is thinking about working on her own – which connects to her friend running an NGO.

Still, she would take a teaching or research post if it were offered since she needs a job. But it would need to be satisfying since she wants passion in her work and to be contributing to the country and the development of the future generation of researchers.

Conclusion

All seven interviewees reported experiencing discrimination of some kind. Sometimes this was clearly connected to legislation (e.g., citizenship) and other times it was more subtle, created by others in the work context (gender, race, age). Further, all of them talked about work-life balance. This was sometimes challenging, for instance, Charles having to live far from his family. But we also saw evidence of individuals agreeing with their partners about how to balance their career goals and life goals. Grace and her partner put off marriage and children until after she had gone away to do her PhD. Similarly, Ian and his wife agreed to both complete their degrees before having a family so they could reduce some work-life challenges. Monica decided to move for her studies in order to be with her husband, who had moved for his job. And Victor reported involving his family in some of the work/travel opportunities that he had.

You may have noted that despite working in the private and para-public sectors, research and research funding still often played a role. Indeed, working in these sectors doesn't guarantee a secure position. As for those seeking employment, they demonstrated a lot of resourcefulness.

Agnes Alice Amina Amos Anna Benjamin Bernard Caroline Cathrin Cecilia Charity Charles Christine Clara Cleop
Daniel Dominique Dorcas Dorothy Edna Elizabeth Emily Ethan Eveline Faith Felix Fiona Fredrick Gerald Gertru
Grace Hunter Ian Ivy Jack Jacob Janet Jason Jeremiah Judy Kenneth Kimberly Monica Moses Nathaniel Nelisiwe Olin
Patrick Sam Shadreck Shane Sheila Simon Stanford Stephen Sylvia Tanya Timothy Trevor Valentina Victor

Section 4:

Appendices

11. Glossary

Bonded

- A contractual arrangement whereby in return for funding the individual must return to their home institution or country after benefitting from a research stay abroad, e.g., master's, PhD, research or sabbatical leave or specialised training.

Early-career researcher (ECR)

- An individual who self-defined as such in choosing to complete the GloSYS Africa survey, in effect, obtaining a Master's or PhD in the last 10 years; can be working in any sector and may or may not be active in research.

Labour sectors

- Academic: higher education institutions with dual missions of teaching and research, these may be either private or public.
- Public: government organisations at all levels providing services to citizens, not including public universities.
- Para-public: not-for-profit organisations for the public good, e.g., the Global Young Academy.
- Private: for-profit organisations, e.g., Facebook.

Work roles and duties

Academic sector

- Academic Professional: someone hired and paid by an institution, i.e., staff, to assist students and faculty members with various tasks, without teaching and research duties in the traditional sense, but trained in research. (e.g., Dorothy).
- Academic: someone hired and paid by an institution, i.e., to do research and/or teaching.
- Principle investigator (PI): someone who leads a research program.
- Post-PhD researcher: someone hired by a PI to work on a contract, not staff; no institutional affiliations (e.g., Ethan).
- Postdoc: someone who has received a time-limited post-PhD fellowship; not always a staff position; usually no institutional affiliation beyond acceptance by host institution (e.g., John).
- PhD student: accepted by an institution as a student; can be self-funded, partially funded by an institution (e.g., fees waived or work release) and/or competitively funded (e.g., time duration scholarship).

- N.B. All positions can be further funded, supplemented by competitive funding, often referred to as fellowships which provide dedicated funding for specified purposes, e.g., research visit, research leave, conference attendance, etc., but often do not cover research expenses, such as infrastructure and reagents.

Other labour sectors

- Research professional: someone working outside the academic sector with research as a core responsibility.
- Professional: someone working outside academia with no responsibility for doing research.

Academic hierarchy

Two systems are used, one originating in North America, the other in the UK – though with some integration of the two. The majority of African institutions use the UK based system, with their own promotional guidelines and variation in the requirement of a PhD at different levels. The definitions used below merge participant descriptions with literature-based accounts.

- UK-based: Assistant lecturer, lecturer (need PhD), senior lecturer, associate professor, professor.
- Canada- and US-based: Tutor (no PhD), sessional lecturer (annual teaching contract, usually with a PhD), assistant professor (need PhD), associate professor, and professor.

Regions

Africa: to preserve anonymity, we use four regional terms to group the 14 African countries that constituted the focal regions of the GloSYS Africa study. These don't represent political regions in Africa.

- Northern Africa: Egypt, Morocco, and Tunisia.
- Western Africa: Cameroon, Ghana, Nigeria, and Senegal.
- Eastern Africa: Kenya, Rwanda, and Uganda.
- Southern Africa: Mauritius, Mozambique, South Africa, and Zimbabwe.

Europe: terms used to preserve anonymity

- Northern Europe: Estonia, and Scandinavia.
- Western Europe: Austria, Belgium, France, Germany, Netherlands, and United Kingdom.
- Central Europe: Czech Republic, Hungary, Poland, and Slovakia.
- Southern Europe: Greece, Italy, Portugal, and Spain.

