



Shaping the Future of Research and Innovation in Sub-Saharan Africa: Profile of Researchers

Synthesis Report

April 2025

Authors

Almamy Konte
Nouhou Diaby



Contents

EXECUTIVE SUMMARY	II
ACKNOWLEDGMENTS	III
ABBREVIATIONS	IV
1. BACKGROUND AND CONTEXT	1
2. OVERVIEW OF THE RESEARCH AND INNOVATION MANAGEMENT (RIM) PROJECT	2
3. THE FINDINGS	3
3.1 Total R&D Personnel Involved in the RIM Project	3
3.2 Share of Researchers across SGC Countries	5
3.3 Researchers' Qualifications and Gender Distribution	7
3.4 Distribution of Researchers by specialization and Gender	8
3.5 Researchers per R&D Fields across the SGC countries	9
3.6 Researchers Per Thematic (project theme)	10
3.7 Leadership Role and Gender Inclusion	11
4. CONCLUSION	12
5. RECOMMENDATIONS	12

Executive Summary

This synthesis report provides insights on the profile of researchers under the Research and Innovation Management (RIM) Project which is supporting the capacities of Science Granting Councils in SSA to fund and manage research and innovation management projects. The profiles of participating researchers reveal strong academic qualifications, regional diversity, and growing - though uneven - efforts toward gender inclusion. However, challenges remain in addressing the low technician-to-researcher ratio, expanding representation in social sciences and humanities, and ensuring equitable participation of women in leadership roles. By continuing to refine funding frameworks, support high-quality competitions, and integrate inclusivity and ethics into project management, SGCs can further strengthen national STI systems.

Key Findings

Scale of Participation

A total of 535 R&D personnel were engaged, of which 453 (84.7%) were researchers, 33 (6.2%) technicians, and 21 (3.9%) support staff. The technician-to-researcher ratio (0.073) highlights a notable skills gap.

Geographic Distribution

Côte d'Ivoire, Ghana, and Mozambique host the largest number of projects (7 each), while Namibia has the fewest (2). Researcher concentration reflects this distribution, with Côte d'Ivoire (11%), Ghana (9.9%), and Mozambique (8.8%) leading. Uganda records the highest researcher-to-project ratio (9.3), while Sierra Leone has the lowest (2).

Qualifications and Skills

Researchers are highly qualified, with 61.4% holding PhDs, 19.9% MScs, and 5.5% BScs. Namibia has the highest share of PhD-qualified researchers (100%), while Uganda shows greater representation at the MSc level.

Gender Representation

Research remains male-dominated (59.8% male vs. 39.3% female). However, encouraging trends exist: female representation is stronger at the MSc level (47.8%) and in medical and health sciences (51.4%). Principal Investigator roles show 38% female representation, with Tanzania (100% female PIs) and Côte d'Ivoire (86%) demonstrating leadership in gender inclusivity. Conversely, Namibia, Nigeria, Uganda, and Zimbabwe report no female PIs.

Fields of Research

Natural sciences dominate (53%), followed by engineering and technology (16.3%) and medical and health sciences (15.9%). Agricultural and veterinary sciences account for 10.6%, while social sciences (4%) and human sciences and arts (0.2%) remain underrepresented. Field priorities vary by country, reflecting national development strategies.

Research Themes

The largest share of researchers work in agriculture, food security, and value addition (49.7%), underscoring its strategic importance in the region. Emerging technologies (24.9%) and circular economy/renewable energy (13.2%) highlight growing attention to innovation and sustainability. Health research (7.7%) and science policy (3.3%) attract fewer researchers but show more balanced gender participation.

Acknowledgments

This synthesis report on the profiles of researchers under the Research and Innovation Management (RIM) is based on a desktop review and analysis commissioned by the African Centre for Technology Studies (ACTS) and undertaken by Cheikh Anta Diop University (UCAD) under the Research and Innovation Management (RIM) Project, funded by the International Development Research Centre (IDRC) of Canada and the United Kingdom's Foreign, Commonwealth & Development Office (FCDO).

We extend our sincere appreciation to IDRC and FCDO for their generous financial and technical support. We also acknowledge the Science Granting Councils (SGCI) for their commitment and efforts in implementing projects under the Science Granting Councils Initiative (SGCI), as well as the SGCI team for their valuable technical contributions.

Through SGCI, the IDRC consortium has advanced the pursuit of a more equal and inclusive research and innovation ecosystem in Sub-Saharan Africa under the RIM project – an endeavor of significant importance.

Finally, we express our gratitude to the ACTS and UCAD team – particularly those directly involved in the RIM project – for their dedication and support in its implementation.

Abbreviations

RIM	Research and Innovation Management
ACTS	African Centre for Technology Studies
SGC	Science Granting Council
SGCs	Science Granting Councils
SGCI	Science Granting Councils Initiative
STI	Science, Technology, and Innovation
R&D	Research and Development
PPP	Public-Private Partnership
IDRC	International Development Research Centre (Canada)
FCDO	Foreign, Commonwealth & Development Office (United Kingdom)
NRF	National Research Fund
SIDA	Swedish International Development Agency
DFG	German Research Foundation (Deutsche Forschungsgemeinschaft)
NORAD	Norwegian Agency for Development Cooperation
SSA	Sub-Saharan Africa
HEI	Higher Education Institution

1. Background and Context

Science Granting Councils (SGCs) have a key role to play in their national STI systems. Among their multiple mandates, Councils are responsible for management and disbursement of funds for research and development (R&D) and STI activities. As such, the Science Granting Council Initiative for Sub-Saharan Africa (SGCI) brought together several funders including Foreign, Commonwealth and Development Office (FCDO), International Development Research Centre (IDRC), National Research Fund (NRF), Swedish International Development Agency (SIDA), German Research Foundation (DFG) and Norwegian Agency for Development Cooperation (NORAD) and Councils from across East, Southern and West Africa. The initiative, which started in 2015, has contributed significantly to the capacity building of the councils.

In this context, a consortium led by ACTS is implementing the project “Supporting councils to fund and manage research and innovation projects (2023 – 2025) which aims to support SGCs to fund and manage research and innovation projects in areas aligned with their national development plans and the identified priorities.

