ESSA
Education Sub Saharan Africa

Policy Brief

Closing the Gap: Addressing Faculty Shortages in Rwandan Higher Education Institutions

September 2024/DAF-EAC- PB-003

1. Introduction

This Policy Brief is based on the comprehensive Demographics of African Faculty (DAF) in the East African Community (EAC) study that was conducted in Rwanda and five other EAC partner states, specifically Kenya, Burundi, South Sudan, Tanzania, and Uganda, from 2021 to 2023. The study, undertaken by a consortium comprising the Inter-University Council for East Africa (IUCEA), Education Sub Saharan Africa (ESSA), Association of African Universities (AAU), and the Population Reference Bureau (PRB), is the first to systematically document the status of higher education faculty in the EAC, after a prior examination of DAF in Ghana. The rationale for the DAF-EAC study provides a comprehensive analysis of the state of higher education faculty in the six EAC partner states and forecast demand through 2030.

The primary objectives of the study were to:

1. Conduct an extensive desk literature review and collect data on the higher education policy landscape and faculty status at both national and institutional levels.
2. Use the DAF model to forecast future faculty supply and demand based on gender, discipline, policy norms[1], and turnover rates.

The DAF-EAC report provides accurate and consolidated data on faculty in higher education. This data is crucial for making effective policy decisions, planning, and securing the investment required to enhance the quality of education in East Africa. The report's target audience encompasses education sector leaders in government entities, private sector organisations, civil society organisations, and international development institutions.

2. Tertiary education system in Rwanda

Universities and colleges play a pivotal role in shaping Rwanda's future. These institutions equip young people with the skills to navigate the rapidly evolving economic landscape. They serve as vital training grounds for professionals, including educators, doctors, engineers, economists, and legal practitioners. Additionally, they function as hubs for knowledge creation and dissemination.

Higher education in Rwanda underwent significant transformation since 1994. The sector has witnessed considerable expansion through strategic investments by the government and development partners. This includes the growth of the National University of Rwanda (now the University of Rwanda), comprising six colleges distributed across 14 campuses. These colleges specialise in distinct academic disciplines: College of Arts and Social Sciences (CASS), College of Agriculture and Veterinary Medicine (CAVM), College of Business and Economics (CBE), College of Education (CE), College of Science and Technology (CST), and College of Medicine and Health Sciences (CMHS). Notably, this period also saw a surge in private higher education institutions, further enriching the landscape. However, despite this expansion, the tertiary education sector in Rwanda remains relatively small. Despite steady growth over the years, the number of higher education institutions (HEIs) in Rwanda slightly dropped, decreasing from 54 to 40 between the academic years 2016/2017 and 2018, as detailed in the table below.

[1] Policy Norms are set specific targets or limitations related to numbers, such as student-teacher ratios, class sizes, or minimum qualifications for educators.

Table 1: Higher education institutions in Rwanda

Discipline	2016/2017	2017/18	2018/19	2020/21
HEIs				
Public	10	3	3	**3**
Private	44	37	37	**35**
Total	54	40	40	**38**
Polytechnics				
Public	8	1	1	**1**
Private	9	9	9	**7**
Total	17	10	10	**8**
General HEIs				
Public	2	2	2	**2**
Private	35	28	28	**28**
Total	37	30	30	**30**

Data source: DAF-EAC Report (2023)

3. Methodology

The study adopted a mixed-methods approach that involved data collection at various national offices, including the Ministry of Education, the High Education Council, and the University of Rwanda. Additionally, desktop reviews were conducted to gather background information on university education practices in Rwanda, encompassing policy norms, academic staff mobility trends, and student enrolment statistics. Key informant interviews were also conducted with individuals within these institutions, enriching the quantitative data with valuable qualitative insights. Furthermore, the study employed the DAF model to forecast future faculty supply and demand within the Rwandan university education system. The DAF model is an MS Excel-based quantitative model that projects faculty needed to meet policy norms using data on student enrolment in the current period, projected student enrolment, number of faculty in the current period, faculty exit rates and policy norms.