Other regions

- Oceania: Australia and New Zealand.
- Eastern Asia: China, Japan, North and South Korea.
- Southern Asia: India, Indonesia, Malaysia, Pakistan, Singapore, and Thailand.
- North America: Canada, Mexico, and United States of America.
- Central and South America: All countries in central and southern America

Interviewee location

- Diaspora in Africa: living in Africa but outside African home country.
- Diaspora outside Africa: living outside Africa.
- Home: country of birth and childhood.

Disciplinary clusters

- We have used the discipline named in the survey if it was relatively general, e.g., Applied Sciences, but, if very specific, e.g., Animal husbandry, we have chosen from the Frascati categories below

STEMM

- Life sciences: biology, zoology, agriculture, etc.
- Health sciences/medicine: cardiology, epidemiology, virology, etc.
- Physical sciences: chemistry, astronomy, physics, etc.
- Formal sciences: math, statistics, etc.
- Applied sciences: engineering, computer science, etc.

HSS

- Humanities: history, archeology, philosophy, languages, and literature, etc.
- Social sciences: sociology, law, education, etc.

Contract Type

- Permanent: tenured with benefits, so one cannot lose their job except in cases of gross misconduct.
- Fixed-term: contract has a specified duration and is unlikely to be extended or renewed thereafter. Often linked to available grant funding (e.g., post-doc).
- Open-ended: automatic contract renewal with request from employee; employer can choose not to renew in cases of gross misconduct.
- Renewable: this is the situation that most post-PhD researchers are in – dependent on soft funding, so they are hired for the duration of a grant, and lose the position if no new funding is secured.
- Rolling: the contract is awarded for a certain period of time, with successful milestone review required for perpetual renewal, for example, every 5 years; job can be lost if milestones aren't achieved. Milestones are often not predetermined, but evaluated on success by a review board.

Agnes Alice Amina Amos Anna Benjamin Bernard Caroline Cathrin Cecilia Charity Charl
Christine Clara Cleopas Daniel Dominique Dorcas Dorothy Edna Elizabeth Emily Ethan Evelin
Faith Felix Fiona Fredrick Gerald Gertrude Grace Hunter Ian Ivy Jack Jacob Janet Jason Jeremia
Judy Kenneth Kimberly Monica Moses Nathaniel Nelisiwe Olivia Patrick Sam Shadreck Sha
Sheila Simon Stanford Stephen Sylvia Tanya Timothy Trevor Valentina Victor

12. Research Process

The GloSYS Africa project included interviews with a sample of survey respondents, with the intent to flesh out the accounts that would emerge from the quantitative analysis. This meant, in the first instance, gaining ethical approval, creating a relevant interview protocol, hiring and training research assistants (interviewers), and establishing robust data collection and management systems. After the data was collected and organised, we began a second process of analysing the data with narrative methodology to generate the 61 accounts. Before turning to this process, we describe the ethical stance we aimed to achieve throughout the qualitative portion of the project.

Guiding principle: An ethic of care

As researchers, we are the ones who seek out relationships with participants since we wish to learn from their experiences. We are therefore entrusted with a certain power and level of expertise by interviewees. By viewing this work through the ethic of care, we are attentive to connectivity, to relationships, to trying to understand an individual's experiences from his or her own perspective – and then to represent it in a way that the interviewee would recognise. That is, the account itself is low-inference, not interpreted by us as researchers. Such a stance also means being mindful of the interviewee's well-being and ensuring that we achieve what we promised – that each unique story is well represented and, at the same time, confidentiality is maintained.

Ethics

Ethical approval was obtained at the University of Cape Town, South Africa (through the Faculty of Health Sciences human research ethics committee [HREC 425/2017]), and covered the online survey and the interviews, on behalf of GYA members. Additional ethics approvals were sought by research partners in their home institutions and from specific institutions when required. Ethical approvals were also obtained from the following: the Rwanda Educational Commission, which allowed research to be carried out in Rwanda; the Moroccan Board of Ethics, in Morocco; and the University of the Witwatersrand, South Africa. Information about the project was provided first when a participant gave consent at the initiation of the online survey. Those invited to interview provided additional consent, first via email, and then orally to each interviewer; signed consent forms are stored centrally.

Data collection, organisation and management

Interview protocol: The semi-structured interview of approximately one hour was developed through discussions between Lynn McAlpine and the GloSYS Africa team at the time, including

Abdeslam Badre, Abidemi Akindele, Anna Coussens, Fridah Erastus, Mona Khoury-Kassabri, and Marie Neumann. A key concern was building on the results of the survey and seeking additional information on what the GloSYS team considered important themes. A key implication of this was that in preparing for the interview, interviewers did a careful synthesis of key responses from the survey to familiarise themselves with the interviewee's account. These responses were then used as an introduction to the different themes discussed in the interview.

