

## Strategy to Achieve Gender Responsiveness in the Regional Scholarship and Innovation Fund (RSIF): 2020-2025



**September 7, 2020**

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## List of Acronyms

AHU	African Host Universities
ASET	Applied sciences, engineering, and technology
AU	African Union
AWARD	African Women in Agricultural Research and Development
FGD	Focus group discussion
ICT	Information and communications technology
KII	Key informant interview
OWSD	Organization for Women in Science for the Developing World
PASET	Partnership for Skills in Applied Sciences, Engineering and Technology
RCU	Regional Coordination Unit
RSIF	Regional Scholarship and Innovation Fund
SDG	Sustainable Development Goal
STEM	Science, technology, engineering, and mathematics
STISA	Science, Technology, and Innovation Strategy for Africa

## **Strategy to Achieve Gender Responsiveness in the Regional Scholarship and Innovation Fund (RSIF): 2020-2025**

### **1. Introduction**

Africa's development challenges include how to increase agricultural productivity, move beyond resource extraction and farm-based enterprises towards higher value enterprises, reduce environmental degradation, achieve food and nutrition security, and tackle the triple disease burden (non-communicable, communicable, and reproductive health related). Advances in applied science, engineering, and technology (ASET) fields are essential to finding effective solutions to these complex development problems and will require harnessing Africa's human resources, both women and men (Okeke et al., 2017; Tiedeu, 2019).<sup>1</sup> Unfortunately, only a fraction of women's potential contributions is currently being harnessed. Women make up 30% of researchers in science fields in sub-Saharan Africa (SSA), roughly the same as the global average of 28% (Huyer, 2015). Recent data (Bunting et al., 2014) from nine flagship African universities for 2010/11 show female student enrollment in undergraduate and postgraduate science, engineering, and technology fields ranges from a low of 25% (Edward Mondlane University) to a high of 45% (Cape Town University and University of Mauritius) (see Figure 1 in the Annex). Greater gender disparity in the sciences is revealed at the PhD level for nine of the Regional Scholarship and Innovation Fund (RSIF) African Host Institution (AHU) PhD programs in seven countries (Figure 2).

Enhancing gender inclusiveness in the sciences will require significant investment and deliberate efforts at various levels by various actors, including by universities, governments, and other institutions. However, the important payoffs from this investment justify the costs: removing existing barriers to women's entry and advancement in ASET fields will increase substantially the number of intelligent, talented people making important scientific

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<sup>1</sup> The RSIF program focuses on the applied sciences, engineering, and technology (ASET) fields, which is similar but not synonymous with the STEM acronym (science, technology, engineering, and math). For instance, ASET emphasizes applied sciences and does not include mathematics. In the gender strategy document, we use the term ASET rather than STEM given the emphasis of PASET/RSIF.

contributions towards solving Africa's complex development problems. Indeed, the COVID-19 pandemic has made increasingly evident the enormous importance of science and the need to harness Africa's existing potential for innovative home-grown solutions in addressing the pandemic. When a greater diversity of perspectives is engaged in scientific and technical endeavors, conventional assumptions are challenged, scientific findings are more complete and robust, and ASET innovations address the demands and circumstances of a diversity of stakeholders, including men *and* women.

It is encouraging that African governments are increasingly undertaking actions to promote women scientists in research and development. For instance, the African Union (AU) declared 2015 as the Year of Women's Empowerment and Development Towards Africa Agenda 2063, and adopted the Science, Technology, and Innovation Strategy for Africa 2024 (STISA, 2020) in recognition of the role of women as key drivers of science and technology. Importantly, the AU's gender strategy for 2018-2028 lays out a plan for gender equality and achievement of its aspiration for "An Africa where development is people driven, relying upon the potential offered by people, especially its women and youth and caring for children" (AU, 2018-2028, p. 8). Several other initiatives in SSA are supporting women's participation in research and development. For instance, the African Development Bank's gender equality index tracks women's representation as economic agents, in human development, and as public leaders. The Gender Summit Africa provides an opportunity for scientists, policy makers, gender scholars and stakeholders to meet and discuss issues of gender equality in research and innovation as a way towards normalizing women's importance in research and innovation (Tiedeu, 2019). Mentorship and training programs such as The African Women in Agriculture Research and Development (AWARD), COACH-Cameroon, and Gender-responsive Researchers Equipped for Agricultural Transformation (GREAT) are promoting gender equality in education and research. These initiatives are all anchored on the continent's commitment to the principles of gender equality as enshrined in the Solemn Declaration of 2004 by Heads of State and governments of member states of the African Union (AU, 2004).

## **2. The Regional Scholarship and Innovation Fund (RSIF) program**

The Partnership for Skills in Applied Sciences, Engineering and Technology (PASET) is an Africa-led initiative with the objective of strengthening the applied science, engineering, and technology (ASET) capability in Africa to further its socio-economic transformation. PASET was launched in 2013 by the governments of Senegal, Ethiopia, and Rwanda with facilitation by the World Bank. The Regional Scholarship and Innovation Fund (RSIF), one of PASET's flagship programs, is led by the governments of Burkina Faso, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Rwanda, and Senegal along with the Government of Korea and the World Bank. So far, more than 20 African countries have indicated interest to join the initiative.

As the Regional Coordination Unit (RCU) of RSIF, *icipe* has a mandate that includes overall coordination planning, administering and growing the fund, organizing the selection of host universities and international partner universities, capacity building and monitoring and evaluation of RSIF activities. RSIF aims to catalyze the training of 10,000 PhDs in ASET fields prioritizing the faculty of universities who lack Ph.D. training and the new pipeline of young scientists and engineers who will enter academia or industry, or set up their own enterprises, with a target of 50% of the trained PhDs being women. PASET therefore seeks to understand how to reduce barriers to women's progression in science careers.

RSIF has the following objectives: (1) Create a stock of highly skilled scientists, professionals and innovators in applied sciences, engineering and technology (ASET) areas; (2) Identify and nurture young talented Africans to further their studies in ASET fields where expertise is needed most; (3) Address imbalances in the number of women and disadvantaged groups in ASET fields in Africa; and (4) Build African university capacity to provide relevant ASET training and to ensure continued investment in scaling up ASET education and workforce.

## **3. Rationale and objectives of the RSIF gender strategy**

The RSIF program has set an ambitious target for women's representation among its PhD scholars (50%) based on a commitment to gender and social inclusion and excellence in ASET fields to support Africa's socio-economic transformation. The goal of the gender strategy is not to advantage women relative to men, but rather to level the playing field and ensure equal

opportunity for women and men. In SSA, as elsewhere, women face barriers to entry and advancement in ASET fields, which is problematic from a social justice perspective and impedes progress in solving Africa's complex development challenges (Bientema & Marcantonio, 2010; Drame et al., 2015; Okeke et al., 2017). By aiming for high proportions of women PhD scholars, social transformations can be triggered so that women's representation becomes self-sustaining (Aina et al., 2015; Markus, 2017).

Achievement of the RSIF target of 50% women PhD scholars trained requires a well-thought-out gender strategy, along with deliberate and continuous engagement on the part of the RSIF team, RSIF African host universities (AHUs), and partner institutions. This strategy document provides practical guidance to the RSIF program team and collaborating partners to effectively mainstream gender dimensions (see the list of key gender concepts in Annex Box 1) throughout the program cycle, including gender research, program implementation, monitoring and evaluation, and wide dissemination of lessons learned from gender research and their implications for policy and programs. The gender strategy is a living document that will be updated and improved as new evidence emerges from the various activities undertaken during the program.

A complex interaction of many factors explains women's under-representation in ASET fields, with the pipeline "leaking" girls and women at various stages from secondary school through undergraduate and postgraduate studies and in their career transition (Blickenstaff 2005; Ceci et al. 2014; Manderson et al., 2017; Ngabaza & Shefer, 2013; Nkosie & Matlala; Oni et. al, 2019; Owusu et al, 2014; Wang & Degol, 2017; Williams, 2018). The RSIF gender strategy focuses on the PhD portion of the ASET pipeline. Through implementation of evidence-based recommendations (detailed in section 4), the four key objectives of the RSIF gender strategy will be pursued:

1. Increase enrollment of qualified women into RSIF AHU PhD programs.
2. Improve the postgraduate student experience (e.g., sense of belonging, work-life balance, lack of gender discrimination) of RSIF women PhD scholars.
3. Improve PhD performance among women and men RSIF PhD scholars.
4. Support RSIF women scholars' PhD degree completion and career transition.