This project aims to contribute towards building the capacities of Science Granting Councils in SSA to fund and manage research and innovation management projects. The project focuses on supporting the Councils to: a) refine, adapt and use research, and innovation frameworks; b) design and manage high quality research competitions; c) main stream gender equality, inclusivity, and ethical considerations in all the funded projects; d) conduct monitoring, evaluation and learning of the funded projects, synthesize research outputs and develop relevant knowledge products. The implementation of these activities will contribute to strengthening the Councils’ ability to support research projects that contributes to economic and social development in their countries. This will result in more effective national STI systems which contributes to inclusive development in sub-Saharan Africa.

This document presents the synthesis report of the Research and Innovation Management (RIM) Project. The focus of this synthesis report is on the researchers’ profile.

2. Overview of the Research and Innovation Management (RIM) Project

The RIM project covers 17 Science Grating Councils (SGC) across Africa with **82 projects**. The countries including the 17 SGCs comprise Botswana, Burkina Faso, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Malawi, Mozambique, Namibia, Nigeria, Rwanda, Senegal, Sierra Leone, Tanzania, Uganda, Zambia, Zimbabwe. In this regard, it is important to note that Côte d'Ivoire, Ghana, and Mozambique have the highest number of projects (7 each), while Namibia has the lowest (2) (Figure 1).

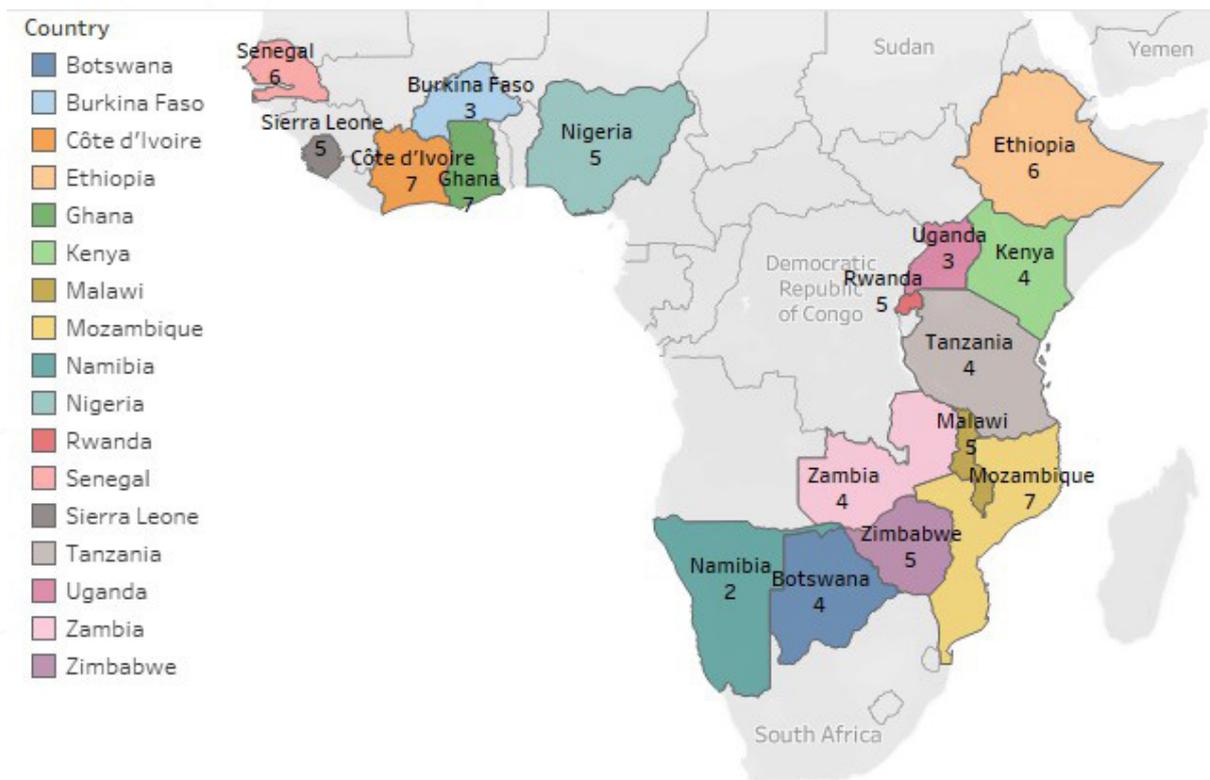


Figure 1. Number of projects by SGCs country

3. The Findings

3.1 Total R&D Personnel Involved in the RIM Project

A total of 535 R&D personnel are involved in the RIM project, as shown in Figure 2. Researchers make up the vast majority, with 453 individuals (84.7%). Technicians account for 33 individuals (6.2%), while 21 individuals (3.9%) serve as supporting staff. The data highlights a notably low technician-to-researcher ratio of 0.073.

It is important to note that information was not available on 28 individuals, representing 5.2%.