Training research assistants to be interviewers: The four research assistants (RAs) were Otilia Chiramba, Hamza Saidi, Martin Wasike and Judith Nagasha. Each was offered two face-to-face workshops prior to data collection. The first focused on developing a consistent protocol and interviewing practice. The second focused on organising and managing data as a team, dealing with issues such as consistent naming conventions and data organisation, etc. using a qualitative analysis software programme (MaxQDA). Using this platform alongside the agreed conventions meant that while team members were collecting data individually, using the software in a consistent fashion made it relatively straightforward to merge all the data.

Choosing and contacting potential interviewees: Marie Neumann and Matt Keane identified potential interviewees from the GYA Office. Selection occurred by reference to the survey responses submitted. We specifically sought interviewees who were either born or living in one of the 14 African focal countries and who held a PhD. Among these individuals, we made it our priority to ensure that we balanced the number of interviews conducted with individuals in the four focal regions in Africa and the diaspora. We also prioritised balancing gender, discipline and employment status.

Collecting the data: When an individual agreed to be interviewed, they were asked to submit a consent form and agree an interview time. Before the interviews, the GYA Office team sent a copy of the interviewees' survey responses to the interviewers so they could individualize the interview protocol (description above).

The interviewers did the data collection and initial coding between February and October 2018. Given the geographical dispersion, the interviews were done using a range of virtual modes: Skype, WhatsApp and direct phone calls. There were only a few cases where face-to-face interviews were done.

As the interviews were completed, the audio files were sent for transcription by the interviewer. Marie and Matt liaised with the transcription team at Weloty Academic Transcription Services (led by Nancy Githongo) to ensure timely turnaround and resolve any issues with audio quality, administration etc. When the transcripts were completed they were verified by the interviewer. Each case was then uploaded into MaxQDA by the interviewer, including the fact sheet, the survey summary, the transcript, and the interviewer's research notes. Then the interviewer coded sections of the transcript according to broad themes of interest in the study, such as research environment, funding, mobility, inequity and the like.

There were numerous difficulties in conducting the interviews including: a shortage of respondents to contact in target areas (such as northern Africa); no responses after inviting respondents to participate; failed appointments; and postponements. Perhaps most challenging was the lack of consistent power; not infrequently, interviews were disrupted due to poor internet connections. Further, the lack of bandwidth meant that the discussion was sometimes hard to understand for transcription.

Language issues also caused communication breakdown even after rephrasing and probing. English was the language used for the interviews, but it wasn't the first language of a number of the interviewees; this was particularly the case for the interviews in the northern region, and part of the southern and western regions. This might also explain why we didn't get as many interviewees as we had hoped for from Egypt, Ghana, Mauritius, Morocco, Mozambique, Senegal, and Tunisia.

At the same time, a number of individuals stated how important the work was and others mentioned that being interviewed helped them to see themselves and their careers better: '[Y]ou realise what you want to become,' (Catherine).

Organising and managing the data: Each interviewer maintained a MaxQDA file of their cases. Once all the interviews were completed, transcribed and uploaded following the agreed conventions, the MaxQDA files from the four interviewers were merged into one, under Lynn's guidance.

Each interviewer kept a progress record of the interviews in the interview tracking sheet. Marie and Matt tracked the data collection and coding process, and liaised with the interviewers when issues arose at any stage of the process.

Narrative analysis

In order to create this book, our next step was constructing narrative accounts of each person's story,¹ and doing this in a way that was consistent so the reader could make sense of the various stories. This again involved a team effort.

Each team member first read through all the data for the 61 cases, before an in-person meeting. This allowed us to become familiar with the range of experiences, but it also to see different ways in which the individual cases could be clustered into chapters. Further, it was an opportunity to verify the consistency of the variables we were using, e.g., discipline, country of origin, etc.

Then, using a structured template so the stories we constructed would be consistent in their flow, we practiced writing cases and comparing the results to ensure these stories remained true to the individual's story, that is, they were "low-inference accounts."

During the in-person meeting, we divided the cases among two teams of people: Badre and Lynn; Fatima, Matt, and Otilia. Each team worked relatively independently of the other. However, within each team we exchanged our cases so that at least one other person read through them and offered comments or suggestions based on their own reading of the case data. After the meeting, Lynn, Otilia and Matt continued the work to ensure that every case was read for consistency by at least two team members, as were the introduction and conclusion to each chapter.

Editing and Review

Following the analysis and writing phase the publication was reviewed and copy-edited by Jim Curtiss (GYA Media Officer) and Anna Coussens (GloSYS Africa Project and GYA Member). A further review was conducted by Abdeslam Badre (GloSYS Africa Project and GYA Member), and the GYA Review Committee under the guidance of Teresa Stoepler (Lead of the GYA Review Committee and GYA Member).