## 4. RSIF gender strategy

The RSIF program's gender strategy includes two components:

1. Gender research to inform recommendations for enhancing women's participation and success in the RSIF AHU PhD programs.
2. Interventions and activities to advance women in ASET fields at the 11 RSIF AHUs.

### 4.1. Gender research to inform the RSIF gender strategy recommendations

Gender analysis is an essential component to achieving the RSIF gender targets. Gender analysis provides input into program activities and contributes to the modification of implementation strategies through feedback loops, where gender lessons are regularly communicated to the RSIF program team and representatives at RSIF AHUs.

A gender baseline study was conducted in 2019/2020 to generate an evidence base to inform recommendations for the RSIF gender strategy, and to contribute to literature on women in ASET fields in SSA. Research methods and results of the baseline study are detailed in an accompanying technical report. Research activities included:

- Participation at the Global Forum for Women in Scientific Research (GoFoWiSeR) in July 2019, which provided a captive audience to validate the RSIF gender research approach and solicit recommendations for RSIF's gender strategy.
- An extensive literature review of women's participation in science, engineering, and technology PhD programs was completed in October 2019, which elucidated the main economic, sociocultural, and institutional barriers to women's enrollment, performance, and completion of ASET PhDs. Nearly all the studies in this extensive literature concern North America and Europe, a knowledge gap that the RSIF research helps to address.
- Data on enrollment and completion of MSc and PhD degrees between 2015-2020 were obtained from nine of the 11 RSIF AHUs (Figure 2).<sup>2</sup>

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<sup>2</sup> University of Felix Houphouet-Boigny, Cote D' Ivoire; University of Ghana; Kenyatta University, Kenya; University of Nairobi, Kenya; African University of Science and Technology, Nigeria; University of Port Harcourt, Nigeria; Bayero University, Nigeria; University of Rwanda; Nelson Mandela University of Science and Technology, Tanzania; Sokoine University of Agriculture, Tanzania; and University of Gaston Berger, Senegal.

- Site visits were made to four of the RSIF AHUs: Kenyatta University, University of Nairobi, University of Rwanda, and Gaston Berger University (Senegal). The site visits involved focus group discussions (FGDs) with current MSc and PhD students to assess barriers and opportunities, and key informant interviews (KIIs) with faculty members to identify best practices for alleviating those barriers.
- A survey using SurveyMonkey (hereafter referred to as the survey) was implemented with women and men who had pursued an ASET PhD at a university in SSA in the last 20 years ( $n = 252$ ). Figure 3 shows the countries and institutions represented in the survey. Survey participants were solicited by sharing the survey link with African-university faculty met at GoFoWiSeR, representatives of organizations working to advance women in ASET, and former PhD students who had attended the RSIF AHUs or had *icipe* PhD attachments. The survey collected data to understand the key factors influencing the postgraduate student experience and PhD performance and completion.

Additional research and monitoring, evaluation, and learning activities will be conducted in the near term to revise and improve the gender strategy interventions, including:

- Post-course assessments: As part of the gender strategy, RSIF will mainstream gender into the RSIF orientation course and various cross-cutting trainings. Using information from the post-course assessments, we will assess gender-based differences, if any, in participants' training needs; learning styles; existing knowledge of course topics; and preferences for course content, format, and mode of delivery. This information will be integrated into future orientation and cross-cutting trainings to better serve women and men participants.
- Generating a longitudinal dataset of PhD students: Datasets on PhD students in SSA are sparse and not publicly available. The RSIF program offers a tremendous opportunity to develop a large panel dataset of African PhD students and thereby improve our understanding of why women are under-represented in ASET PhD programs in SSA. Towards this end, a short online survey will be shared with RSIF scholars on entry into and exit from PhD programs.

- Monitoring and evaluation will focus on the routine collection of gender-disaggregated data on key indicators of RSIF program activities, outputs, and outcomes, to continuously inform on progress towards the gender-strategy objectives.

#### 4.2. Interventions and activities to advance women in ASET fields

The RSIF-RCU understands that women's experiences of discrimination result from multiple oppressions, with gender inequalities intersecting with oppression based on other identities, such as race, ethnicity, age, ability, social class, and immigrant status. RSIF therefore aims to support scholars that represent a diversity of identities. In the initial years of the program, the gender strategy focuses on two intersecting identities: gender and disability (physical and sensory limitations). As the program evolves, we will add interventions to the gender strategy to increase diversity beyond gender and disability.<sup>3</sup> The package of interventions to enhance women's participation in RSIF PhD programs is informed by the results of the RSIF gender study and covers four objectives related to enrollment, the postgraduate student experience, PhD performance, and PhD completion and career transition. Annex Table 1 summarizes the 9 recommended interventions and their accompanying activities. Based on RSIF gender study results, **four interventions should be prioritized** for greatest impact, one per objective:

- (1) Implement affirmative action and equal opportunity practices for scholar selection (Intervention 1.2).
- (2) Develop a mentoring and supervision program within RSIF that promotes gender and social inclusion (Intervention 2.2).
- (3) Develop a program to promote greater family support for women scholars (Intervention 3.1).
- (4) Adopt family-friendly policies within RSIF (Intervention 4.2).

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<sup>3</sup> In the African context, ethnicity and class are other key aspects of social inclusion that intersect with gender in determining outcomes, including higher education outcomes. However, increasing diversity in these two areas is complicated by the large number of ethnic groups in African countries and the need to collect sensitive income information from applicants.

***Objective 1: Increase enrollment of qualified women into RSIF AHU PhD programs***

Objective 1 is critical, given survey evidence of near gender parity for some indicators of PhD performance and completion (Figures 4-6). Interviews at four AHUs supported this finding, with faculty reporting that women make very good postgraduate students. Results may suggest that the greatest challenge to increasing the number of women PhDs in ASET is identifying and enrolling them. Once women enroll, they do very well with the requisite support. To enhance women's enrollment in RSIF AHUs, four interventions are important:

- ***Intervention 1.1. Advertise social inclusion aspects of the program in the RSIF scholarship call and adopt a proactive women's recruitment model***

The RSIF scholarship call already includes reference to the program's commitment to gender equality, but there is need to include mention of the commitment to inclusion of disabled persons. The call will therefore be modified to state "Women and people of disabilities are strongly encouraged to apply." Furthermore, to attract more women, RSIF will mention in the call the women-friendly aspects of the program, such as women's mentoring resources and program flexibility for women with young children, and that reasonable accommodations will be provided for persons with disabilities as needed. A proactive recruitment model will be used whereby recruitment involves a continuous, active search for talented and diverse applicants. Towards this end, we will develop and continuously update an extensive list of contacts from university departments with relevant MSc programs, organizations working to advance women in ASET, disability rights organizations, University disability services offices, and government and industry employers in ASET fields. The RSIF AHU Coordinators will be encouraged to advertise the scholarship call to women faculty at their universities. RSIF-RCU will develop a brief promotional presentation to be used by the AHU Coordinators that conveys RSIF's commitment to gender and social inclusion. The presentation will also be used by RSIF team members when opportunities to promote the program arise. Increasing the size and diversity of the RSIF applicant pool should translate to higher-quality applicants.

- ***Intervention 1.2. Implement affirmative action and equal opportunity practices for scholar selection***

A starting point is the use of affirmative action, which is known to be effective in increasing the representation of under-represented groups in academia and the workplace. RSIF-RCU will monitor applications and nominations, awarding at least 30% of the scholarships to women but aiming for 50% women students at each call. Furthermore, if two candidates are otherwise equal in terms of their academic merits, but one is disabled, the disabled candidate will be selected. Another key activity is to develop a protocol for identifying and including on the recruitment panels a “diversity representative” (not necessarily female) who is tasked with advocating for the interests of women applicants. Panel members and faculty members at the RSIF AHUs will also be asked to participate in and pass an online training course on unconscious bias and gender discrimination in recruitment. This is important because our key informant interviews suggest there may exist some bias and discrimination in the recruitment of women at the AHUs. Some faculty and program heads expressed reluctance to enroll women students into their PhD program, due to concerns that women were less committed than men to graduate school and might experience life events that could trigger program dropout or lengthy time to completion. A suitable model for the proposed training course is the Collaborative Institutional Training Initiative (CITI) Program’s research ethics and compliance training, where trainees access online resource materials and must pass an exam every couple years to obtain and remain current with certification.