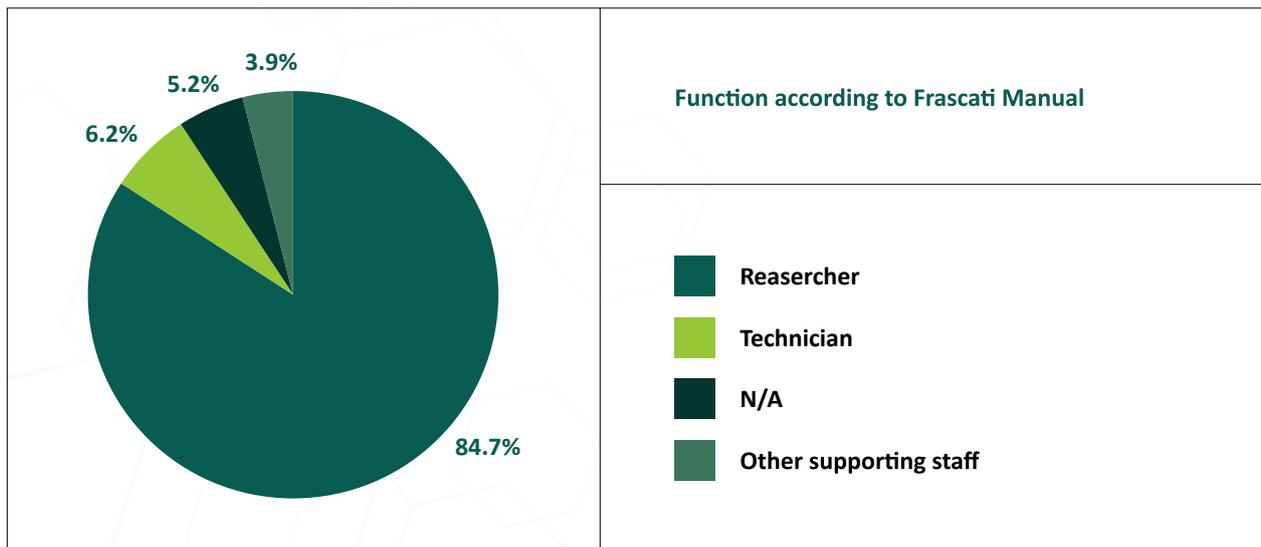


Figure 2. R&D personnel employed by the projects

This trend is also observed across the different SGC countries, as presented in Figure 3, which illustrates the proportion of R&D personnel involved in the project. Nigeria (96.4%) and Tanzania (94.7%) have the highest proportion of researchers, whereas Botswana (63.3%) and Uganda (66.7%) have the lowest. Regarding technicians, Botswana (26.7%) and Sierra Leone (23.1%) record the highest shares, while several countries, including Burkina Faso, Côte d'Ivoire, Namibia, Senegal, Tanzania, Zambia, and Zimbabwe, report none. In the category of other supporting staff, Namibia (20.0%) has the highest proportion, whereas Ghana, Malawi, Nigeria, and Sierra Leone report no personnel in this category.

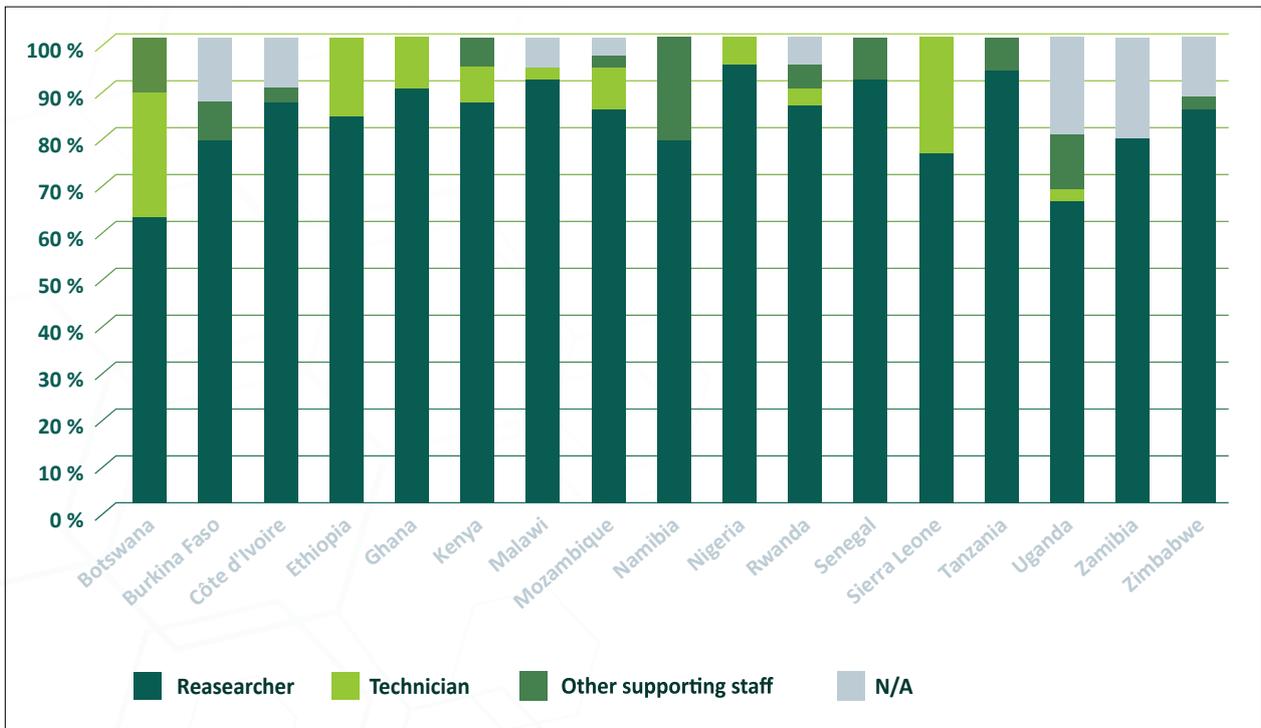


Figure 3. R&D personnel across SGC countries

3.2 Share of Researchers across SGC Countries

Figure 3 shows the share of researchers per SGC country. Côte d'Ivoire, Ghana and Mozambique have the highest proportions with 11%, 9.9% and 8.8% respectively, while Namibia has the lowest number with 4 researchers (0.9%). This can be justified by the fact that Côte d'Ivoire, Ghana and Mozambique have the highest share of project, and they have number of researchers per project above the average compared to others such as Namibia