20 If you are interested in learning more about narrative methodology, see Riessman, C. (2008). *Narrative methods for the human sciences*. Los Angeles, US: Sage; or Elliott, J. (2005). *Using narrative in social research: Qualitative and quantitative approaches*. London, UK: Sage.

13. Comparing survey respondent and interviewee characteristics

Due to the limited number of Master's holders interviewed, comparisons of survey respondents to interviewees is only done for those with PhDs, unless otherwise stated (e.g. under 'Qualification').

| Factor | Sub-Category | Survey | | Interview | | Difference |
|-----------------------------|------------------|------------|--------------|-----------|--------------|------------|
| | | Freq. | % | Freq. | % | % |
| Region | North | 55 | 9.2 | 7 | 12.3 | 3.1 |
| | East | 87 | 14.5 | 7 | 12.3 | -2.2 |
| | South | 121 | 20.1 | 8 | 14.0 | -6.1 |
| | West | 162 | 27.0 | 14 | 24.6 | -2.4 |
| | Non-focal | 67 | 11.1 | 0 | 0.0 | -11.1 |
| | Diaspora-Out | 37 | 6.2 | 12 | 21.1 | 14.9 |
| | Diaspora-In | 44 | 7.3 | 8 | 14.0 | 6.7 |
| | International-In | 28 | 4.3 | 1 | 1.8 | -2.9 |
| <i>Total (sub-category)</i> | | <i>601</i> | <i>100.0</i> | <i>57</i> | <i>100.0</i> | <i>-</i> |
| Race | Black | 397 | 69.5 | 37 | 64.9 | -4.6 |
| | White | 103 | 18.0 | 10 | 17.5 | -0.5 |
| | Mixed Ancestry | 21 | 3.7 | 0 | 0.0 | -3.7 |
| | Asian | 17 | 3.0 | 1 | 1.8 | -1.2 |
| | Not Disclosed | 22 | 3.9 | 8 | 14.0 | 10.2 |
| | Other | 11 | 1.9 | 1 | 1.8 | -0.2 |
| <i>Total (sub-category)</i> | | <i>571</i> | <i>100.0</i> | <i>57</i> | <i>100.0</i> | <i>-</i> |
| Gender | Female | 263 | 45.6 | 31 | 54.4 | 8.8 |
| | Male | 307 | 53.2 | 25 | 43.9 | -9.3 |
| | Not Disclosed | 5 | 0.9 | 1 | 1.8 | 0.9 |
| | Other | 2 | 0.3 | 0 | 0.0 | -0.3 |
| <i>Total (sub-category)</i> | | <i>577</i> | <i>100.0</i> | <i>57</i> | <i>100.0</i> | <i>-</i> |

| Factor | Sub-Category | Survey | | Interview | | Difference |
|---------------------------|---------------------------------|-------------|--------------|-----------|--------------|------------|
| | | Freq. | % | Freq. | % | |
| Qualification | Master | 554 | 47.9 | 4 | 6.6 | -41.3 |
| | PhD and Master | 564 | 48.7 | 56 | 91.8 | 43.1 |
| | PhD without Master | 39 | 3.4 | 1 | 1.6 | -1.7 |
| | <i>Total (sub-category)</i> | <i>1157</i> | <i>100.0</i> | <i>61</i> | <i>100.0</i> | <i>-</i> |
| PhD Discipline | Life Sciences | 180 | 30.0 | 18 | 31.6 | 1.6 |
| | Physical Sciences | 60 | 10.0 | 10 | 17.5 | 7.5 |
| | Formal Sciences | 13 | 2.2 | 1 | 1.8 | -0.4 |
| | Health Sciences or Medicine | 97 | 16.2 | 8 | 14.0 | -2.1 |
| | Applied Sciences | 59 | 9.8 | 6 | 10.5 | 0.7 |
| | Social Sciences | 86 | 14.3 | 4 | 7.0 | -7.3 |
| | Humanities | 52 | 8.7 | 5 | 8.8 | 0.1 |
| | Other | 53 | 8.8 | 5 | 8.8 | -0.1 |
| | <i>Total (sub-category)</i> | <i>600</i> | <i>100.0</i> | <i>57</i> | <i>100.0</i> | <i>-</i> |
| Current Employment Status | Currently Employed | 440 | 73.2 | 39 | 66.1 | -7.1 |
| | Currently Holding Post-doctoral | 101 | 16.8 | 14 | 23.7 | 6.9 |
| | Currently Self-Employed | 14 | 2.3 | 0 | 0.0 | -2.3 |
| | Current Doctoral Student | 8 | 1.3 | 2 | 3.4 | 2.1 |
| | Currently Runs Own Business | 3 | 0.5 | 1 | 1.7 | 1.2 |
| | Currently On Leave | 4 | 0.7 | 0 | 0.0 | -0.7 |
| | Currently Unemployed | 31 | 5.2 | 3 | 5.1 | -0.1 |
| | <i>Total (sub-category)</i> | <i>601</i> | <i>100.0</i> | <i>59</i> | <i>100.0</i> | <i>-</i> |