- ***Intervention 1.3.*** *Raise awareness among undergraduate students and their lecturers that ASET fields are for women too*

To increase the pipeline of African women in ASET fields, the various life stages where females lose interest should be addressed. The gender study revealed that it is not uncommon for girls and young women to be discouraged from ASET fields by teachers, family members, societal messages, and lack of information. Some women FGD participants also shared their childhood observations of boys getting preferential treatment from science and math teachers. As a remedial strategy, RSIF-RCU and the AHU Coordinators will facilitate outreach programs together with the RSIF women scholars who will be engaged as role models (“ASET Ambassadors”). The ASET Ambassadors will give talks at their

universities to undergraduate and MSc students and faculty to help dispel gender stereotypes (e.g., men are better at science) and provide information about ASET careers (e.g., what they entail, salary range, and their social impact). We will experiment with different approaches to incentivize the ASET Ambassador activities (e.g., provision of funding to attend a leadership training course or participate in a mentoring program) and develop a toolkit for use in the outreach activities.

***Objective 2: Improve the postgraduate student experience of RSIF women PhD scholars***

Graduate school is a challenging time for women and men alike. However, the challenges faced by women students appear to be greater. In the FGDs, women participants reported several issues faced during their postgraduate studies, such as balancing family and study responsibilities, societal pressure, gender stereotyping, and sexual harassment. The survey data also revealed challenges faced by women PhD students (Figure 7). The gender study also indicated the importance of women role models to women doctoral students' motivation and success. It should be mentioned, however, that the challenges women doctoral students face do not appear to prevent them from performing well and completing the PhD (Figures 4-6). But "success" may come with nontrivial emotional and mental costs. Two recommendations for Objective 2 seek to improve the postgraduate student experience of RSIF women scholars.

- ***Intervention 2.1. Raise awareness among RSIF scholars and AHU faculty of the gender-related resources and disability services offered by their university***

According to faculty interviewed during the site visits, gender units and sexual harassment policies exist at the four AHUs visited, but detailed information was not collected. The RSIF survey data indicate that only 25% of sampled women PhD alumni had awareness of family-friendly policies or gender units at their PhD institution. Less than half (45%) of surveyed women were aware of a sexual harassment policy at their PhD institution, and only 54% of these were familiar with the university's reporting mechanisms for sexual harassment cases. RSIF-RCU will conduct a review of the existing gender-related resources and disability services at the AHUs. This information will be used for the following purposes: First, we will develop an information package for RSIF scholars and AHU faculty on support services offered by their university (e.g., gender units, disability services offices, counseling, family-

friendly policies), and where and how to report cases of sexual harassment. Second, we will develop and share with the RSIF AHUs a list of best practices currently in use at the AHUs. Third, RSIF will provide recommendations to the AHUs on possible modifications to existing policies and practices to promote favorable maternity leave and other family/women-friendly policies at the host universities where they do not already exist.

- ***Intervention 2.2.*** *Develop a mentoring and supervision program within RSIF that promotes gender and social inclusion*

RSIF-RCU will undertake efforts to make women’s contributions in ASET fields more visible, and normalize diversity in science, for example, by sponsoring PhD scholars to attend and present at conferences where women in science are key speakers, e.g., the Gender Summit Africa or GoFoWiSeR. RSIF is in the process of creating a formal mentoring program for all RSIF PhD scholars, which will be tailored to address the needs of both women and men scholars as well as those of disabled scholars. RSIF will identify and implement other effective actions that allow women scholars to build interpersonal problem-solving skills, discuss challenges and solutions, and share information on opportunities in their fields. Examples are establishing peer support groups for the RSIF women scholars and providing them with resources to participate in existing online mentoring programs (e.g., OWSD, CareerWise).

In order to promote gender and disability sensitivity among AHU faculty, staff, and students, RSIF-RCU will support a multiple-day training course “Creating an inclusive educational environment” to explore current structural social inequities within higher education in SSA; raises awareness of the value of diversity in ASET; and helps participants (students, faculty members, university administrators) develop skills and action plans for social inclusion in communications, mentorship, curriculum development, teaching, and supervision. RSIF will also work with the AHUs to code of practice for supervision of RSIF PhD scholars that is sensitive to gender- and disability-based differences, which will be integrated into the RSIF capacity building supervisors’ training course.

**Objective 3: Increase PhD performance among RSIF women and men PhD scholars**

The gender study found that women doctoral students obtained external grants, presented at conferences, and gained teaching experience at similar rates to men (Figures 4, 5). However, gender disparity was observed for publication productivity, with women (vs men) having about one less paper accepted for publication during the PhD training. Recommendations for this objective focus on interventions to support the publication productivity of RSIF scholars, preparing them for productive careers in ASET fields.

- **Intervention 3.1.** *Develop a program to promote greater family support for women scholars*

Women in the focus groups shared that without a supportive spouse, a married woman, especially one with children, faces a very challenging time during their PhD training. Likewise, survey results indicate that women who got married during their PhD studies published significantly less, whereas this life event associated to higher publication output for men. There is a need to create greater family, especially spousal, support for RSIF-RCU women scholars, which will partly be pursued by involving the spouses of RSIF scholars in some elements of the orientation program. RSIF will also engage men RSIF PhD scholars and AHU faculty as champions of gender equality who will make speeches at their universities on the importance of supporting women in ASET. To identify promising male champions and develop a resource toolkit for them to use in their activities, RSIF can solicit best practice examples from the AHUs and other relevant institutions.
- **Intervention 3.2.** *Mainstream gender into relevant RSIF capacity building training courses*

Women and men FGD participants mentioned that graduate students in their programs do not have adequate skills in grant writing and scientific publication, and that their learning institutions currently do not offer much assistance in these areas. Furthermore, regression analysis with the survey data revealed that participation in a scientific writing course was associated with an increase in publication output among the surveyed PhD alumni. Annual cross-cutting courses are part of RSIF's capacity building activities and cover a range of critical topics. RSIF will mainstream gender into these courses to ensure the needs of both women and men are served. This will be undertaken with post-course assessments to learn whether there are differences between women and men in learning styles; existing

knowledge in the subject areas; and preferences for course content, format, and delivery. Information from the assessments will be used to modify these courses, as needed.

***Objective 4: Support RSIF women scholars' PhD degree completion and career transition***

Results of our survey indicate high PhD completion rates for women and men students alike (Figure 6). However, analysis of the survey data indicate that women take about half a year longer to complete the PhD than men, controlling for key predictors. For purposes of the gender strategy, the most salient findings of our analysis of the predictors of PhD completion time are as follows: First, participation in an orientation program significantly reduced PhD completion time for women and men alike. Second, having a child during the PhD training increased time to completion by for women but reduced PhD duration for men. Two remedial interventions are recommended for this objective:

- ***Intervention 4.1. Mainstream gender into the RSIF orientation training***

The PhD pathway can be clarified and shortened by providing students with a complete and realistic preview of their PhD program's requirements, funding opportunities, and potential hurdles (and ways to overcome them). This can be partly accomplished through an intensive orientation course, which is offered as part of RSIF capacity building activities. Our survey revealed a need for student orientation training: 37% and 46% of men and women respondents, respectively, reported that their PhD institution did not offer an orientation program. RSIF will mainstream gender into the orientation course in the same manner as mainstreaming of the cross-cutting courses (see Intervention 3.2).