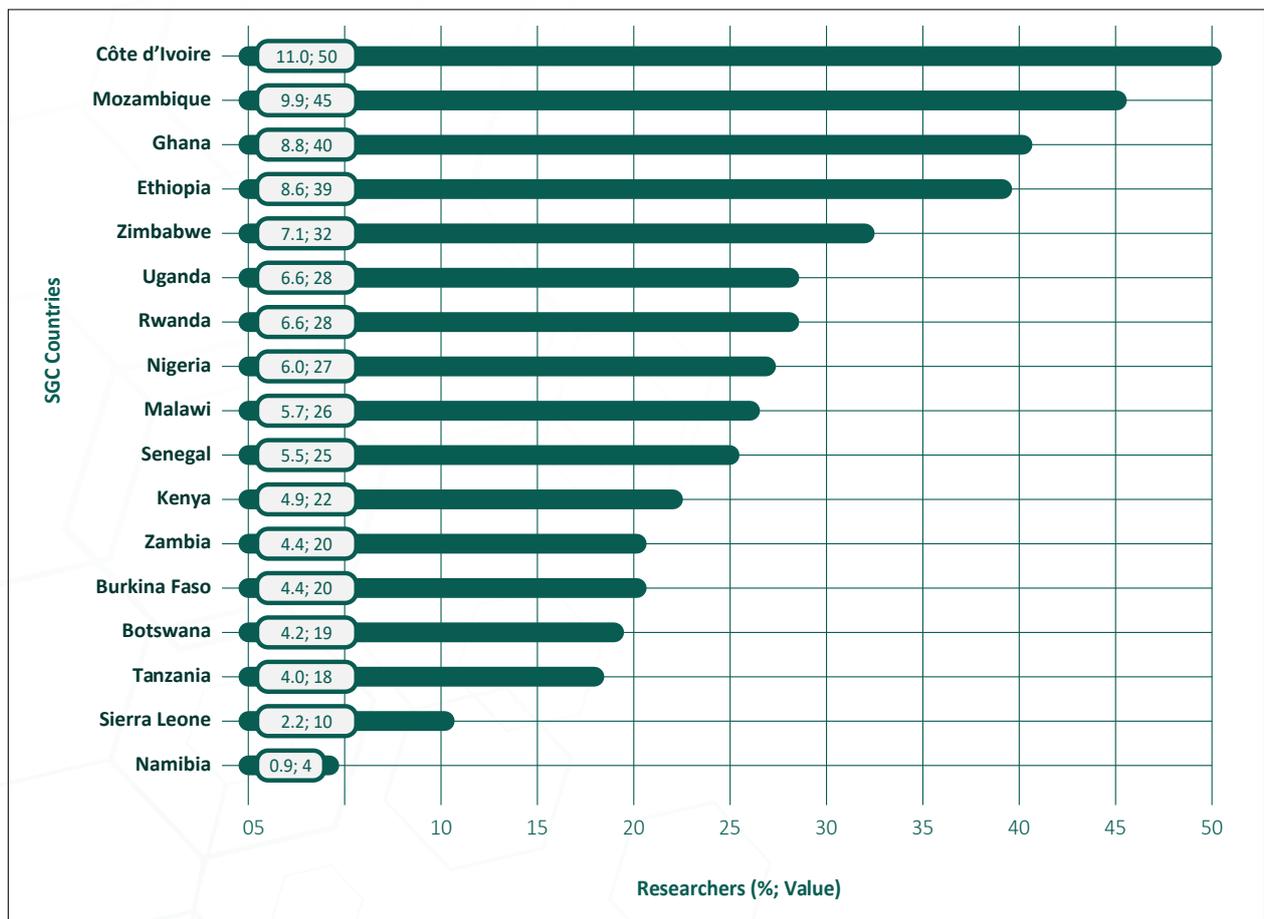


Figure 3. Distribution of researchers across SGCs countries

For a better analysis of researchers per country, the ratio of researchers per project is presented on figure 4. The figure indicates that Uganda has the highest ratio with 9.3 researchers per project and Sierra Leone have the lowest ratios of 2. The average ratio is 5.1, which shows a general average of approximately 5 researchers per project.