| Factor | Sub-Category | Survey | | Interview | | Difference |
|---|--|------------|--------------|-----------|--------------|------------|
| | | Freq. | % | Freq. | % | |
| Employment Sector (a) - Currently Employed | University / Higher Education | 359 | 83.9 | 31 | 79.5 | -4.4 |
| | Research Institution (Pub./Private) | 53 | 12.4 | 6 | 15.4 | 3.0 |
| | Business Enterprise | 3 | 0.7 | 1 | 2.6 | 1.9 |
| | Private non-Profit / NGO | 6 | 1.4 | 1 | 2.6 | 1.2 |
| | Other | 7 | 1.6 | 0 | 0.0 | -1.6 |
| | <i>Total (sub-category)</i> | <i>428</i> | <i>100.0</i> | <i>39</i> | <i>100.0</i> | <i>-</i> |
| Employment Sector (b) - Current Post-docs | University / Higher Education | 72 | 72.0 | 9 | 64.3 | -7.7 |
| | Research Institution (Pub./Private) | 27 | 27.0 | 5 | 35.7 | 8.7 |
| | Business Enterprise | 0 | 0.0 | 0 | 0.0 | 0.0 |
| | Private Non-Profit / NGO | 1 | 1.0 | 0 | 0.0 | -1.0 |
| | Other | 0 | 0.0 | 0 | 0.0 | 0.0 |
| | <i>Total (sub-category)</i> | <i>100</i> | <i>100.0</i> | <i>14</i> | <i>100.0</i> | <i>-</i> |
| Employment Sector (c) - Own Business | University / Higher Education | 1 | 33.3 | 0 | 0.0 | -33.3 |
| | Research Institution (Pub./Private) | 0 | 0.0 | 0 | 0.0 | 0.0 |
| | Business Enterprise | 2 | 66.6 | 1 | 100.0 | 33.3 |
| | Private Non-Profit / NGO | 0 | 0.0 | 0 | 0.0 | 0.0 |
| | Other | 0 | 0.0 | 0 | 0.0 | 0.0 |
| | <i>Total (sub-category)</i> | <i>3</i> | <i>100.0</i> | <i>1</i> | <i>100.0</i> | <i>-</i> |
| Employment Sectors (a) to (c) Combined | University / Higher Education | 432 | 81.4 | 40 | 74.1 | -7.3 |
| | Research Institution (Pub./Private) | 80 | 15.1 | 11 | 20.4 | 5.3 |
| | Business Enterprise | 5 | 0.9 | 2 | 3.7 | 2.8 |
| | Private Non-Profit / NGO | 7 | 1.3 | 1 | 1.9 | 0.5 |
| | Other | 7 | 1.3 | 0 | 0.0 | -1.3 |
| | <i>Total (sub-category)</i> | <i>531</i> | <i>100.0</i> | <i>54</i> | <i>100.0</i> | <i>-</i> |

| Factor | Sub-Category | Survey | | Interview | | Difference |
|---|--|------------|--------------|-----------|--------------|------------|
| | | Freq. | % | Freq. | % | |
| Future Intention to Leave Employment Sector | Yes, Previously Considered | 110 | 24.0 | 10 | 23.3 | -0.7 |
| | Yes, Currently Considering | 194 | 42.3 | 20 | 46.5 | 4.2 |
| | No, Never Considered | 155 | 33.8 | 13 | 30.2 | -3.5 |
| | <i>Total (sub-category)</i> | <i>459</i> | <i>100.0</i> | <i>43</i> | <i>100.0</i> | <i>-</i> |
| Children | With Children - F | 148 | 25.7 | 20 | 35.1 | 9.3 |
| | With Children - M | 226 | 39.3 | 20 | 35.1 | -4.2 |
| | With Children - No Gender Disclosed | 2 | 0.3 | 0 | 0.0 | -0.3 |
| | Without Children - F | 112 | 19.5 | 10 | 17.5 | -1.9 |
| | Without Children - M | 75 | 13.0 | 5 | 8.8 | -4.3 |
| | Without Children - No Gender Disclosed | 2 | 0.3 | 0 | 0.0 | -0.3 |
| | No Response re: Children – F | 3 | 0.5 | 1 | 1.8 | 1.2 |
| | No Response re: Children - M | 6 | 1.0 | 0 | 0.0 | -1.0 |
| | No Response re: Children - No Gender Disclosed | 1 | 0.2 | 1 | 1.8 | 1.6 |
| | <i>Total (sub-category)</i> | <i>575</i> | <i>100.0</i> | <i>57</i> | <i>96.5</i> | <i>-</i> |
| | | | | | | |
| PhD Completion Year | 2013 Onwards | 436 | 72.5 | 43 | 75.4 | 2.9 |
| | 2007 to 2012 | 165 | 27.5 | 14 | 24.6 | -2.9 |
| | <i>Total (sub-category)</i> | <i>601</i> | <i>100.0</i> | <i>57</i> | <i>100.0</i> | <i>-</i> |
| Mobility Beyond Birth Country (PhD Only) | 3 months or more | 401 | 70.1 | 50 | 87.7 | 17.6 |
| | Never more than 3 months | 171 | 29.9 | 7 | 12.3 | -17.6 |
| | <i>Total (sub-category)</i> | <i>572</i> | <i>100.0</i> | <i>57</i> | <i>100.0</i> | <i>-</i> |