- ***Intervention 4.2. Adopt family-friendly policies within RSIF***

PhD programs are extremely time-demanding, household responsibilities fall disproportionately on women, and the typical doctoral program does not have a family-friendly policy in place. RSIF will adopt family-friendly policies to support doctoral students with young children and raise RSIF's profile as a gender-responsive program. While the portfolio is yet to be determined, requiring discussion, some recommendations are as follows. One low-cost option is to formalize a policy to allow RSIF women scholars to temporarily stop the funding clock during their maternity leave, if they request it, along with supportive measures to facilitate an easy and efficient return to doctoral studies. While

many universities in SSA already allow such flexibility, a supervisor often has at her/his discretion whether to continue working with students who interrupt their studies. RSIF could also offer sandwich program flexibility, allowing parents with young children to have a shorter sandwich program, have their mentor from a RSIF-partner institution spend some time in the student's locality, or use an e-commuting model. An ambitious intervention that would raise RSIF's profile considerably would follow the example of CARTA (Khisra et al., 2019) and provide funds to allow breastfeeding mothers to bring their child along and pay for childcare during the sandwich program.

#### **4.3. Timeline of interventions and activities**

Annex Table 2 presents a timeline for the gender strategy interventions and activities. The proposed timing is based on the following: (1) starting with some of the activities that are "easy wins" (high impact with relatively minimal effort) as well as those that are feasible under current circumstances of the COVID-19 pandemic, (2) implementing simultaneously some complementary activities, and (3) the need to coordinate timing of some activities with RSIF capacity building activities. Furthermore, for some activities, timing cannot be determined until approval has been obtained from the PASET Executive Board.

In terms of easy wins, writing journal articles based on the RSIF gender study, including a policy-oriented piece targeted to policy makers and University administrators, will promote the program among scholars, practitioners, and policy makers (July-Sept. 2020). In Sept. 2020, a survey tool will be developed for implementation with RSIF scholars upon entry into and exist from their PhD program. Another activity for Sept. 2020 is to research and report on the existing policies related to women in higher education for each country represented by the RSIF AHUs. Several other activities – organizing peer support groups, modifying the orientation course to involve the spouses of incoming PhD scholars, and creating a policy for PhD interruption – will make the program more gender responsive with minimal cost and effort (Oct. and Nov. 2020). Further development of an extensive contact list and creating a promotional presentation to assist RSIF in proactively recruiting women PhD scholars can be done immediately (Sept. and Oct. 2020).

Developing a protocol for identifying and including a diversity representative on recruitment panels and creating a gender training and certification program for panelists will occur in Oct. and Nov. 2020. Complementary to the latter activities is the development of a gender and diversity training course (Nov. and Dec. 2020) which will be done in partnership with an institution that currently offers such a course (e.g., Emerge Africa, any of the AHU gender units). This course will be among the offerings of the RSIF capacity building program and therefore has funding for course development.

Several complementary activities are proposed for Dec. 2020 to Feb. 2021, including creation of protocols for the ASET Ambassadors and Male Champions and sponsoring students to participate in other mentoring programs (e.g., OWSD and AWARD) and conferences/events where women scientists are key speakers (e.g., the Gender Summit and GoFoWiSeR). Provision of funding to participate in other mentoring programs and attend conferences is a main approach we could use to incentivize the ASET Ambassador and Male Champion activities. For instance, a competition could be initiated with the top ASET Ambassadors and Male Champions winning the opportunity to attend an AWARD leadership course or an international conference of their choice.

Review of the AHUs gender resources is not planned until 2021 due to the expectation that COVID-19 will make it rather challenging to contact relevant staff at the AHUs. Modification of the RSIF scholarship call to bring attention to women-friendly program elements will take place in 2021 after we have implemented several of the gender strategy interventions. The timing of post-course assessments and modification of course content and delivery for the existing RSIF orientation and cross-cutting courses will depend on the timing of those courses. Timing of the development of a family grant package (a priority intervention) is yet to be determined; approval by the PASET EB must first be obtained.

## **5. Expected outputs and outcomes of RSIF gender responsiveness**

Gender responsiveness of the RSIF program will help realize a pathway from (1) Africa's development challenges to (2) gender research to (3) recommended interventions and

activities to (4) research and strategy outputs to (5) anticipated outcomes. Details about the anticipated outputs and outcomes are provided below.

Examples of concrete outputs expected from RSIF gender strategy include:

- Gender-related training materials, short courses (on unconscious bias in recruitment and gender and diversity in higher education), and resource repositories developed for university students, faculty, and administrators.
- Gender mainstreamed into RSIF orientation and cross-cutting trainings.
- Practical recommendations for AHU gender units.
- An inventory of best practices currently in use at the AHUs for enhancing women's representation in ASET.
- Improved gender-sensitivity in the AHU's codes of practice for PhD supervisors.
- Formal mentoring programs established for women in ASET.
- New, public access datasets on women in ASET in SSA.
- Peer-reviewed publications.
- Conference presentations.
- An increased number of women beneficiaries of the RSIF program.

The above outputs will lead to program outcomes, some anticipated in the short-term and others in the mid- or long-term:

*Short-term outcomes:*

- Increased understanding among scholars, practitioners, and policy makers of why women are under-represented in ASET PhD programs in SSA.
- Increased body of evidence on approaches and interventions that address barriers to women's participation in ASET in Africa, made available to AHUs; Ministries of Education, Science and Technology; and national level higher education actors.

*Medium-term outcomes:*

- Improved pedagogical capacities of the AHUs to implement approaches for breaking down systemic barriers to women's participation.

- Improved experiences (e.g., sense of belonging, lack of gender discrimination) and performance (e.g., publications, research grants), and increased probability of completion among RSIF PhD scholars.

*Long-term outcomes:*

- Systemic barriers to women in science are reduced or mitigated, and the number of female PhDs in ASET fields in Africa is increased, thus contributing directly to the following Sustainable Development Goals (SDGs): SDG5 (Achieve gender equality and empower all women and girls) and SDG10 (Reduce inequality within and among countries).
- Advances in ASET are supported by increasing the numbers and improving the experiences of women in ASET in SSA, leading to an increased ability of African countries to address their development challenges, and thereby contributing towards achievement of SDG1 (No poverty) and SDG9 (Industry, innovation, and infrastructure).

