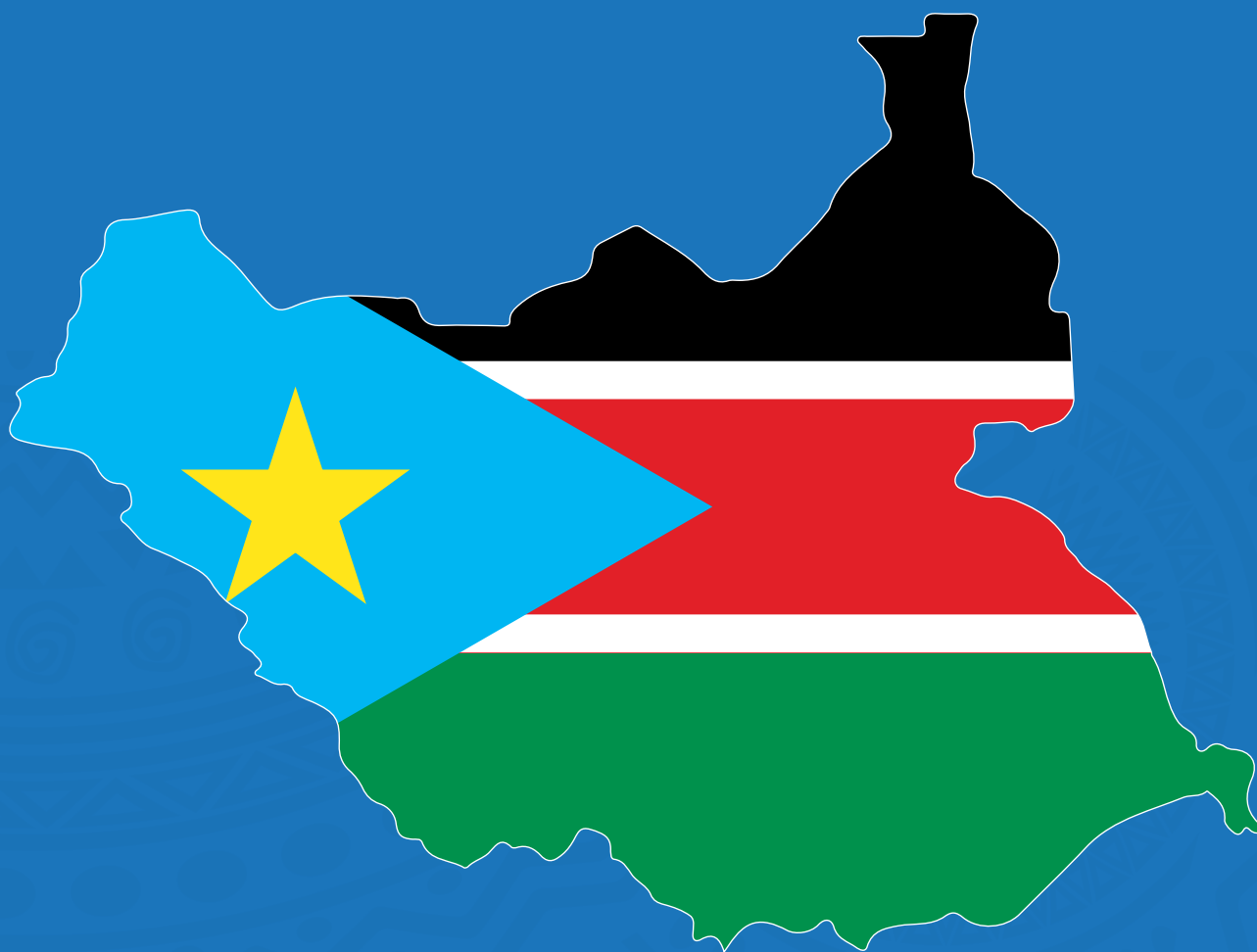![ESSA – Education Sub Saharan Africa logo]

Policy Brief

Data-Driven Decisions: Using Evidence to Improve South Sudan's Higher Education System

1. Introduction

This Policy Brief is based on the Demographics of African Faculty in the East African Community (DAF-EAC) study that was conducted in South Sudan and five other EAC partner states, specifically Burundi, Kenya, Rwanda, Tanzania, and Uganda, between 2021 and 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, following a prior examination of the DAF in Ghana. 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 gather data on the higher education policy landscape and faculty status at both national and institutional levels.