| Factor | Sub-Category | Survey | | Interview | | Difference |
|---------------|---|------------|--------------|-----------|--------------|------------|
| | | Freq. | % | Freq. | % | % |
| Age | 29 or younger | 10 | 1.9 | 2 | 3.8 | 1.9 |
| | 30 to 34 | 121 | 22.8 | 11 | 20.8 | -2.1 |
| | 35 to 39 | 193 | 36.4 | 20 | 37.7 | 1.3 |
| | 40 to 44 | 128 | 24.2 | 15 | 28.3 | 4.2 |
| | 45 or older | 78 | 14.7 | 5 | 9.4 | -5.3 |
| | <i>Total (sub-category)</i> | <i>530</i> | <i>100.0</i> | <i>53</i> | <i>100.0</i> | <i>-</i> |
| Contract Type | Fixed Term Contract, total duration of less than 1 year | 8 | 1.9 | 0 | 0.0 | -1.9 |
| | Fixed Term Contract, total duration of 1 to 2 years | 25 | 5.9 | 1 | 2.7 | -3.2 |
| | Fixed Term Contract, total duration more than 2 years | 50 | 11.8 | 5 | 13.5 | 1.7 |
| | Open-ended Contract | 68 | 16.1 | 6 | 16.2 | 0.1 |
| | Rolling / Renewable Contract | 14 | 3.3 | 3 | 8.1 | 4.8 |
| | Permanent Contract | 248 | 58.6 | 22 | 59.5 | 0.8 |
| | Other | 10 | 2.4 | 0 | 0.0 | -2.4 |
| | <i>Total (sub-category)</i> | <i>423</i> | <i>100.0</i> | <i>37</i> | <i>100.0</i> | <i>-</i> |



Lynn McAlpine



Otilia Chiramba



Matt Keane



Abdeslam Badre

Fatima Kareem

Unfortunately, no picture was made available.

Afterword: Who are we

Here you will find our stories, each about the same length as the 61 others. The difference of course is that we each have written our own stories. In each story you will find a description of how we became involved in the project and what we have learned from participating.

Lynn McAlpine

My name is Lynn McAlpine and I'm the most senior in the group by both age and years of academic experience. I came rather late to academia, having worked for 20 years in the public sector in Canada. During that time, I largely self-funded my part-time postgraduate work in social sciences – though I did receive several bonded education leaves. I ended up as an academic once I completed my doctorate in 1986 when I was invited to become involved in a culturally- and linguistically-based teacher education programme in the Canadian Arctic and sub-Arctic.

Since then, I have expanded my experiences through work I have done in Indonesia, Chile, Sri Lanka and most recently this project. I have found such experiences life expanding and I fully understand why many of the narratives in this book describe the same kinds of learning emerging from working outside your own country. I have also more recently experienced the mobility that is increasingly a part of the life of younger academics. I moved from Canada to the UK over a decade ago – and experienced the upheaval of being long-term in a new cultural and academic environment.

My area of research is early-career researcher life and career trajectories, which I have studied principally in Canada, the UK and Europe. So I was very pleased to be invited to be a senior international advisor on the GloSYS project back in late 2015, and have been involved since then in a range of ways – most recently, this narrative project.

Narrative research has been a key part of what I consider my academic contribution. I believe strongly that people's stories, rigorously collected and carefully represented, can provide insight that other representations of research findings cannot. So I was very happy to be involved in this project and help think about how we might ensure that the individual stories would be told. For me, reading and re-reading the accounts provided by the African interviewees was a powerful reminder of the fact that while, in aggregate, we all experience some of the same things as human beings, our actual real-life experiences are largely distinct. I hope we have captured this distinctness while also making it possible for you to read across the stories and find resonances with your own experiences as well as previously unimagined possibilities.

I nearly always work in a team and have found this approach a powerful way in which to draw on collective strengths in order to conduct more powerful research. Working on this particular project with a team of dedicated people expanded our potential but was also fun. In looking back over the past four years, the time I have been involved in this project, I feel I have gained much and hope I have contributed as well. I want to thank everyone who has worked on this project with me.

Otilia Chiramba

My name is Otilia Chiramba, and I am married with two children. I would refer to myself as one of the emerging researchers in this team. I joined academia after having worked in the civil service for 12 years in Zimbabwe, my home country. I have since relocated to South Africa to do my postgraduate studies because of a lack of funding in my country. I am currently doing my PhD at the University of the Witwatersrand, where I also did my master's degree. Both degrees are in the humanities, looking at the experiences of underprivileged groups in education.