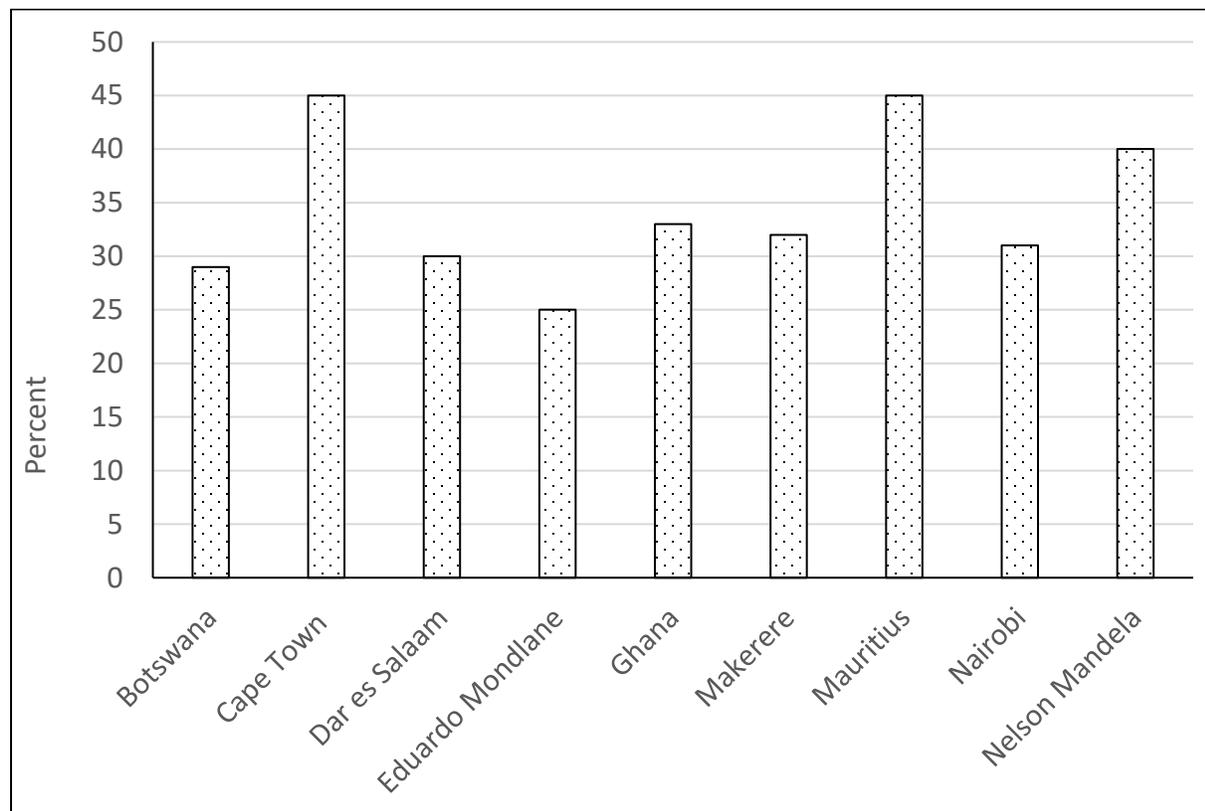
## 6. Bibliography

- African Development Bank Group (2014). Investing in gender equality for Africa's transformation. <https://www.tralac.org/documents/resources/africa/1785-afdb-group-gender-strategy-2014-2018/file.html>
- African Union (2004). Heads of States also made a gender declaration in 2004. Available at [https://www.mrfcj.org/pdf/Solemn Declaration on Gender Equality in Africa.pdf](https://www.mrfcj.org/pdf/Solemn%20Declaration%20on%20Gender%20Equality%20in%20Africa.pdf)
- African Union (2016). African Union Strategy for gender equality and women's empowerment 2018-2028. Available at [https://au.int/sites/default/files/documents/36195-doc-au\\_strategy\\_for\\_gender\\_equality\\_womens\\_empowerment\\_2018-2028\\_report.pdf](https://au.int/sites/default/files/documents/36195-doc-au_strategy_for_gender_equality_womens_empowerment_2018-2028_report.pdf)
- African Union (2020). Science, Technology and Innovation Strategy for Africa 2024. Available at [https://au.int/sites/default/files/newsevents/workingdocuments/33178-wd-stisa-english - final.pdf](https://au.int/sites/default/files/newsevents/workingdocuments/33178-wd-stisa-english_-_final.pdf)
- Blickenstaff, J.C. (2005). Women and science careers: leaky pipeline or gender filter? *Gender and Education*, 17(4), 369-386.
- Bunting, I., Cloete, N., & Van Schalkwyk, F. (2014). HERANA II Empirical Data from Eight African Flagship Universities March 2014 v1.1.xlsx, *Data on Eight Flagship Universities in Africa 2009-2011*, <https://doi.org/10.7910/DVN/25427/FEQ9ZF>, Harvard Dataverse, V2.
- Ceci, S. J., Ginther, D. K., Kahn, S., & Williams, W. M. (2014). Women in academic science: A changing landscape. *Psychological Science in the Public Interest*, 15(3), 75-141.
- Dabney, K. P., Chakraverty, D., Hutton, A. C., Warner, K. A., & Tai, R. H. (2016). The bachelor's to PhD transition: Factors influencing PhD completion among women in chemistry and physics. *Bulletin of Science, Technology & Society*, 36(4), 203-210.
- Davis K. E, Ekboir J. & David J. Spielman (2008). Strengthening Agricultural Education and Training in sub-Saharan Africa from an Innovation Systems Perspective: A Case Study of Mozambique. *The Journal of Agricultural Education and Extension*, 14:1, 35-51.
- Huyer, S. (2015). Is the gender gap narrowing in science and engineering? *UNESCO science report: towards, 2030*, 85.
- Khisa AM, Ngure P, Gitau E, Musasiah J, Kilonzo E, Otukpa E, et al. (2019). Gender responsive multidisciplinary doctoral training program: the Consortium for Advanced Research Training in Africa (CARTA) experience. *Global Health Action* 12(1).
- Manderson, L., Bondjers, G., Izugbara, C., Cole, D. C., Egesah, O., Ezeh, A., & Fonn, S. (2017). Enhancing Doctoral Supervision Practices in Africa: Reflection on the CARTA Approach. *Journal of Higher Education in Africa / Revue de l'enseignement Supérieur En Afrique*, 15(2), 23-40. JSTOR.
- Molla, T., & Cuthbert, D. (2016). In pursuit of the African PhD: A critical survey of emergent policy issues in select sub-Saharan African nations, Ethiopia, Ghana and South Africa: *Policy Futures in Education*. <https://doi.org/10.1177/1478210316641567>

- Muyia, H., Wekullo, C., & Nafukho, F. (2018). Talent Development in Emerging Economies Through Learning and Development Capacity Building. *Advances in Developing Human Resources, 20*, 498–516. <https://doi.org/10.1177/1523422318803089>
- Ngabaza, S., & Shefer, T. (2013). Policy commitments vs. lived realities of young pregnant women and mothers in school, Western Cape, South Africa. *Reproductive Health Matters, 21*(41), 106–113. [https://doi.org/10.1016/S0968-8080\(13\)41683-X](https://doi.org/10.1016/S0968-8080(13)41683-X)
- Nkosi, K. B., Makhene, A., & Matlala, S. (2019). Educational challenges as experienced by pregnant student nurses at a college in Mpumalang. *Curationis, 42*(1), 7. <https://doi.org/10.4102/curationis.v42i1.1880>
- Okeke, I. N., Babalola, C. P., Byarugaba, D. K., Djimde, A., & Osoniyi, O. R. (2017). Broadening Participation in the Sciences within and from Africa: Purpose, Challenges, and Prospects. *CBE Life Sciences Education, 16*(2). <https://doi.org/10.1187/cbe.15-12-0265>
- Oni, H. T., Tshitangano, T. G., & Akinsola, H. A. (2019). Sexual harassment and victimization of students: A case study of a higher education institution in South Africa. *African Health Sciences, 19*(1), 1478–1485. <https://doi.org/10.4314/ahs.v19i1.21>
- Owusu, F., Kalipeni, E., & Kiiru, J. (2014). *Capacity Building for Research Leadership: The Need, Support and Strategies for Growing African Research Leaders*. Available at <https://www.semanticscholar.org/paper/Capacity-Building-for-Research-Leadership%3AThe-Need%2C-Owusu-Kalipeni/8726425933446e5740f8bcf87ef6d50bae3a7690>
- Sawyer, K. & Valerio, A.M. (In press). Male champions for ` gender inclusive organizations. *Organizational Dynamics*.
- Tiedeu, B. A., Para-Mallam, O. J., & Nyambi, D. (2019). Driving gender equity in African scientific institutions. *The Lancet, 393*(10171), 504–506. [https://doi.org/10.1016/S0140-6736\(19\)30284-3](https://doi.org/10.1016/S0140-6736(19)30284-3)
- Wang, M. T., & Degol, J. L. (2017). Gender gap in science, technology, engineering, and mathematics (STEM): Current knowledge, implications for practice, policy, and future directions. *Educational Psychology Review, 29*(1), 119-140.
- Williams, W. M. (2018). Editorial: Underrepresentation of Women in Science: International and Cross-Disciplinary Evidence and Debate. *Frontiers in Psychology, 8*: 2352.