4. Key Findings of the DAF-EAC Assessment for Rwanda

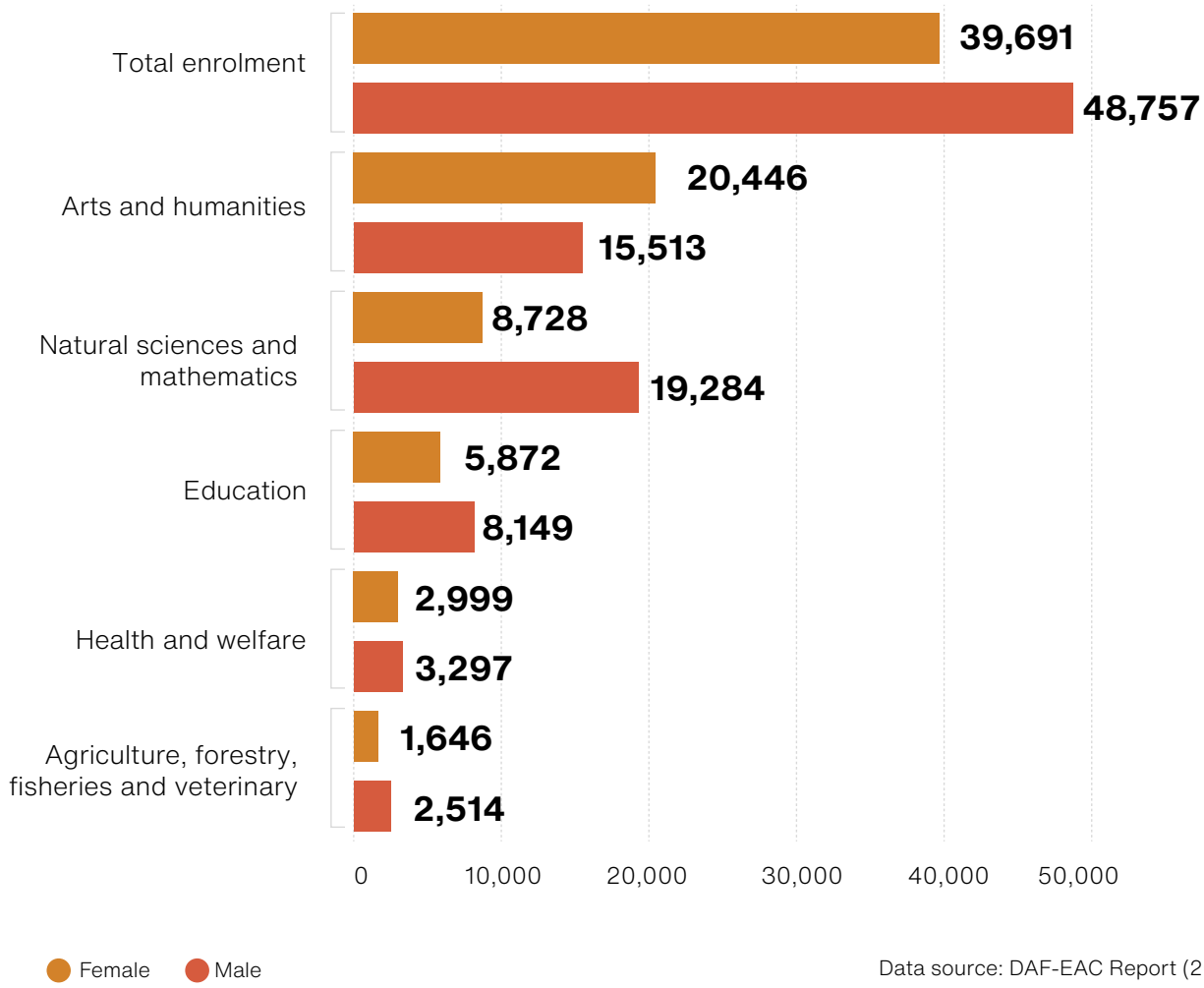
4.1 Policy Norms in Higher Education

The national higher education system lacks policy norms for student-teacher ratios and faculty gender representation. However, minimum qualifications for faculty appointments and promotions have been established. Generally, a PhD or professional doctorate is required for all teaching positions, except for tutorial assistants. However, entry-level requirements beyond doctoral degrees vary across universities, including the number of publications in peer-reviewed journals, conference participation, years of experience, and experience supervising graduate students. While the University of Rwanda has a Gender Policy, it does not explicitly outline targets for achieving a balanced gender composition within the faculty.

4.2 Student Enrolment

The decline in the number of higher education institutions between 2016/2017 and 2020/2021 (See Table 1) mirrors a consistent decrease in overall student enrolment (See Figure 1). This enrolment dropped from about 91,000 students in 2016/2017 to roughly 88,400 students in 2020/2021, representing a decrease of approximately 2,600 students. However, there are some positive trends despite this decline. While there is a marginal decline in enrolment in arts and humanities (falling from 49% of total enrolments in 2016/2017 to 41% in 2020/2021), there has been an increase in enrolment in education (from 12% to 16% of total enrolments) and natural sciences and mathematics related programmes (from 27% to 32% of total enrolments), reflecting a shift to science, technology engineering and mathematics related training. Females are most under-represented in science, technology, engineering and mathematics (STEM) courses, with a female enrolment rate of 31% of total STEM students in the 2020/2021 academic year. This highlights a need for targeted initiatives to encourage female participation in STEM fields.