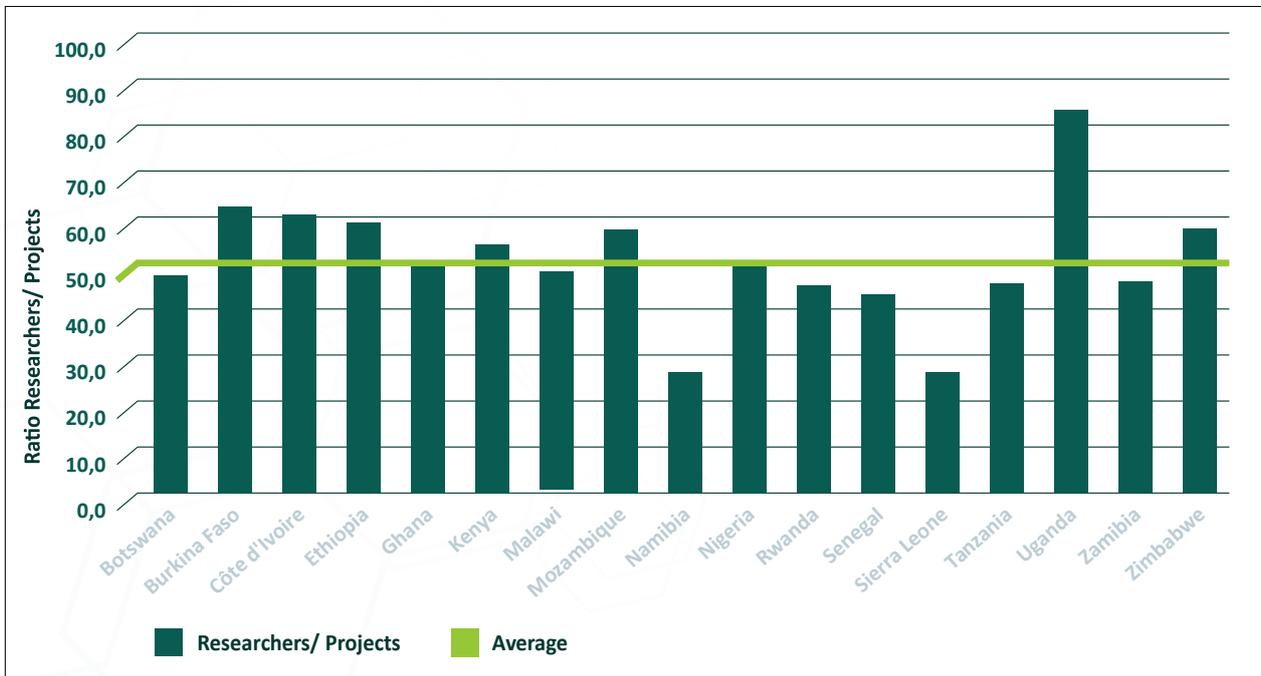


Figure 4. Researchers per project per country

3.3 Researchers' Qualifications and Gender Distribution

The qualification distribution of researchers involved in the project reveals that the majority hold a PhD (61.4%). Researchers with MSc represent 19.9%, and the ones with BSc are the lowest with 5.5%. Other qualifications¹ account for 13.2%. To understand the trend per country, the figure 5 indicates that most SGC countries have a majority of researchers holding a PhD qualification, with Namibia (100%) having the highest proportion, while Uganda (28.6%) records the lowest. For researchers with a Master's degree (MSc), Uganda (39.3%) has the highest share, whereas Côte d'Ivoire (4.0%) has the lowest. In terms of Bachelor's degree (BSc) holders, Zimbabwe (31.3%) leads, while several countries, including Burkina Faso, Côte d'Ivoire, Kenya, Nigeria, Senegal, and Tanzania, report no researchers in this category. Finally, in the 'Others' category, Mozambique (37.8%) has the highest proportion, whereas Kenya, Nigeria, and Senegal report no contributions in this group.

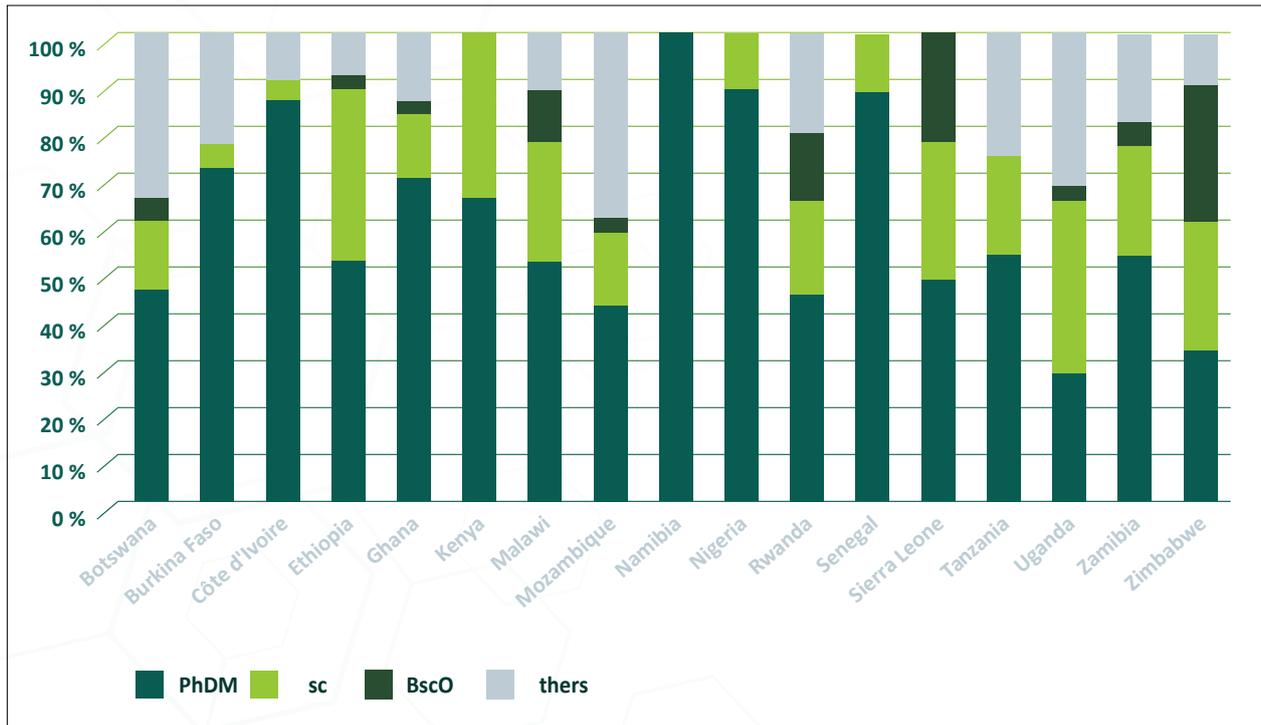


Figure 5. Researchers' qualification across SGC countries

Regarding gender distribution, research remains male-dominated, with 271 male researchers (59.8%) compared to 178 female researchers (39.3%), while 4 researchers (0.9%) indicate absence of data to disclose their gender. PhD holders show the widest gap (62.2% male vs. 37.8% female) while the MSc level is more balanced, with 47.8% female and 51.1% male researchers. The BSc and "Others" categories follow a similar trend, where male researchers remain the majority (Figure 6).

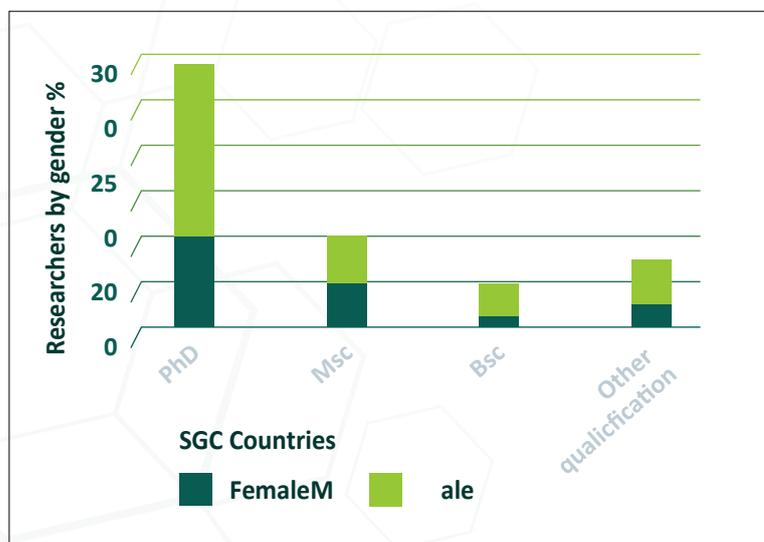


Figure 6. Distribution of researchers by gender and qualifications

¹ "Other qualifications" individuals where data is not available.