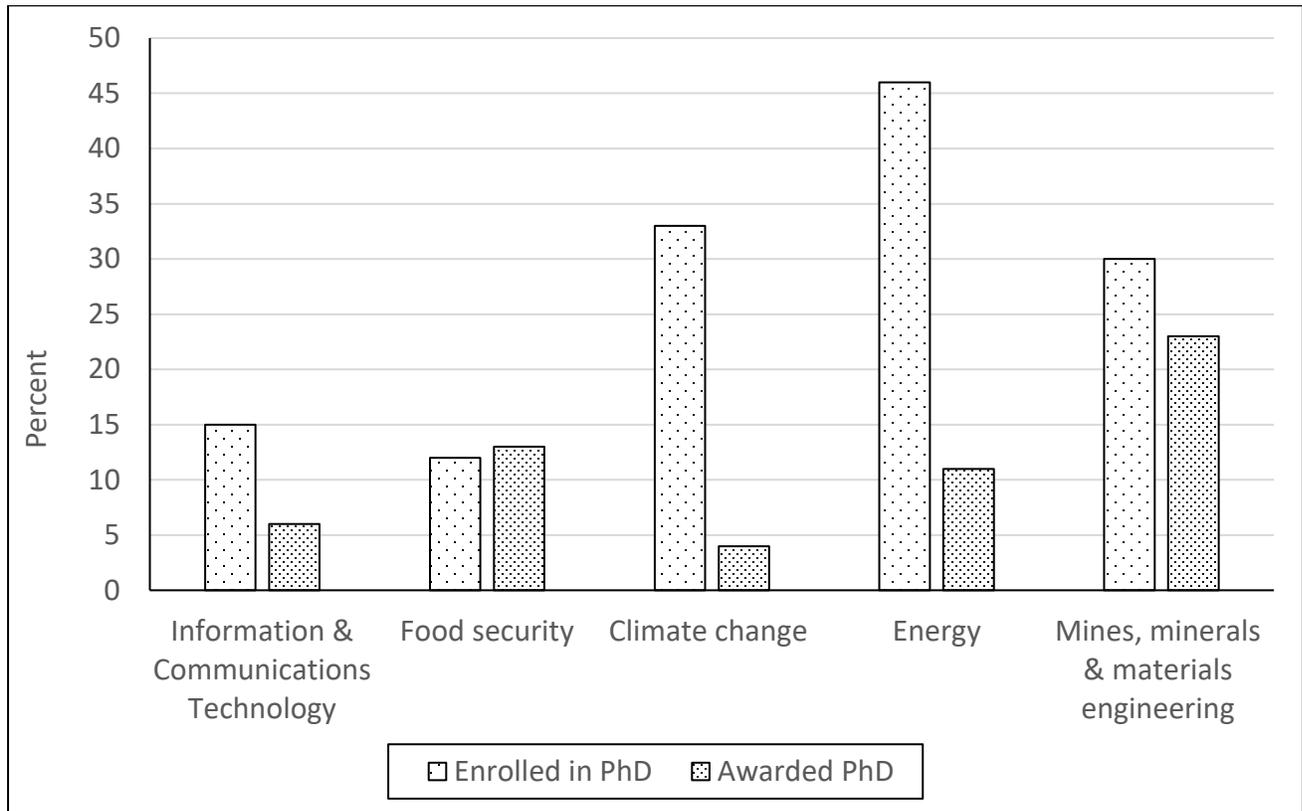
## 7. Annex

**Figure 1.** Percent women students enrolled in science, engineering, and technology fields in 2010/11: undergraduate and postgraduate levels at nine African flagship universities



Source: Bunting et al. (2014)

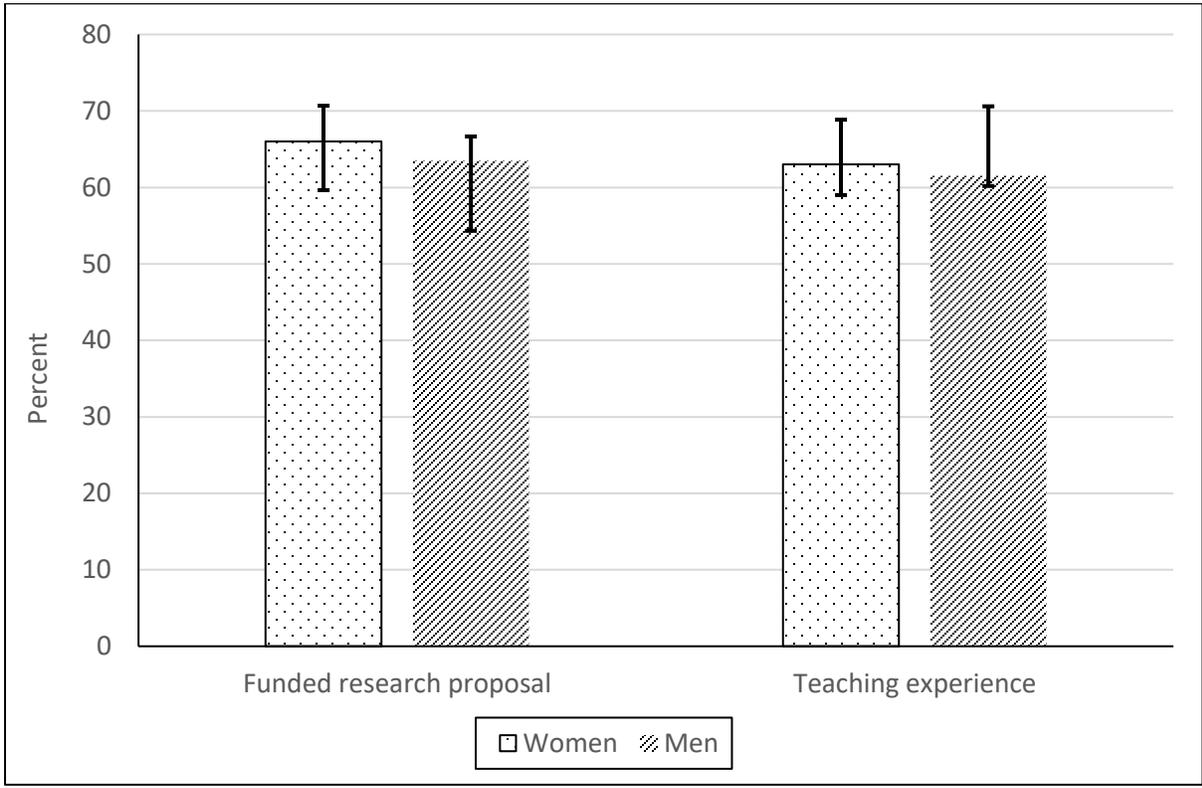
**Figure 2.** Percent of women enrolled in doctoral programs and awarded PhDs by RSIF theme, averages 2015/16 – 2018/19



Source: Enrollment and Completion data provided by the RSIF AHUs, 2019/2020

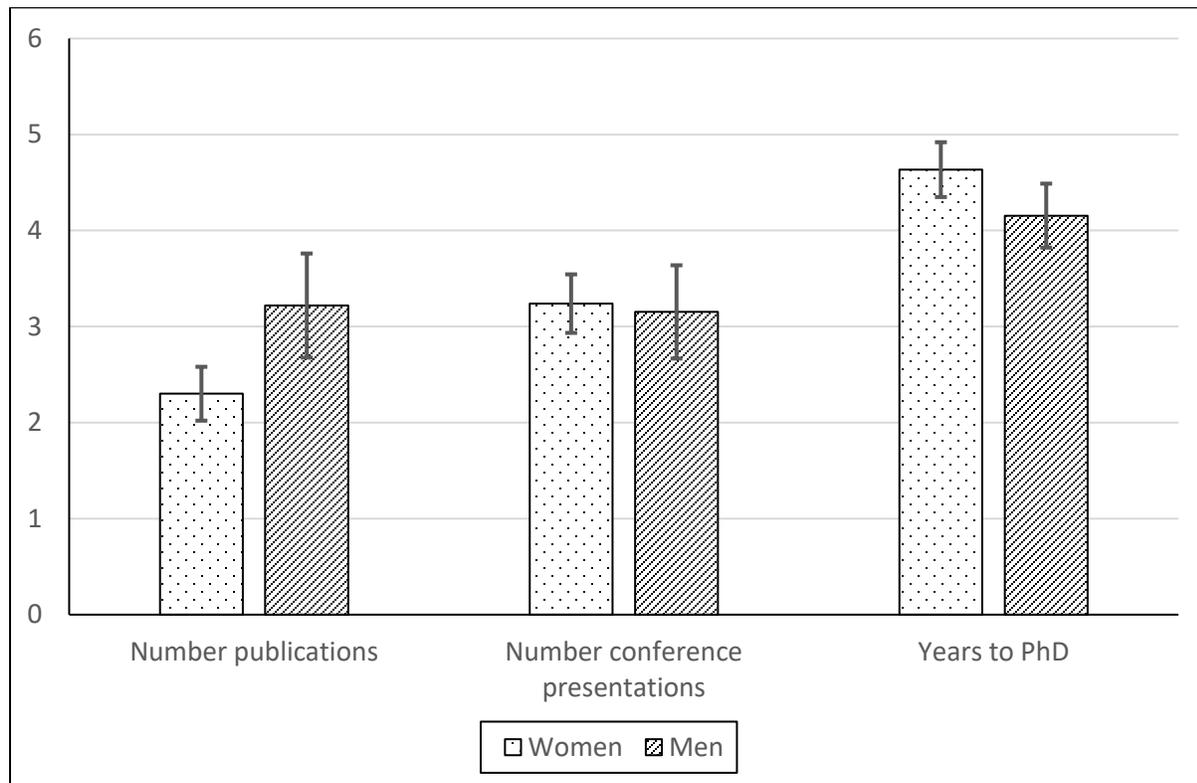


**Figure 4.** Percent having a funded research proposal and teaching experience during the PhD training: sampled women and men at African universities ( $n = 227$ ), 2005-2020