Figure 1: Student Enrolments by gender and discipline (2020-2021)



Data source: DAF-EAC Report (2023)

4.3 Faculty Size and Distribution

Academic staff in the higher education system has grown steadily, increasing from 3,324 members in 2016/17 to 4,301 members in 2020/21. However, asignificant gender disparity persists, with males comprising asubstantial majority (81.2%) compared to females (18.8%) in 2020/21. Public institutions also hold aslight edge in faculty numbers (2,180) compared to private institutions (2,121) during the 2020/21 academic year.

Faculty qualifications and trends revealed that Master's degrees remain the most common qualification among faculty (2,113 in 2020/21), followed by PhDs (976) and Bachelor's degrees (871). Encouragingly, the number of PhD holders exhibited aconsistent upward trend, from 17% in 2016/17 to 23% of the national faculty in 2020/21.

The University of Rwanda employed 1,232 faculty members in 2020/21, mirroring the national gender disparity. Interestingly, their faculty distribution reveals aconcentration in health and welfare (202) and Engineering, Manufacturing, and construction (143) disciplines.

4.4 Reasons for Student Attrition and Faculty Turnover in Higher Education Institutions

Understanding student and faculty mobility factors is crucial for developing effective retention strategies in Rwandan higher education institutions. Incentives play a significant role in attracting both students and faculty to Rwandan universities. University leaders highlighted that faculty are particularly drawn to opportunities for professional development, competitive salaries, comprehensive welfare packages, additional allowances, access to quality infrastructure, and scholarship opportunities for advanced study. Financial constraints remain a significant driver of student attrition, alongside poor academic performance, medical challenges, and disciplinary issues. On the other hand, faculty members leave academia for diverse reasons, including seeking career advancement opportunities, dissatisfaction with salary levels, retirement, promotion to government positions, and higher-paying opportunities offered by national and international non-governmental organisations.

4.5 Performance against Benchmarks: STRs and Faculty Gender Ratios

Rwanda's higher education system lacks established national student-teacher ratios (STRs) benchmarks. However, a comparison with benchmarks from Kenya shows areas for improvement. Based on data for the academic year 2020/21, STRs within Rwandan institutions vary significantly by discipline, ranging from a high of 42:1 in arts and humanities to a low of 5:1 in health and welfare (see Table 2). While most disciplines exceed the benchmark STR, the most significant disparity lies in arts and humanities (42:1 vs 18:1). On a positive note, both health and welfare (5:1) and agriculture, forestry, fisheries, and veterinary (10:1) meet or exceed their respective benchmarks of 7:1 and 10:1. These findings underscore the need for strategic interventions to improve STRs in disciplines like arts and humanities, education, and natural sciences. Further analysis is crucial to understand the underlying factors contributing to these variations. Developing Rwanda-specific STR benchmarks aligning with national goals and resource realities could also be valuable.

Table 2: Policy Norms versus Student-teacher ratio (2021)

Discipline	Student Enrolment	Number of Faculty	Actual STR	Policy Norm (CUE 2014*)
Arts and humanities [a]	35,959	852	42:1	**18:1**
Education	14,021	527	27:1	**18:1**
Health and welfare	6,296	1,205	5:1	**7:1**
Natural sciences and mathematics [b]	28,012	1,281	22:1	**10:1**
Agriculture, forestry, fisheries and veterinary	4,160	436	10:1	**10:1**

*Due to absence of STR policy norms in Burundi, policy norms were borrowed from the Kenyan Commission for University Education's University Standards and Guidelines (2014)

[a] Arts and humanities – comprise the arts and humanities, social sciences, journalism and information, business administration, law and services

[b] Natural sciences and mathematics comprise natural sciences, mathematics and statistics, engineering, manufacturing, construction and ICTs

Data source: DAF-EAC Report (2023)

Similarly, the national ratio of 4:1 (male: female) observed in the academic year 2020/21 falls far short of the benchmark 2:1 ratio. This significant gap highlights the urgent need for initiatives encouraging female participation in faculty positions across all disciplines. Targeted efforts to attract and retain qualified female academics will be essential for a more balanced and equitable faculty.

