



# Envisioning Frameworks to Address Systemic Causes of the Persisting Gender Gap in Science

Webinar Report and Highlights | October 2021

## Envisioning Frameworks to Address Systemic Causes of the Persisting Gender Gap in Science, September 3, 2021

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The webinar was held on the margins of the closing ceremony of the AWARD Leadership Program for Emerging African Women in Science. The Program is funded by The Carnegie Corporation of New York (CCNY) and is implemented under the umbrella of AWARD's Global Forum of Women in Scientific Research (GoFoWiSeR). GoFoWiSeR is designed to address the systemic causes of the gender gap in STEM and to spotlight the strategies and approaches that can improve the numbers and experiences of women in STEM.

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## Contents

Background.....	1
How can we envision systems that fast-track careers of women in science and support their retention?.....	2
What are some of the opportunities to eliminate the systemic barriers that perpetuate gender gaps in science?.....	6
Mentoring and networks play a pivotal role.....	6
Leveraging and strengthening institutional policies and practices.....	7
Priorities for research funders.....	8
Key Takeaways .....	9
Annex 1: Summarized Webinar Program.....	11
Annex 2: Webinar Speakers.....	11

## Background

On September 3, 2021, African Women in Agricultural Research and Development (AWARD) hosted an interactive dialogue that explored opportunities and strategies toward strengthening frameworks to bridge the gender gap in science. The webinar was held on the margins of the closing ceremony of the AWARD Leadership Program for Emerging African Women in Science. The two-month virtual Program was designed to equip participants with the skills and confidence to lead and innovate in the scientific world.

The event was attended by 153 participants from 35 countries worldwide, including researchers, university lecturers and students, science writers, communication professionals, leaders of research institutions, and other stakeholders. The webinar recording is available [here](#).

This report presents highlights of the discussions from the dialogue, which was structured to focus on two overarching questions:

1. How can we envision systems that fast-track careers of women in science and support their retention?
2. What are some of the opportunities to eliminate the systemic barriers that perpetuate gender gaps in science?

## How can we envision systems that fast-track careers of women in science and support their retention?

The share of women in higher education and research is recorded to be only 28 percent, with a paltry 3 percent of these women reaching the echelons of their science careers. A report by the L'Oreal Foundation analyzed data from 14 countries tracking points in women's educational and career paths where they begin to leave science-related fields. The results indicated that the gap starts at the bachelor's degree level, but experts argue the problem likely starts earlier.

The leaking pipeline persists, with recent empirical evidence revealing that the trend has not changed. Each step on the science career ladder sees drops in female participation, resulting in very few women at the highest decision-making and scientific research levels. A 2020 study on Gender and student performance in sub-Saharan Africa revealed that women represent over half the science graduates at bachelor's level (53 percent), compared to 43 percent at the Master's level and 28 percent at the Ph.D. level. The report highlights a complex interaction of various factors explaining women's underrepresentation in science and technology fields.

The STEM pipeline is still "leaking" girls and women at multiple stages from secondary school through undergraduate and graduate studies and transitioning to STEM careers.

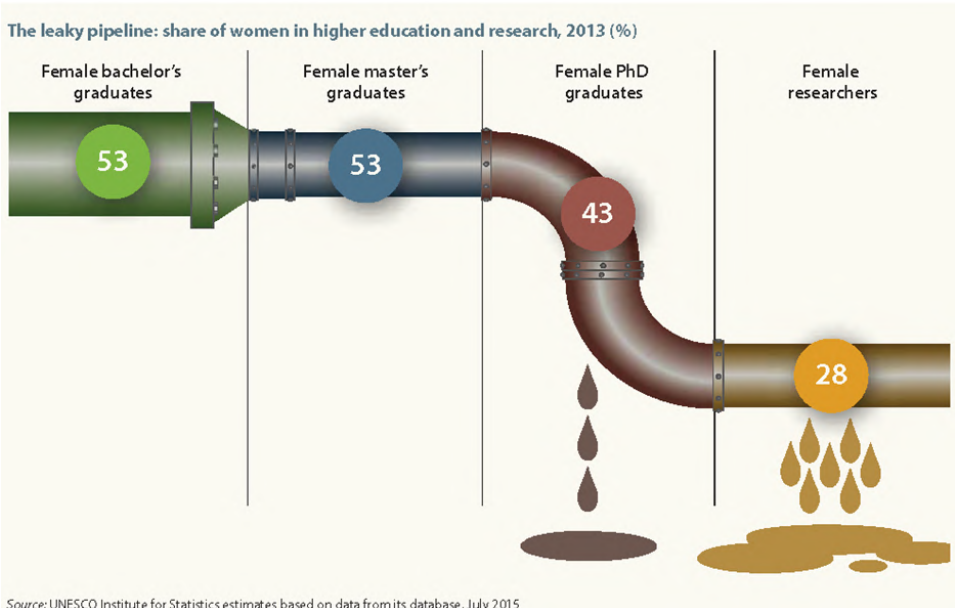


Figure 1: The leaky pipeline: Share of women in higher education and research

The gender gap in science can be traced back to early phases of education and is exacerbated by a myriad of drawbacks, including scarcity of secondary schools that results in reduced enrollment of girls, lower enrollment in the sciences at the university level, scarcity of science teachers and science education, and scarcity of research funds. While scarcity affects both men and women for various reasons, the effects on women tend to be more severe.