I was first recruited for the GloSYS Africa project as a research assistant on the basis of having been working in a number of qualitative research projects with my supervisor in South Africa, who happened to be one of the research partners for the project. In those projects I would do interviews and initial data analysis, something that seemed to be easy but rendered me confident in qualitative research competency as well as working with teams. I have developed an interest and fervour to do qualitative research ever since my experience from both honours and master's degrees, as well as my involvement in projects. My supervisor and I believed that my experience of working with qualitative data would benefit the GloSYS project so he invited me on board.

As a research assistant for this project, I enjoyed doing the interviews because the participants' experiences were relatable to mine as a young researcher, especially on the issues of work/life balance, mobility and funding. The experience and the passion I had indeed benefitted the project because I managed to interview a large number of participants for qualitative data and did the initial analysis using the MAXQDA software. I was then very happy to be invited to join the team, which was involved with the second stage of qualitative data analysis.

My area of research involves looking at the experiences of underprivileged students in higher education, particularly refugee students, and this resonates well with the exploration in this project. I have since written a paper and a book chapter (in press) for this particular area and in the process, I have realised that understanding experiences needs to prioritise the participants' voices. As many scholars in the field rightfully say, we can learn much about individuals' experiences from the stories.

Although my methodology for the two publications aren't based on the narratives, I have realised that understanding the experiences of human beings requires a methodological stance that considers the participant as the core source of knowledge. Thus, I chose to go the narrative way in my PhD. It was because of this choice of the methodology as well as my knowledge of the early-career researchers' experiences through interviews that I was again invited to join the GloSYS narrative team.

I have learnt from the beginning that my involvement wouldn't only benefit the GloSYS project but would also help me develop more skills beneficial for my career growth through interaction with and the expertise of the senior members involved. Indeed, through this project and my PhD thesis I have realised that deploying the narrative enquiry helps to understand the uniqueness of individual experience, although of course broadly, some experiences might be grouped as the same, there is a need to realise the contextual and personal variations.

My sincere gratitude to the GYA and the GloSYS Africa team, particularly the narrative team for spending time together on this good cause.

Matt Keane

My name is Matt Keane and my path into research has been quite winding. In my first professional role, I worked as a process engineer within a mining company. However, I realised quickly that establishing a career therein would limit my capacity to meaningfully engage with the most interesting subject of science: people.

Nevertheless, resigning from my role to pursue a rather unclear path forward was more difficult than I imagined. Only after my fifth year in the role was I able – enthused by the opportunity to join a graduate philosophy and ethics programme.

Initially, I felt that a background in engineering might prohibit me from engaging as thoughtfully and constructively as I wished to in those studies – seeing as I lacked the traditional background in the humanities and social sciences. Indeed, this was the case in certain ways. Yet, as we progressed into issues with particularly strong scientific or technological aspects, I realised that my background enabled my participation too. Slowly I learnt to apologise less for my naivety and instead stand more firmly behind my sideways entry into the humanities.

In those studies, my latent interest in human behaviour and social values had a first opportunity to unfold. As I progressed, I found that in questions of consciousness the natural sciences, humanities, social science and the like are unavoidably entangled – and there, for the first time in many years, I sensed in myself a pulse of genuine fascination again.

I entered these questions initially through my own reflections on my experience of consciousness but began grounding them more formally in readings that intersected physics and philosophy. Admitting my inability to understand much of the physics, much less the philosophy, I moved from Australia to Germany in 2017 to enter a bachelor programme in physics in the hope that one day I will.

After six months, I was given the opportunity to join the GloSYS Africa research team as a student research assistant. Initially, my involvement focussed on identifying and collating higher education data pertaining to African countries from online sources. As the project progressed, I have been very fortunate to be invited to participate in the qualitative data analysis team and the team developing the narratives project, which I am particularly enjoying.

Through difficult periods and insecurity in my own journey, I was unconsciously drawn to stories as a means of reframing thought patterns, establishing connection to others and as a form of personal catharsis through expression. Now, my involvement in this project has helped me expand my understanding of narrative as a scientific methodology – one that preserves the humanity that first drew me to it in my personal life.

For me, this value of narrative is revealed in the experiences I had working with these stories. At times I laughed, cried, felt anger, had to walk away, felt disbelief, reimagined the world, and as all else passed, I called home.

The separation from home that the pursuit of a meaningful career in science almost necessitates is a difficult reality – and an undercurrent in so many of the lives of the people who shared their stories for this project. To you all, I am deeply grateful for the privilege of working with your stories. I trust that your remarkable passion will help manifest the vision for a different future that you all share.

To the members of the GloSYS Africa and narratives team: from a place that science is yet to reach, there is so much gratitude to you for giving me the opportunity to experience research within the wonderful reality that always binds us: being people.