4.6 DAF Model Projections[2]

4.6.1 Projected faculty needed to meet STR goals in the baseline year (2021)

The DAF analysis used student enrolment and faculty data, disaggregated by discipline, to estimate faculty demand for and supply in the Rwandan higher education sector. Using 2021 as the baseline year, the analysis showed a significant discrepancy between actual STRs across all disciplines and benchmark policy norms. The DAF projections indicated a shortfall of about 2,900 faculty members needed to achieve the benchmark STR policy norms in the baseline year (see Table 3). This represents a gap of roughly 68% compared to the actual number of faculty (4,301) recorded in 2021. The analysis further highlights the distribution of the required 2,900 additional faculty members across disciplines.

To achieve policy-mandated STRs in 2021, 52% of this additional faculty would have been needed in natural sciences and mathematics. Similarly, 39% were necessary in arts and humanities, while the education category would have required 9%.

[2] Projections are based on existing benchmark norms adopted from Kenya as per the Commission of University Education (2014) University Standards and Guidelines

Table 3: Additional faculty needed in 2021 (Baseline year)

Description	Faculty needed
Panel A: Total	
Additional faculty needed to meet STR goals	2,918
Additional faculty needed to replace the ones projected to exit during the year*	672
Additional faculty needed to account for overestimation**	215
Total	**3,805**
Panel B: Breakdown of the additional faculty needed to meet STR goals by discipline	
Arts and humanities [a]	1,146
Education	252
Health and welfare	0 (-306)
Natural sciences and mathematics [b]	1,520
Agriculture, forestry, fisheries and veterinary	0 (-20)
Total	**2,918**

Notes: *Assumption: 5% of professors and 10% of other teaching staff exit each academic year and need replacement; **Overestimation of faculty can result from having faculty who are on the payroll of universities but are absent for some reason. Assumption: the faculty is overestimated by 5%.; A Negative sign (-) in the table implies the policy norm has been met and exceeded

[a] Arts and humanities – comprise the arts and humanities, social sciences, journalism and information, business administration, law and services

[b] Natural sciences and mathematics comprise natural sciences, mathematics and statistics, engineering, manufacturing, construction and ICTs

Source: DAF-EAC Report (2023), DAF Model results

4.6.2 Projected faculty needed to meet growth in student enrolment by 2030

The analysis shows that nearly 1,120 additional faculty members will be required by 2030 to accommodate projected increases in student enrolment driven by population growth (see Table 4). The distribution of these additional faculty across disciplines shows that the largest proportion (30%) will be needed in natural sciences and mathematics, followed by health and welfare (28%) and the arts and humanities (20%).

Table 4: Additional Faculty Needed by 2030

Description	Faculty needed
Panel A: Total	
a) Additional faculty needed to meet the increased enrolment due to population growth*	1,118
b) Additional faculty needed to meet STR goals, considering population growth	3,676
c) Additional faculty needed to replace the ones projected to exit during the year**	7,564
d) Additional faculty needed to account for overestimation***	215
Total	**12,573**
Panel B: Breakdown of the additional faculty needed to meet the increased enrolment due to population growth by discipline	
Arts and humanities [a]	221
Education	137
Health and welfare	313
Natural sciences and mathematics [b]	333
Agriculture, forestry, fisheries and veterinary	113
Total	**1,118**
Panel C: Breakdown of the additional faculty needed to meet STR goals by discipline, given population growth	
Arts and humanities [a]	1,443
Education	317
Health and welfare	0(-385)
Natural sciences and mathematics [b]	1,915
Agriculture, forestry, fisheries and veterinary	0(-25)
Total	**3,676**

Note: * Assumption: Student enrolment will grow annually at the same rate as the population age group 18 – 21 projected by the UNDP; **The policy norms are adopted from Kenya; ***Assumption: 5% of professors and 10% of academic teaching staff exit each academic year and need to be replaced; ****Assumption: The faculty is overestimated by 5%.

[a] Arts and humanities – comprise the arts and humanities, social sciences, journalism and information, business administration, law and services

[b] Natural sciences and mathematics comprise natural sciences, mathematics and statistics, engineering, manufacturing, construction and ICTs

Source: DAF-EAC Report (2023), DAF Model results

4.6.3 Projected faculty needed to meet STR goals by 2030, given population growth

Focusing on achieving established STR goals by 2030, given population growth, the analysis identified the need for about 3,700 additional faculty members. This significant figure suggests that Rwanda would need almost double its baseline year faculty numbers to meet these goals. The distribution of required additional faculty by discipline to bridge the identified faculty shortfalls by 2030 shows that natural sciences and mathematics require the highest proportion (52%), followed by the arts and humanities (39%) and education (9%). Health and welfare and agriculture, forestry, fisheries, and veterinary categories already meet the thresholds, and this needs to be sustained.