2. Utilise 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. Higher Education in South Sudan

South Sudan, which attained its independence from Sudan in July 2011, has one of the smallest higher education systems in sub-Saharan Africa. Since 2011, South Sudan has seen growth, with the number of universities increasing from nine (five public, four private) in 2011 to 11 (five public, six private) by the end of 2021. Additionally, the country has 20 technical and vocational education and training (TVET) institutions.

Public universities remain the dominant force, enrolling approximately 83% of students (27,127 in 2021) compared to 15% in private universities (5,130) and a small but growing 2% in TVET programmes (around 500). The University of Juba is the largest and oldest university, established in 1975. It started its operations with only four colleges. In 2021, the university had 12 colleges, four specialised centres, and a graduate school. Table 1 reveals a wide range in student enrolment and faculty sizes across South Sudan's public and private universities. Among public universities, the University of Juba dominates with the highest enrolment (18,000 students) and faculty (813). This contrasts sharply with the University of Rumbek, which has the lowest enrolment (731) and faculty numbers (268). The private sector also shows significant disparity. Stafford International University leads in student enrolment (2,684) and faculty size (210), while South University for Medicine, Science and Technology has the fewest students (30) and faculty (13).

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[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: Student enrolment and faculty distribution across public universities

Universities	Student Enrolment	Faculty
Public Universities		
University of Juba	18,000	813
University of Upper Nile	3,772	631
University of Bahr El Ghazal	2,624	515
University of Rumbek	731	268
University of Dr. John Garang	2,000	393
Sub-total	27,127	2,620
Private Universities		
Catholic University of South Sudan	1,397	100
St. Mary's College	189	50
Stafford International University	2,684	210
Star International University	598	60
Mary Help College	232	30
South University for Machine, Science and Technology	30	13
Sub-total	5,130	463
Total	**32,257**	**3,083**

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 for Higher Education, Science and Technology (MoHEST), UNESCO and the University of Juba. Additionally, desktop reviews were conducted to gather background information on university education practices in South Sudan, 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 Demographics of African Faculty (DAF) model to forecast future faculty supply and demand within the South Sudan university education system. The DAF model is an MS Excel-based quantitative model that projects faculty needed to meet policy norms using data on various indicators, including current period student enrolment, projected student enrolment, number of faculty in the current period, faculty exit rates and policy norms. Due to data challenges across universities, the analysis focussed on the University of Juba, which had adequate data for DAF analysis.

4. Key Findings of the Assessment of Faculty Demographics

4.1 Policy norms

The oldest and largest university, the University of Juba, has recruitment and promotion principles that outline the criteria for appointments and promotions of academic staff by ranking. This framework defines the procedures for recruitment and establishes a recruitment committee and the committee's terms of reference. Further, the framework defines criteria for recruitment and the minimum requirements that candidates must meet. For example, the candidate must be a South Sudanese citizen, be at least 18 years of age and not more than 53 years old, have no criminal record, have not been dismissed from a public institution for disciplinary action, and meet the criteria for the post applied. In descending order, the faculty rank comprises professor, associate professor, assistant professor, lecturer, and assistant lecturer. A holder of a master's degree or equivalent may be appointed in the status of an assistant lecturer, and a holder of a PhD or its equivalent may be appointed in the status of an Assistant Professor and above, depending on other qualifications such as years of experience, satisfactory references, and publications in refereed journals.