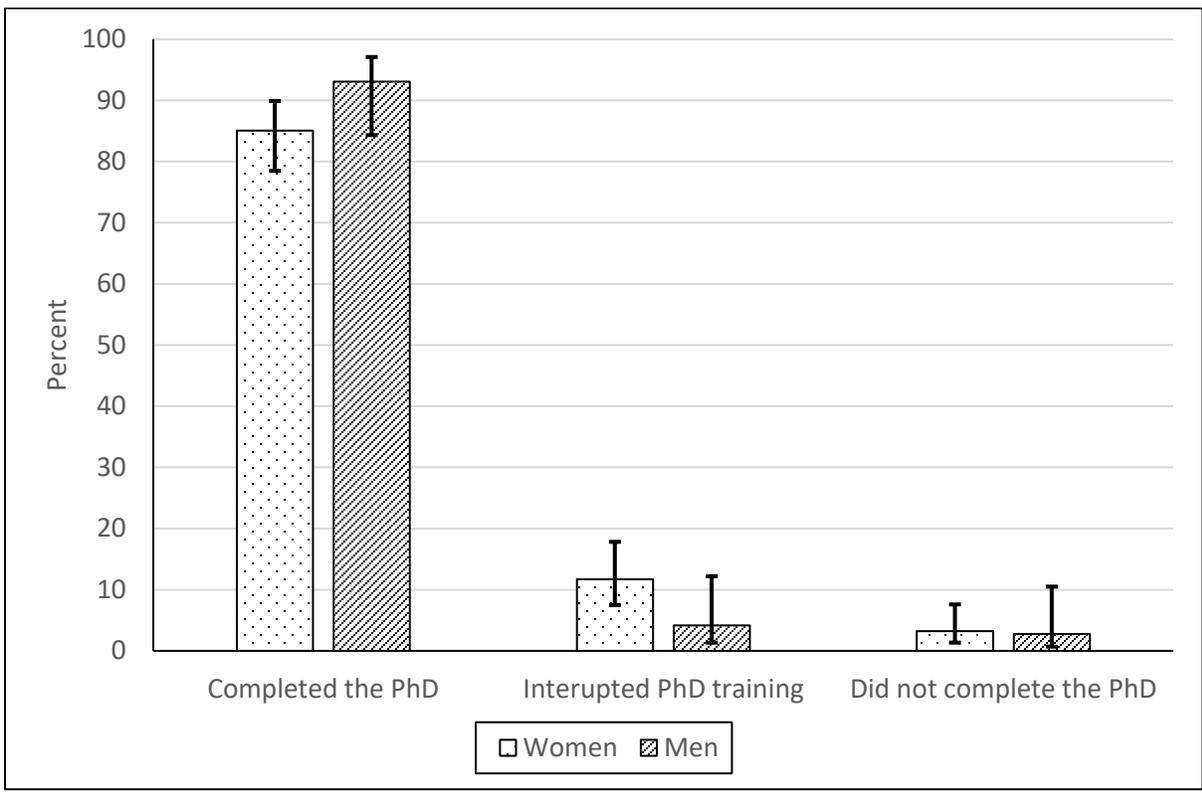
Source: icipe RSIF gender survey, 2020

**Figure 5.** Number of accepted publications and conference presentations and years to PhD completion for sampled women and men at African universities ( $n = 227$ ), 2005-2020



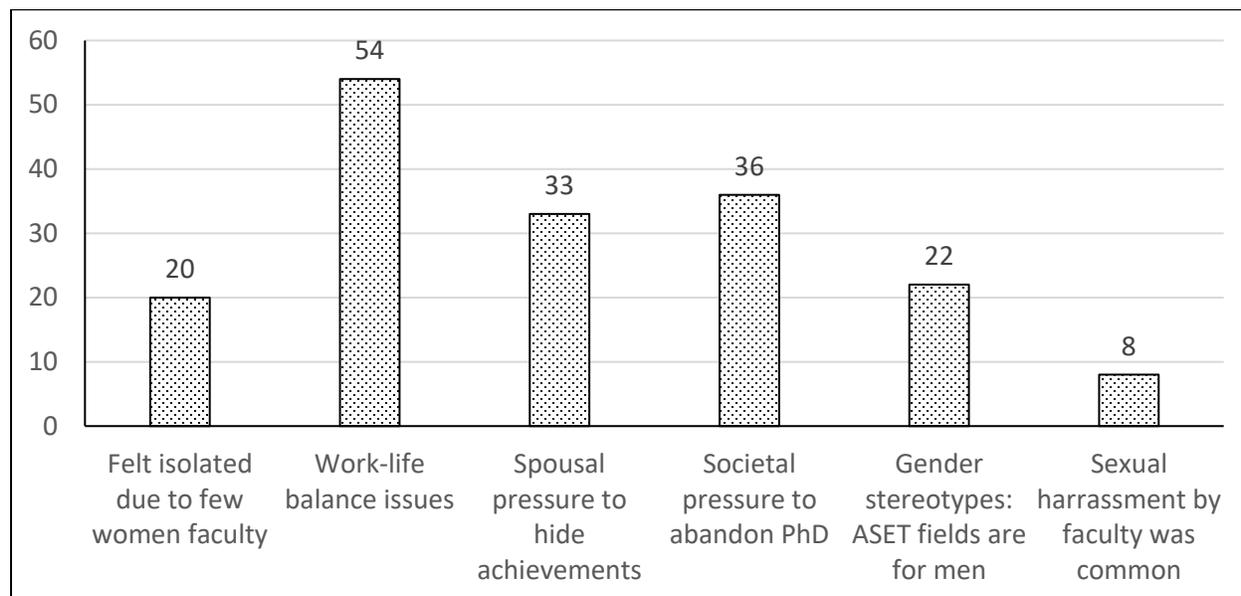
Source: *icipe* RSIF gender survey, 2020

**Figure 6.** PhD completion rates at African universities for women and men ( $n = 227$ ), 2005-2020



Source: *icipe* RSIF survey, 2020

**Figure 7.** Percent of surveyed women PhD alumni who agreed or strongly agreed that they faced a given issue during their PhD training



Source: *icipe* RSIF survey, 2020

**Table 1.** Gender strategy: Interventions, activities, implementation level, and responsible parties

Interventions	Activities	Implementation level and responsible parties
<b>Objective 1: Increase enrollment of qualified women into RSIF AHU PhD programs</b>		
1.1. Advertise social inclusion aspects of the program in the RSIF scholarship call and adopt a proactive women’s recruitment model	a. Modify the scholarship call to include mention of women-friendly program elements. b. Modify the scholarship call to clarify the commitment to inclusion of disabled persons in the program, including mention that people with disabilities are strongly encouraged to apply and that reasonable accommodations will be provided as needed. c. Develop and regularly update an extensive list of contacts from relevant University departments, organizations working to advance women in ASET, disability rights organizations, University disability services offices and government and industry employers in ASET fields. d. Develop a short presentation for promotional purposes (for use by AHU Coordinators and RSIF team) to describe RSIF’s commitment to gender equality and social inclusion.	<ul style="list-style-type: none"> <li>• Meso level: RSIF-RCU and AHUs.</li> </ul>
1.2. Implement affirmative action and equal opportunity practices for scholar selection	a. Select 50% of women students at each RSIF call. b. Adopt a policy that if two candidates are otherwise equal in terms of merit, but one is disabled, the disabled candidate is selected. c. Develop the protocol for identification and inclusion of a “diversity representative” (not necessarily female) to serve on scholar selection panels. d. Develop online training materials for panel members and AHU faculty on gender-sensitive recruitment and hiring practices and unconscious bias.	<ul style="list-style-type: none"> <li>• Micro level: Selection panel members</li> <li>• Meso level: RSIF-RCU, AHUs, PASET.</li> </ul>
1.3. Raise awareness among undergraduate students and their lecturers that ASET fields are for women too	a. Develop the protocol for facilitating women RSIF scholars and faculty to become “ASET Ambassadors”, including ways to incentivize role modeling activities. b. Develop a toolkit for ASET Ambassadors.	<ul style="list-style-type: none"> <li>• Micro level: Women RSIF scholars and AHU faculty.</li> </ul>