3.4 Distribution of Researchers by specialization and Gender

According to the Frascati Manual classification, there are six (6) R&D fields such as: (1) Human sciences and arts, (2) Social sciences, (3) Medical and health sciences, (4) Engineering and Technology, (5) Agricultural and veterinary sciences, and (6) Natural sciences.

The figure 7 shows the number of researchers across the different R&D fields. Natural sciences dominate the landscape, accounting for 240 researchers (53%) of the total, with females representing 90 (37.50%), males 147 (61.25%), and a small proportion of 3 (1.25%) categorized as “N/I”. Similarly, Engineering and Technology has 74 researchers (16.33%), where females make up 25 (33.78%) and males dominate with 49 (66.22%). In medical and health sciences, which represents 72 researchers (15.89%), females are 37 (51.39%) and males 35 (48.61%). Agricultural and veterinary sciences account for 48 researchers (10.60%), with females representing 18 (37.50%), males 29 (60.42%), and 1 (2.08%) in the “N/I” category. The Social

sciences field has 18 researchers (3.97%), with females comprising 8 (44.44%) and males 10 (55.56%). Finally, the human sciences and arts field is the least represented, with only 1 researcher (0.22%), entirely male.

The overall analysis shows that the proportion of female researchers is higher than the one of male researcher in the field of medical and health sciences. In the other R&D field, male researchers have the highest representation.

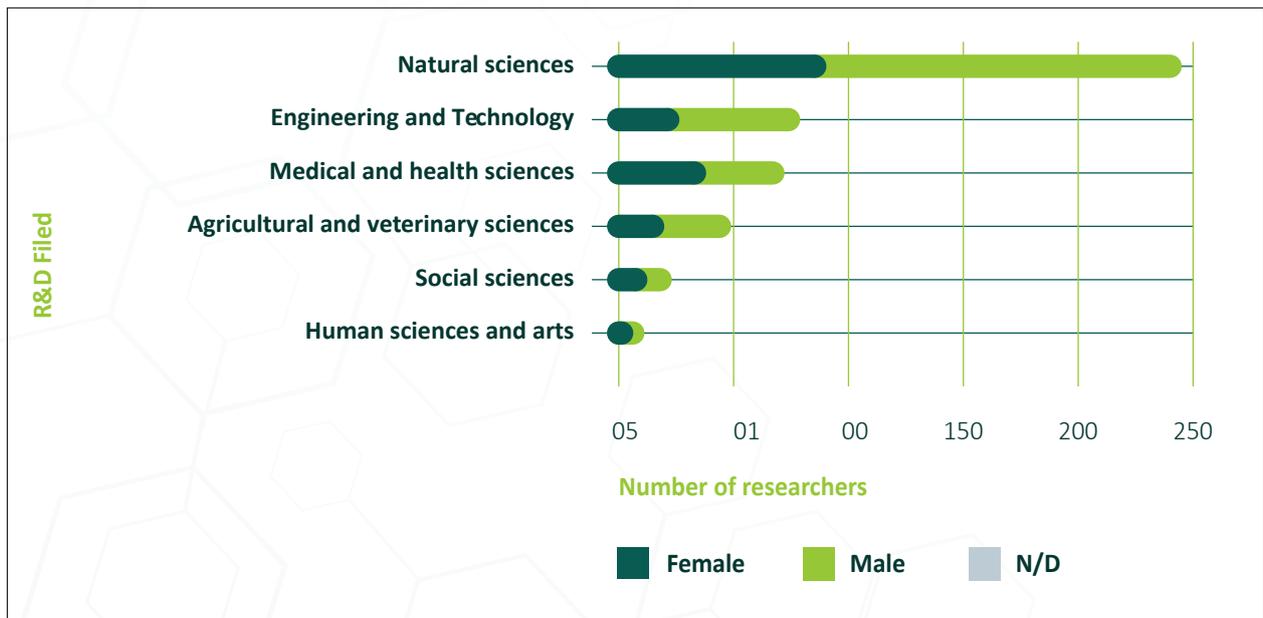


Figure 7. Distribution of researchers across R&D fields² according to gender

3.5 Researchers per R&D Fields across the SGC countries

The most represented R&D field varies significantly across the SGC countries. Figure 8 shows the share of researchers per R&D field across the 17 countries. Natural Sciences dominate research activities in Nigeria, Rwanda, Ethiopia, Ghana, Tanzania, Mozambique, Sierra Leone, Côte d’Ivoire, and Zimbabwe, where more than 46% to 100% of researchers are engaged in this

² The R&D fields are classified based on the Terms of References (TOR) of the project.

field. In the engineering and technology field, Uganda, Botswana, and Burkina Faso demonstrate a strong focus on technical advancements with 100%, 68.4%, and 45% respectively. In the medical and health sciences Côte d’Ivoire (42%), Sierra Leone (40%), Zimbabwe (37.5%) and Kenya (36.4%), take the lead. Agricultural and veterinary Sciences is the primary focus in Malawi (61.5%), Zambia (45%), and Senegal (32%). Meanwhile, Social Sciences is most prevalent in Namibia (50%), and human sciences and Arts have minimal representation, with Kenya (4.5%) being the only country reporting researchers in this field. This distribution reflects varying national priorities in research and development across the SGC countries.