In addition to the faculty recruitment and promotion principles, the University of Juba needs essential policy norms, such as student-teacher ratio and faculty gender ratio. However, there are no such norms available.
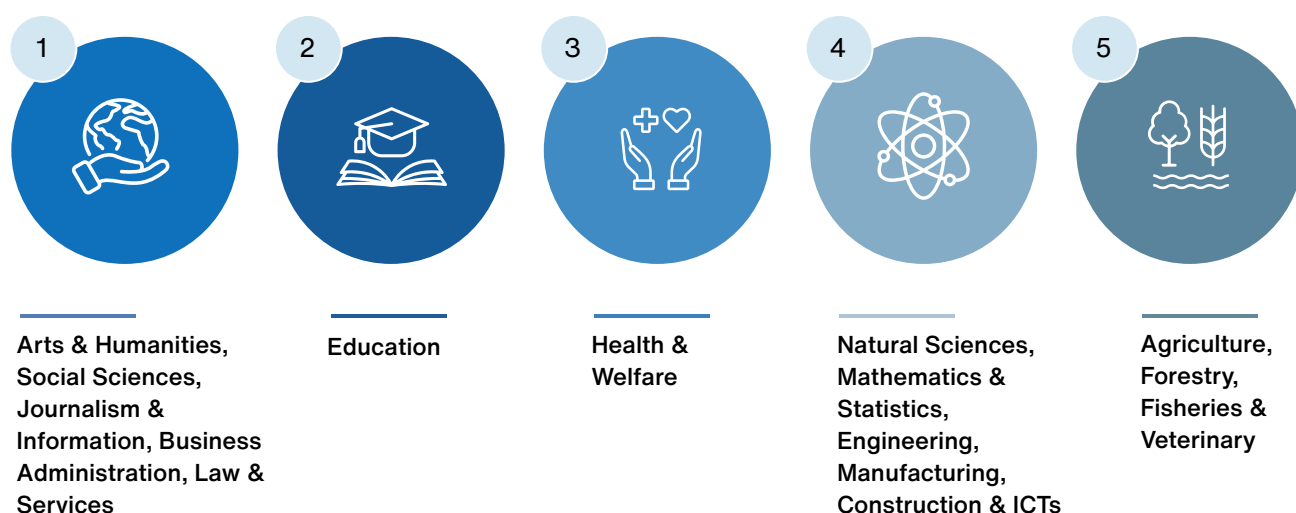
4.2 Faculty distribution by rank, gender, and student-teacher ratios for the University of Juba

There was a concentration of faculty in the lower ranks, with assistant lecturers (116) significantly outnumbering professors (9) during the 2020-2021 academic year, which points to a potential lack of career progression at the university. A significant gender imbalance among faculty was also observed, with only 40 female faculty members out of 360, yielding a 1:8 ratio. Notably, some disciplines, such as arts and humanities, law, engineering, and architecture, had no female faculty. This implies the need for policies that encourage and support the recruitment and retention of female faculty across the university.

During the academic year 2020-2021, the university had approximately 4,767 students enrolled in various disciplines. This yielded an overall student-teacher ratio (STR) of 1:13, reflecting the average workload for faculty. However, there are significant variations between disciplines. Natural Resources and Environmental Sciences have a lower STR of 1:8. In contrast, law has a much higher STR of 1:30. This imbalance could lead to overworked lecturers in law and potentially impact teaching quality.

4.3 DAF model results and projections[2]

This section presents the results and projections obtained through the DAF model. The analysis focussed on the University of Juba due to its position as the largest and most significant contributor to South Sudan's higher education landscape, enrolling 66% of national students in the academic year 2020-2021. The analysis employed five discipline categories derived from UNESCO's International Standard Classification of Education Fields:

1	2	3	4	5
Arts & Humanities, Social Sciences, Journalism & Information, Business Administration, Law & Services	Education	Health & Welfare	Natural Sciences, Mathematics & Statistics, Engineering, Manufacturing, Construction & ICTs	Agriculture, Forestry, Fisheries & Veterinary

Given the absence of specific South Sudanese policy norms, the analysis adopted Kenyan benchmarks for STRs, and faculty gender ratios established by the Kenya Commission for University Education. These benchmarks are a reference point for evaluating potential outcomes under various policy scenarios.

4.3.1 Student-Teacher-Ratios

Table 2 presents the University of Juba's actual STRs by discipline in 2021 (baseline year) and the corresponding policy norms adopted from Kenya. STRs are calculated by dividing student enrolment in each discipline by the corresponding faculty size. The STRs explain more about the quality of education, where the lower the STRs, the higher the quality of education in that specific discipline. Two discipline categories, agriculture, forestry, fisheries, and veterinary and education, had STRs lower than their policy norms, thus meeting the STR goals in the baseline year. All other disciplines had STRs much higher than their respective policy goals. High STRs translate into an increased workload for faculty, limiting opportunities for personalised student attention. Furthermore, large class sizes and overcrowding strain resource allocation, impacting the educational experience for students.