Abdeslam Badre

I am Badre Abdeslam, a young social scientist from Morocco and professor at Mohammed V University in Rabat, where I completed most of my graduate studies. Having enjoyed a career in teaching and research for over 17 years, my research focuses on policy development in the fields of a) higher education, b) migration & mobility and c) gender & development, especially within Africa and the EU-Southern Mediterranean cooperation. Previously, I have had the chance to serve as a visiting professor at various international universities, including Alfred University in New York, Monterey Institute for International Studies in California, University of North Carolina in Chapel Hill; Aalborg University in Denmark, Institute for Cultural Diplomacy in Berlin, and Babes Bolyai University in Romania.

After obtaining my PhD in gender, media and policy development in north Africa, I completed a Carnegie postdoctoral fellowship, at the University of North Carolina-Chapel Hill (2014), a visiting post-doc fellowship at the United Nations University of Barcelona (2015), and a fellowship at the Arab Council for Social Science ACSS (2017-2018). Currently, I am a 2019-2020 fellow under the auspice of Princeton University and the University of Michigan's programme. I also hold 4 Masters' degrees in 1) education; 2) post-colonial theory; 3) business administration; and 4) international relations from Morocco, USA, and Germany, respectively.

As a former GYA member, I was among the five members who wrote the GloSYS Africa project's application; hence, my involvement in the project started far before the project itself began, and I helped co-lead the project in its various stages. This, however, wasn't the only reason that kept me going in this study, despite the challenges and, at times, frustrations linked mainly to bureaucratic snags, unpredictability, and cultural differences in doing research amongst the project's core team members. The study sought to investigate factors such as international mobility, mentorship, work-life balance, and funding, which touched on a great deal of my personal experience as a young African researcher; thus, I found it fascinating.

Furthermore, the chance to interact with a diverse group of international research partners (RPs), international research advisors (RADs), and research assistants (RAs) was a unique learning opportunity this project offered and I simply couldn't miss. Additionally, as a project co-leader, I have had the opportunity to work closely with my fellow core-team members, as well as the qualitative and quantitative team, not to speak of memorable moments I shared with them all when meeting and presenting the project at various international scientific platforms around the globe.

For this and more, I will remain grateful to all the outstanding scientists, researchers, participants; and individuals this project has introduced me to. They are too many to single out, but I hope that through the output of the project they will all sense the sincere gratitude I owe them all. Finally, I do hope that the reader, and in particular, the African one, would find some resonance in reading these shared experiences!

Fatima Kareem

I am Fatima Kareem, and a Project Researcher of the GloSYS Africa Project. I received my baccalaureate education (First Class Honours) and a master's degree in Nigeria. Thereafter, I obtained a second master's and a doctoral degree, in the Netherlands and Germany, respectively. I am an economist and enjoy research, and thus worked in both universities and research institutes. I have also undertaken post-doctoral studies, after which I ended up as a Project Researcher at the Global Young Academy, where I coordinated the activities of the GloSYS African Project, including its interview phase. I joined the GloSYS Africa project as the field survey and interviews were still coming to an end.

My area of research is development economics, which is rather broad. Thus, I research and dabble into development-oriented research that spotlights the plights of individuals, countries and regions, with the aim of highlighting appropriate policy responses that will accelerate their growth and development. Hence, I was elated to be involved in this project, which studies the developmental aspirations and challenges of young African scientists and scholars to highlight how they could be better supported.

Economists rely primarily on quantitative empirical analysis to support our findings, and sometimes complement this with qualitative analysis. Thus, I am enthusiastic to be able to also use narrative research to shed light on societal problems.

I am happy to be part of a team that uses narrative research to shed important light on the career trajectories of young scientists – in a way that their voices, aspirations, agitations and challenges are carefully presented. Led by Professor Lynn McAlpine, and being a young scientist myself, I am pleased to be part of a team that analyses and narrates the real-life stories of scientists – most of which we can relate to as we, our friends and even acquaintances have lived through similar experiences as scientists from working around the globe. This is particularly the case in the areas of funding and scientific mobility. I fervently hope that this research will elicit appropriate policy responses, and hope that you enjoy reading through the heart-touching stories of these young scientists – many of whose love for science has helped them to remain in their scientific careers.

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About the Global Young Academy

The Global Young Academy (GYA) was founded in 2010 with the vision to give a voice for young scientists around the world. The GYA empowers early-career researchers to lead international, interdisciplinary, and intergenerational dialogue by developing and mobilising talent from six continents. Its purpose is to promote reason and inclusiveness in global decision-making. Members are chosen for their demonstrated excellence in scientific achievement and commitment to service. Currently, there are 200 members and 216 alumni from 83 countries.

The GYA is hosted at the German National Academy of Sciences Leopoldina, and received its seed funding from the Volkswagen Foundation. Since 2014, the GYA receives core funding from the German Federal Ministry of Education and Research (BMBF) and is also supported by the InterAcademy Partnership (IAP) and other international donors.

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