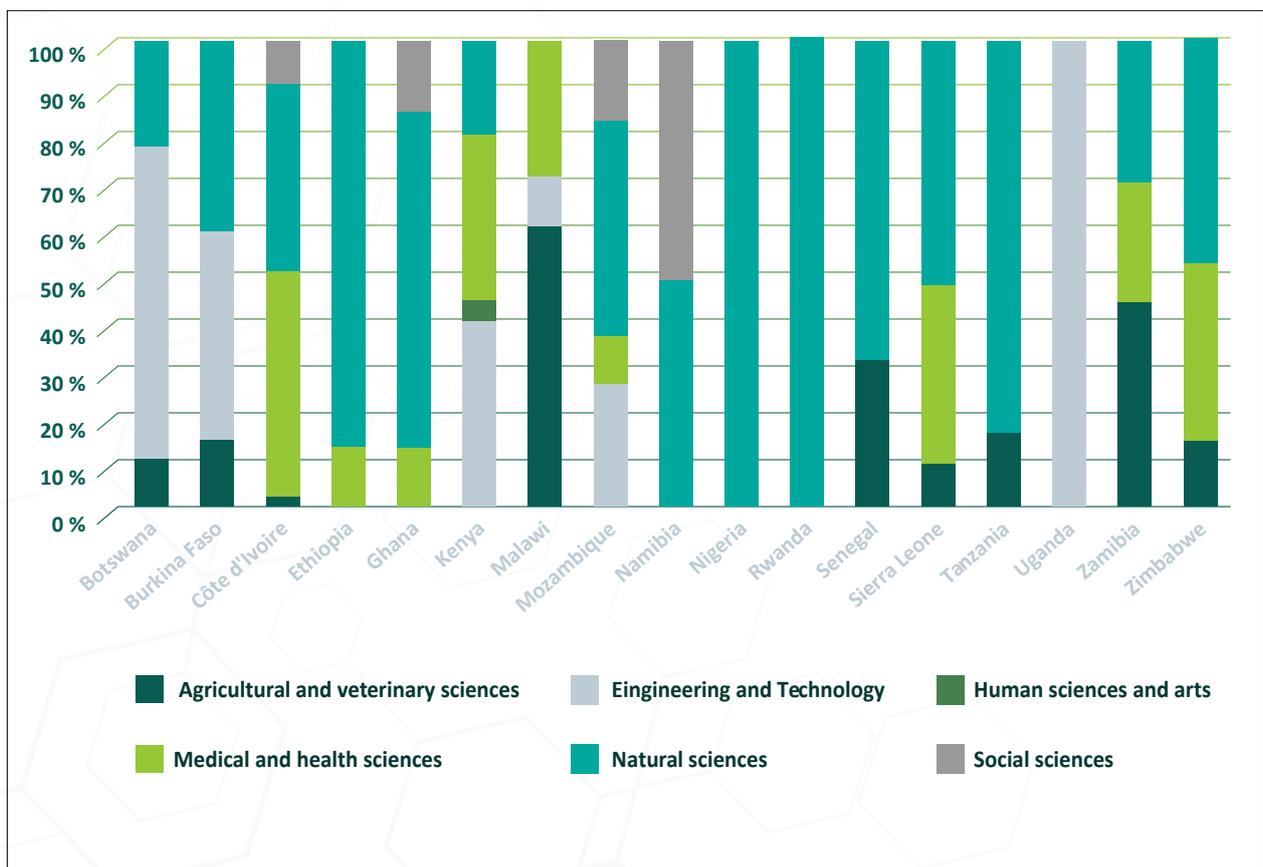


Figure 8. SGCI Country-by-country share of researchers across R&D fields

3.6 Researchers Per Thematic (project theme)

Figure 9 presents the distribution of researchers across various research thematic areas and the gender representation within each field. The thematic area with the highest number of researchers is agriculture, food security, and value addition, accounting for 225 researchers (49.7%) of the total 453, followed by emerging technologies, with 113 researchers (24.9%). This indicates that while agriculture, food security, and value addition thematic area surpasses all others, there is also a growing interest in technological advancements. The circular economy and renewable energy sector shows less engagement compared to the others, with

60 researchers (13.2%). Health research (35 researchers, 7.7%) and Science Policy (15 researchers, 3.3%) have the smallest shares of researchers.

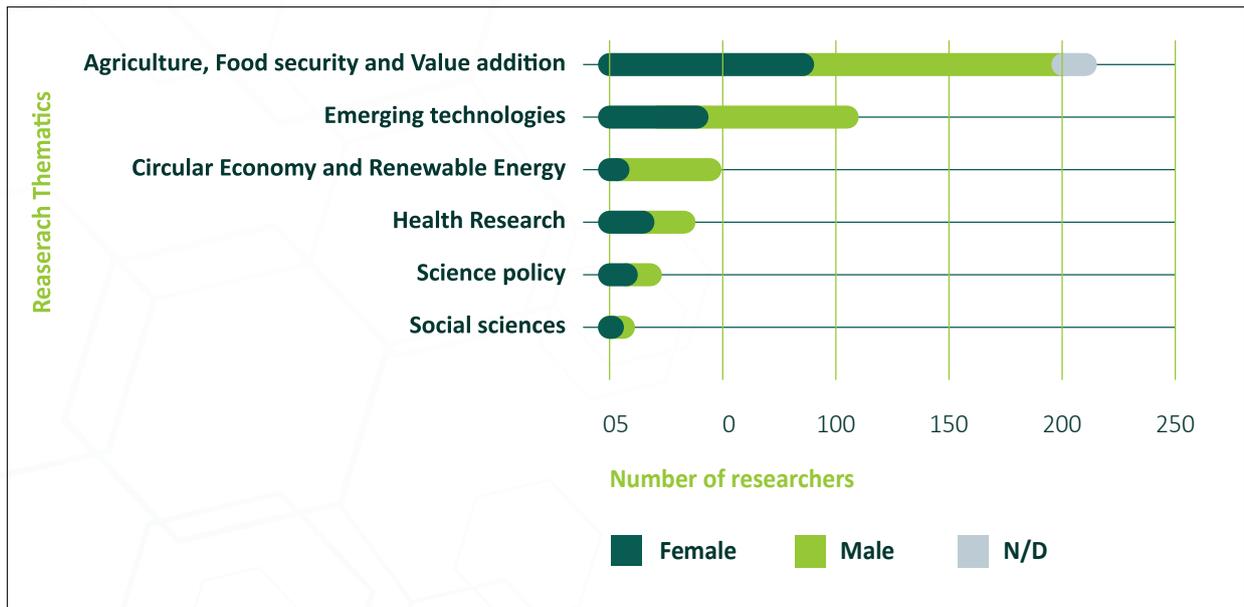


Figure 9. Distribution of researchers across project theme according to gender

From a gender perspective, some thematic areas show a more balanced representation. For instance, in health research, the gender gap is narrow, with 18 female and 17 male researchers. Science policy stands out as the only thematic area where female researchers (11) outnumber males (4). On the other hand, emerging technologies (71 male researchers, 62.8%, vs. 42 female researchers, 37.2%) and circular economy and renewable energy (45 male researchers, 75%, vs. 15 female researchers, 25%) have significantly more male than female researchers, illustrating a persistent gender imbalance in STEM fields.