		<ul style="list-style-type: none"><li>• Meso level: RSIF-RCU, AHUs, PASET.</li></ul>
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Objective 2: Improve the postgraduate student experience of RSIF women PhD scholars		
2.1. Raise awareness among RSIF scholars and AHU faculty of the gender-related resources and disability services offered by their university	<ol style="list-style-type: none"> <li>a. Review the existing gender-related resources and disability services at the AHUs.</li> <li>b. Develop an information packet for RSIF scholars and AHU faculty on support services offered by their university (e.g., gender units, disability services offices, counseling), family-friendly policies, and where and how to report cases of sexual harassment.</li> <li>c. Develop and share with the RSIF AHUs a list of best practices for creating more equitable and inclusive environments.</li> </ol>	<ul style="list-style-type: none"> <li>• Meso level: RSIF-RCU and AHUs.</li> </ul>
2.2. Develop a mentoring and supervision program that promotes gender and social inclusion	<ol style="list-style-type: none"> <li>a. Develop a protocol for sponsoring women PhD scholars to attend and present at women-focused science events and conferences.</li> <li>b. Establish peer-support groups among RSIF scholars.</li> <li>c. Build gender-responsive elements into the RSIF formal mentorship program.</li> <li>d. Develop a protocol for supporting RSIF scholars to participate in existing mentoring/networking programs (e.g., Mawazo, OWSD, AWARD).</li> <li>e. Identify and partner with an organization to develop a course “Creating an inclusive educational environment” that covers a range of topics related to social inclusion in communications, curriculum development, teaching, mentorship, and supervision. Offer the course to faculty members and students on an annual basis.</li> <li>f. Develop a code of practice for supervision that is sensitive to gender- and disability-based differences and integrate this into the RSIF capacity building supervisors’ training course.</li> </ol>	<ul style="list-style-type: none"> <li>• Meso level: RSIF-RCU, AHUs, and PASET.</li> </ul>
Objective 3: Improve PhD performance among women and men RSIF PhD scholars		
3.1. Develop a program to promote greater family support for women scholars	<ol style="list-style-type: none"> <li>a. Modify the RSIF orientation course to include some activities that involve the RSIF scholars’ spouses/partners with the goal of gaining their support.</li> <li>b. Develop the protocol for facilitating men RSIF scholars and faculty to become male champions of gender equality in ASET, including identifying ways to incentivize their activities and developing a toolkit for activities.</li> </ol>	<ul style="list-style-type: none"> <li>• Micro level: Men RSIF scholars and AHU faculty.</li> <li>• Meso level: RSIF-RCU, AHUs, and PASET.</li> </ul>

3.2. Mainstream gender into RSIF capacity building cross-cutting courses	<ol style="list-style-type: none"> <li>a. Conduct desk review of literature on gender-based differences in learning styles and preferences for course content, format, and delivery.</li> <li>b. Conduct post-course assessments of the RSIF cross-cutting capacity building courses to identify gender-based differences, if any.</li> <li>c. Modify these courses, if needed, to ensure both women's and men's learning needs are met.</li> </ol>	<ul style="list-style-type: none"> <li>• Meso level: RSIF-RCU.</li> </ul>
<b>Objective 4: Support RSIF women scholars' timely PhD degree completion and career transition</b>		
4.1. Mainstream gender into the RSIF orientation training	<ol style="list-style-type: none"> <li>a. Conduct a post-course assessment of the RSIF orientation course to assess gender-based differences in demand for content and preferences for course delivery, if any.</li> <li>b. Modify the orientation course, if needed, to ensure both women's and men's needs for orientation are served.</li> </ol>	<ul style="list-style-type: none"> <li>• Meso level: RSIF-RCU.</li> </ul>
4.2. Adopt family-friendly policies within RSIF	<ol style="list-style-type: none"> <li>a. Formalize a policy within RSIF addressing interruption of studies due to life events (e.g., maternity, major illness).</li> <li>b. Identify approaches and implement flexibility in the sandwich program to accommodate scholars with young children (e.g. allowing scholars to take regular breaks to visit their families, have a shorter sandwich program, or use an e-commuting model).</li> <li>c. Develop a family travel grant package for breastfeeding mothers.</li> </ol>	<ul style="list-style-type: none"> <li>• Meso level: RSIF-RCU, AHUs, and PASET.</li> </ul>



**Table 2.** Timeline of gender strategy interventions and activities, July 2020 to June 2021 (continued)

Interventions and Activities	2020						2021					
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June
<b>Intervention 2.2</b>												
a. Protocol for conference attendance												
b. Establish peer support groups												
c. Protocol for other mentoring programs												
d. Develop RSIF mentoring program	Timing to be determined.											
e. Co-develop gender & diversity course												
f. Develop supervisor code of practice												
<b>Intervention 3.1</b>												
a. Modify orientation to include spouses												
b. Develop protocol for male champions												
<b>Intervention 3.2</b>												
a. Desk review of literature												
b. Post-course assessments	These assessments occur at the end of each cross-cutting course.											
c. Modify cross-cutting courses	As needed, depending on assessment results. To be done at the time of other course modifications.											
<b>Intervention 4.1</b>												
a. Post-course assessment	The assessment occurs at the end of the orientation course.											
b. Modify orientation course	As needed, depending on assessment results. To be done at the time of other course modifications.											
<b>Intervention 4.2</b>												
a. Create policy for PhD interruption												
b. Sandwich program flexibility	Timing to be determined.											
c. Develop family grant package	Timing to be determined. First approval for a family grant package must be obtained from PASET EB.											

**Box 1.** Some key gender concepts and definitions

Gender: Refers to the socially and culturally determined ideas and practices of what it is to be male or female. One's gender is, therefore, comprised of those cultural norms, roles, and attributes dictated by traditions.
Gender Equity: Denotes the equivalence in life outcomes for women and men, recognizing their different needs and interests, and requiring a redistribution of power and resources. To ensure fairness, measures are often needed to compensate for historical and social disadvantages. Equity leads to equality.
Gender Equality: Denotes women having the same opportunities in life as men, including the ability to participate in the public sphere and that social values, rights and responsibilities are equally shared, including equal access to resources and opportunities.
Gender Balance: Gender balance refers to the ration of women to men in any given situation. Gender balance is achieved when there are approximately equal numbers of men and women present or participating. This is sometimes also referred to as gender parity.
Gender Analysis: The systematic gathering and examination of information on gender differences and social relations in order to identify, understand, and redress inequities based on gender.
Gender Perspective or Gender Lens: Using a "gender perspective" means approaching or examining an issue, paying particular attention to the potentially different ways that men and women are or might be impacted. This is also called using or looking through a "gender lens".
Gender Responsive: A commitment to go beyond merely identifying gender issues and instead engage in processes to substantially help overcome historical gender biases. Gender-responsive approaches are essential to ensure that women are not only reached but truly benefit from actions.
Gender Roles: These are the roles assigned to men and women, respectively, according to cultural norms and traditions. Most often, gender roles are not based on biological or physical imperatives, but rather result from stereotypes and presumptions about what men and women can and should do. Gender roles become problematic when a society assigns greater value to the roles of one gender – usually men's.
Disaggregation by Sex: This refers to data collected from men and women respondents and statistics that are analysed in a way to show results for women and men separately.
Gender Mainstreaming: is the process of assessing the implications for women and men of any planned action, policy or program, in all areas and at all levels before any decisions are made and throughout the whole process. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programs so that both women and men benefit and inequality is not perpetuated. Gender mainstreaming is not a goal in itself, but an approach for promoting gender equality.
<i>Source: Gender mainstreaming in practice: A HANDBOOK, 2005, 2<sup>nd</sup> edition, UNDP Regional Centre for Europe and the CIS, Bratislava, Slovak Republic; Gender toolbox, Gender Mainstreaming, Sida 2015.</i>