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[2] Projections are based on policy norms borrowed from the Kenyan Commission for University Education's University Standards and Guidelines (2014).

Table 2: Student-teacher ratio in the University of Juba in 2021 (baseline year)

Discipline	Student Enrolment	Number of Faculty	Actual STR	Policy Norm (CUE 2014*)
Arts and humanities [a]	2,923	122	24:1	**18:1**
Education	656	64	10:1	**18:1**
Health and welfare	305	34	9:1	**7:1**
Natural sciences and mathematics [b]	718	68	11:1	**10:1**
Agriculture, forestry, fisheries and veterinary	596	72	8:1	**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)

Gender disparity was wider during the baseline year (see Table 3). The faculty gender ratio was eight male faculty members to one female, as opposed to the policy goal of no more than two male faculty members to one female member.

Table 3: Male-female ratio in the University of Juba in 2021 (baseline year)

Male Faculty	Female Faculty	Actual Male-Female Ratio	Policy Norm for Male-Female Ratio
320	40	8:1	2:1

Data source: DAF-EAC Report (2023)

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

The DAF analysis employed student enrolment and faculty data from the University of Juba, disaggregated by discipline, to identify faculty challenges in South Sudan's higher education. Using 2021 as the baseline year, the DAF model projected that 54 faculty members were needed to achieve the STR policy norms in 2021 (see Table 4).

The analysis further highlights how the 54 additional faculty members required would be distributed across disciplines. To achieve policy-mandated STRs in 2021, about 74% of this additional faculty would have been needed in the arts and humanities category. Similarly, 19% were required in the health and welfare category, while 7% were necessary in the natural sciences and mathematics category.

Table 4: Additional faculty needed by the University of Juba in 2021 (Baseline year)

Description	Faculty needed
Panel A: Total	
Additional faculty needed to meet STR goals*	54
Additional faculty needed to replace the ones projected to exit during the year**	36
Additional faculty needed to account for overestimation***	18
Total	**108**

Description	Faculty needed
Panel B: Breakdown of the additional faculty needed to meet STR goals by discipline	
Arts and humanities [a]	40
Education	0[-28]
Health and welfare	10
Natural sciences and mathematics [b]	4
Agriculture, forestry, fisheries and veterinary	0[-12]
Total	**54**

Notes: *STR policy norms are adopted from Kenya. **Assumption: 5% of professors and 10% of other teaching staff exit each academic year and need a replacement; ***Overestimation of faculty can result from having faculty who are on the payroll but are absent from the universities for some reason, e.g., faculty may lecture in private universities and have a post in public universities. The assumption is that 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

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

The analysis reveals that an additional 259 faculty members will be required by 2030 to accommodate projected increases in student enrolment driven by population growth (see Table 5). In terms of the distribution of these additional faculty members across disciplines, 34% will be needed in the arts and humanities category, followed by the agriculture, forestry, fisheries, and veterinary category (20%) and the natural sciences and mathematics category (19%).

Table 5: Additional Faculty Needed by the University of Juba by 2030

Description	Faculty needed
Panel A: Total	
a) Additional faculty needed to meet the increased enrolment due to population growth**	259
b) Additional faculty needed to meet STR goals, considering population growth*	92
c) Additional faculty needed to replace the ones projected to exit during the year***	479
d) Additional faculty needed to account for overestimation****	18
Total	**847**
Panel B: Breakdown of the additional faculty needed to meet the increased enrolment due to population growth by discipline	
Arts and humanities [a]	88
Education	46
Health and welfare	24
Natural sciences and mathematics [b]	49
Agriculture. Forestry, fisheries and veterinary	52
Total	**259**
Panel C: Breakdown of the additional faculty needed to meet STR goals by discipline, given population growth	
Arts and humanities [a]	69
Education	0[-47]
Health and welfare	16
Natural sciences and mathematics [b]	7
Agriculture. Forestry, fisheries and veterinary	0[-21]
Total	**92**

Notes: *STR policy norms are adopted from Kenya. **Assumption: student enrolment grows annually at the rate of the population of age 18–21 projected by UNPD. ***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 but are absent from the universities for some reason, e.g., faculty may lecture in private universities and have a post in public universities. The assumption is that 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