3.7 Leadership Role and Gender Inclusion

Among the researchers, there are project leaders identified as Principal Investigator (PI). Figure 10 presents the gender distribution of the PI. It illustrates that out of a total of 82 PIs, 51 are male (62%), while 31 are female, representing 38%.

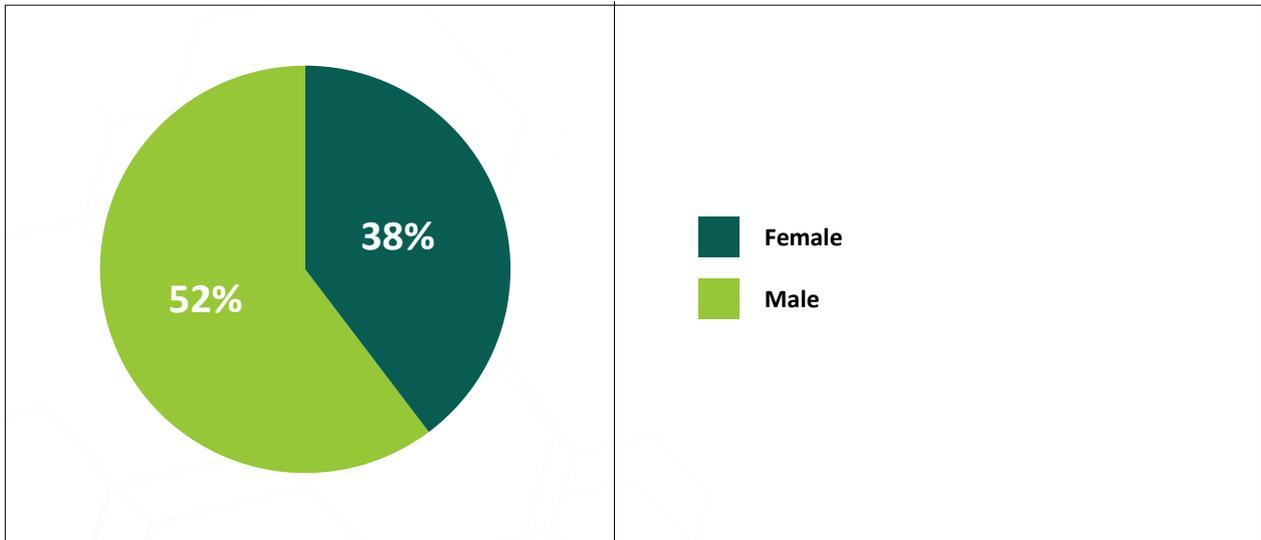


Figure 10. R&D Principal Investigator and gender

Figure 11 presents the gender distribution of Principal Investigators (PIs) across various SGC countries. The country with the highest female representation is Tanzania, where all PIs are female (100%). Other countries with high female representation include Côte d’Ivoire (86%) and Malawi (60%). In contrast, Namibia, Nigeria, Uganda, and Zimbabwe have no female PIs. Zambia is the only country with a gender-balanced distribution of PI, with an equal representation of female (50%) and male (50%) researchers.



Figure 11. Gender distribution of Principal Investigators (PIs) across the SGC countries.

4. Conclusion

The Research and Innovation Management (RIM) Project has provided a comprehensive synthesis of researcher profiles across 17 Science Granting Councils (SGCs) in sub-Saharan Africa. The findings reveal a dynamic research ecosystem characterized by strong participation in the natural sciences, agriculture, and emerging technologies, reflecting the strategic development priorities of the region. The majority of researchers hold advanced qualifications, particularly PhDs, which demonstrates the depth of academic expertise available within the continent.

Despite these strengths, the analysis highlights persistent challenges. Gender imbalances remain pronounced, especially in STEM fields and leadership positions, with male researchers continuing to dominate in both numbers and roles as Principal Investigators. Furthermore, the technician-to-researcher ratio is critically low, limiting the ability of research teams to fully leverage technical expertise and infrastructure. Disparities in researcher distribution and specialization across countries also indicate uneven capacity and investment in national research systems.

Overall, while the RIM Project underscores significant progress in strengthening research and innovation ecosystems, it also points to the need for deliberate strategies to promote inclusivity, enhance technical capacity, and ensure that research outputs are closely aligned with both national and regional development priorities.

5. Recommendations

Based on the findings of this synthesis, the following actions are recommended:

1. Develop and implement gender-responsive policies and funding mechanisms that increase female participation in STEM fields and leadership roles.
2. Establish mentorship and capacity-building programs targeting early-career female researchers to foster future leaders.
3. Invest in the recruitment and training of technicians and support staff to address the low technician-to-researcher ratio.
4. Provide targeted training in research management, monitoring, and dissemination to strengthen institutional capacities.
5. Encourage diversification of research funding to strengthen underrepresented fields such as social sciences and humanities, which are essential for inclusive and sustainable development.
6. Support interdisciplinary research initiatives that bridge natural sciences, social sciences, and policy studies.
7. Establish leadership training and development pathways for researchers, with particular emphasis on supporting women and early-career scientists.
8. Encourage equitable representation in Principal Investigator roles through institutional and national policies.
9. Support Councils to design funding calls and programs that directly address critical national challenges such as food security, renewable energy, and health.
10. Facilitate cross-country collaboration and exchange programs to address disparities in researcher distribution and specialization.
11. Establish regional platforms for data sharing, best practices, and dissemination of research outcomes.

African Centre for Technology Studies

2nd Floor, Konza Complex

Nairobi-Mombasa Road

P.O. Box 45917 - 00100

Nairobi, Kenya.

Email: info@acts-net.org

Tel: +254-710 607 210