4.6.4 Addressing faculty gender disparity

The DAF model projects a need for about 2,700 additional female faculty members by 2030 to achieve gender parity in faculty ranks. This represents a fourfold increase from the current baseline of 809 female faculty.

5. Conclusion and policy recommendations

The study confirmed the existence of higher education policies addressing faculty ranking and qualification; however, policy norms on growth in student enrolment, distributions of students across disciplines, faculty gender ratio, and STRs by discipline were absent. For DAF analysis, Kenya-based norms on faculty gender ratio and STRs were used as benchmarks. While the national faculty gender ratio aligns with benchmark norms, a significant shortfall exists across disciplines in meeting STRs. Projections indicate the need for about 3,700 additional faculty members are required by 2030 to achieve these policy-mandated STRs. Furthermore, anticipated student enrolment growth necessitates a further 1,100 faculty members, while 7,500 new hires will be needed to replace faculty members who exit employment. Overall, Rwandan HEIs require over 12,500 additional faculty members by 2030, of which about 2,700 should be female. To address this critical faculty shortage and ensure a well-resourced higher education system, the following recommendations are proposed:

a. **Develop National Guidelines:** Establish clear student-teacher and faculty gender ratios guidelines. This will ensure consistency across institutions, promote a more level playing field, and ensure educational quality.

b. **Promote Gender Parity:** Implement targeted initiatives to attract and retain qualified female academics. This can involve scholarships, mentorship programmes, and addressing potential workplace biases.

c. **Promote Faculty Development:** To enhance faculty satisfaction and retention, prioritise faculty development opportunities, including professional training and research support. In addition, competitive salaries and comprehensive benefits packages should be provided to incentivise faculty to remain in academia.

d. **Institutionalise Data Management:** Higher Education Institutions in Rwanda need to maintain comprehensive data on students and faculty categorised by factors like discipline, gender, rank, etc. This data is crucial for effective policymaking. Invest in enhancing data management capacity within HEIs to ensure accurate and reliable data collection and analysis.

e. **Targeted Improvement:** Identify and prioritise disciplines like education, the arts and humanities, natural sciences and mathematics where student-teacher ratios need improvement to achieve national policy goals.

6. Next steps

The findings of the DAF-EAC study underscore the critical need for a robust and sustained approach to addressing the faculty shortage in universities in Rwanda. To ensure the ongoing relevance and effectiveness of policy interventions, it is imperative to regularly update and refine the data-driven insights generated by this study. A key next step involves undertaking new DAF projections utilising the most recent available data. Policymakers can understand evolving faculty demand and supply trends by periodically recalibrating the model. This will enable more precise forecasting of future faculty needs, facilitating proactive planning and resource allocation.

Acknowledgement

This Policy Brief was prepared by Mr. Daniel Omanyo (ESSA's Research Policy Manager for East Africa). Dr. Pauline Essah (Director of Research and Programmes at ESSA) provided oversight of the process, guidance, and review of the brief. The brief benefited from peer reviews from consortium members, including Dr. Toshiko Kaneda (PRB), Dr. Salome Guchu (IUCEA), Ms. Felicia Kuagbedzi (AAU) and Ms. Joan Iyoha (AAU). Dr. Lucy Heady (Chief Executive Officer of ESSA) also provided invaluable input in developing this brief. Editorial support was provided by Ms. Izel Kipruto (Head of Communications, ESSA), with design expertise from Mr. Daniel Kamau. The preparation of the document was made possible by funding from Carnegie Corporation of New York (grant number G-22-59701).

Suggested Citation

Omanyo, D., Essah, P. (2024). Closing the Gap: Addressing Faculty Shortages in Rwandan Higer Education Institutions. ESSA Policy Brief. September 2024/DAF-EAC- PB-003.

The brief is based on the comprehensive "Demographics of African Faculty in The East African Community" report produced as a collaborative effort involving the Inter-University Council for East Africa, Education Sub Saharan Africa, the Association of African Universities, and the Population Reference Bureau (Carnegie Corporation of New York grant number G-21-58066). Special recognition is given to Mr. Kabano Ignace and Mr. Gasafari Mpambuka Willy, who conducted the research in Rwanda, processed the data, and documented the findings in the original report.

ESSA
Education Sub Saharan Africa

ESSA
3rd Floor, Chancery House
St Nicholas Way
Sutton
SM1 1JB, UK

info@essa-africa.org
@ESSA_Africa
@essa1
www.essa-africa.org