4.3.4 Projected faculty needed to meet STR goals by 2030

Focusing on achieving established STR goals by 2030, the analysis identified the need for approximately 92 additional faculty members (see Table 5). The figure, based on policy norms adopted from Kenya, suggests that the University of Juba would need to bolster its faculty numbers to stay within the STR goals. The distribution of required additional faculty by disciplines to bridge the identified faculty shortfalls by 2030 shows that the arts and humanities category requires the highest proportion (75%), followed by the health and welfare category (17%), and the natural sciences and mathematics category (8%).

4.3.5 Addressing faculty gender disparity

To achieve gender parity among faculty, the DAF model projects a need for approximately 245 additional female faculty members by 2030. This translates to a total of 280 female faculty members by 2030, considering the 40 females recorded in 2021 (see Table 3).

4.3.6 Challenges in data collection for the DAF model

The data collection exercise for the DAF model encountered several limitations, including:

1. **Limited Faculty Data:** The MoHEST lacked comprehensive data on faculty demographics, including information on the gender breakdown of faculty across the system, faculty distribution by specific disciplines and information on the distribution of faculty across different academic ranks (e.g., Professor, Associate Professor, Lecturer) was limited.

2. **Student Enrolment Data:** MoHEST lacked adequate data on student enrolment disaggregated by gender and discipline.

3. **Faculty Exit Rate Data:** Higher Education Institutions (HEIs) needed to maintain adequate yearly records on faculty exit rates by rank. This data is crucial for understanding faculty turnover and workforce planning.

5. Conclusion and Policy Recommendations

South Sudan's higher education system, though young, has witnessed growth. However, significant challenges highlighted in this Policy Brief require immediate attention. A primary concern is the wide enrolment and faculty size disparity between public and private universities. Notably, in the academic year 2020/2021, public universities enrolled about 27,100 students with a faculty of about 2,620 members, while private universities enrolled about 5,130 with a faculty of around 463 members. The University of Juba exemplifies this disparity, enrolling 66% of all public university students in 2021. Discrepancies were also found between MoHEST data and the University of Juba records on student enrolment, highlighting the need for improved data collection and management across the sector.

The analysis confirms the existence of policies on faculty ranking and qualifications. However, policies on student enrolment growth, discipline distribution, faculty gender ratio, and STRs by discipline are absent. To address this gap, this study adopted Kenyan benchmarks for faculty gender ratio and STRs for the DAF model analysis. Critical faculty shortage is revealed across disciplines at the University of Juba, exceeding the adopted STR benchmarks. Projections indicate a need for over 850 additional faculty members by 2030, including approximately 245 women, to meet policy-mandated STRs, accommodate enrolment growth, and replace faculty leaving the workforce.

To address this critical faculty shortage and ensure a well-resourced higher education system, the following recommendations are proposed:

1. Standardise University Norms and Practices

◆ The MoHEST, relevant ministries, and universities should collaborate to review existing faculty recruitment and student enrolment policies comprehensively.

◆ Outdated regulations should be revised, and new norms established where needed.

◆ These standardised norms should clearly define faculty-to-student ratios and transparent recruitment processes.

2. Enhance Data-Driven Decision Making

◆ Establish a standardised data collection and management system across HEIs, universities, and MoHEST. This system should:

- Use a consistent format for collecting and organising faculty data.
- Identify critical faculty indicators for informed decision making.
- Disaggregate data by gender and discipline category to reveal trends and disparities.

◆ Strengthen or establish data collection offices within HEIs to ensure accurate and timely faculty and student enrolment data.

◆ Mandate HEIs by law to regularly collect and share faculty demographic data readily accessible through a central body like the National Statistical Office. This transparency will facilitate informed planning.

3. Targeted Faculty Recruitment and Retention

◆ Implement strategic recruitment initiatives by MoHEST and universities to attract and retain a diverse faculty pool, targeting women across all disciplines.

4. Prioritise Faculty Development:

◆ Invest in targeted training and development programmes that enhance teaching skills and qualifications.

◆ Focus these programmes on disciplines with the highest STRs to address critical shortages.

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 South Sudan's universities. 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.

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