Participants noted that the underrepresentation of women in science stems from various factors, including the academic structures of science courses, family obligations, gender stereotypes and societal perceptions, organizational cultures and structures, availability of opportunities, and funders' requirements. The figure below summarizes the webinar discussions on the causes of fewer women in science.



Figure 2: Why there are fewer women in STEM

Beyond the most discussed barriers to women's participation, including lack of support for juggling personal and professional responsibilities and harassment, that is, experienced by many women, we need to pay attention to system-wide and environmental barriers.

Studies have shown that while the number of women undertaking STEM in higher education increases steadily, women are continuously lagging as soon as they start their professional careers.

The persistence gap between women holding a Ph.D. in science and those at the junior faculty level indicates the need for targeted action to address the under-representation of women in STEM.

Many of the bottlenecks within research systems that impede women's participation in research and research leadership are at the organizational level and the enabling environment. Addressing the systemic barriers require interventions aimed at different parts of the system.

At the individual level, we need to build women's capabilities and confidence, strengthening their research skills and professional survival skills. Mentoring is one of the tools that has been proven to be effective in build a pool of confident and capable women in science.

There is a need to design programs that enable women to optimize their participation at the program level. For example, The Consortium for Advanced Research Training in Africa (CARTA) has developed a good reputation for automatically offering support to new mothers who would otherwise find it difficult to travel for the doctoral seminars, part of the CARTA model. They have also developed postdoctoral research opportunities for graduating fellows where they have a choice to travel to other locations for a more traditional postdoc experience, or they can receive a sizable re-entry grant.

At the organizational, level research institutes need to thoroughly review their policies, procedures, and practices to ensure that the environment supports male and female researchers. One way of achieving this is through gender lenses to examine staffing structures and expectations for early career researchers with more workload and reward structures.

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Addressing systemic barriers also requires commitment from multiple actors, including governments, the private sector, and from the public at large, to, for example, prioritize education that is fit for purpose and is widely accessible. That commitment must be accompanied by funding to strengthen research organizations and to support research prioritization. There is increased attention on strengthening research funding frameworks. For example, initiatives such as the Science Granting Councils Initiative (SGCI) enhance science funding councils in African countries.

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) Network is another excellent example. The consortium, comprising 126 African universities in 38 countries, raises resources to fund agreed priority areas amongst the member institutions while promoting a balance in the gender of researchers (faculty, student, and partner agencies) and the inclusion of a gender perspective in the project proposals.

While these examples are a good start, there is an urgent need to scale and accelerate these efforts.



## What are some of the opportunities to eliminate the systemic barriers that perpetuate gender gaps in science?

### Mentoring and networks play a pivotal role

Perceptions that science disciplines are meant for men start at an early age, perpetuated by society's narratives. Society has consistently created an environment that advances men in STEM-related fields while suggesting that women cannot pursue these professions, ultimately diminishing young girls' interests in STEM. Parents are also contributors to this socialization process as big influencers of their children's prospects. These societal stereotypes create the impression that males are better in STEM than their female counterparts, creating a considerable gender gap.

Mentoring has been proven to empower women to pursue STEM in their studies and portray science as a viable career option. An inspirational and transformational relationship that evolves to meet the needs of individuals, mentoring can play a significant role in shifting the narratives and influencing the mindsets of young women and girls.

Knowledge and experience sharing is the core of mentoring, offering an enriching experience for accomplished professionals and a great learning point for the younger inexperienced generation.

Ultimately, mentoring helps challenge perceptions and creates champions of change that can influence the participation of more women in science.

Networks offer opportunities for women to amplify their voices and contribution in science and provide a platform for cross-learning, social support, and friendship, ultimately contributing to career success.

A recent study by the Regional Scholarship and Innovation Fund for Applied Sciences, Engineering and Technology Project in sub-Saharan Africa (RSIF-PASET) showed that fostering broader linkages and networks for women in STEM is critical.

Women in STEM networks have opportunities to strengthen their research and professional survival skills. Employers are encouraged to provide women in STEM with opportunities to interact with their peers working in the same field. Given the dynamics in STEM and the rapid changes in technology, it is critical for women in STEM to network with others across the globe to keep themselves up to date with the current professional trends and better their knowledge.

Small networks should also explore working together to augment their influence and accelerate the impact at a large scale.

### Leveraging and strengthening institutional policies and practices

The need for policies that support women to thrive in their science careers (both as science students and practitioners) has been highlighted in the past. Beyond creating policies, institutions need to be intentional in ensuring awareness and establish accountability mechanisms.

Thorough and frequent policy reviews are also critical, calling for committed leadership. For example, universities as research organizations can examine their staffing structures and expectations for early career researchers. Applying these policies should vary across research topics, methodologies, and how research results are reported, digging deep into what counts as knowledge in the university context.

Institutions need to be aware of unconscious bias that may influence their recruitment decisions. Applying a gender lens to identify the institutional changes that increase opportunities for women to contribute to research will help ensure that available resources are well placed.

Investment in targeted communication and advocacy to create an evidence base on the value of investing in women and girls in science, the distinct contributions of female researchers in solving society's problems both to help change attitudes about women and their place in science and research, as well as policy options that may be required. Organizations such as The Mawazo Institute are deliberate to influence the visibility of women in science, connecting them to policymakers to amplify their contributions at higher policymaking levels.

Institutional policies, such as career progression policies, should consider the factors affecting women's success in STEM at an individual, family, and societal level and their work environment. For example, the policies should cater to career disruptions such as maternity leave.

### Priorities for research funders

The availability of financial resources is a significant factor in ensuring women's success in STEM. At the university level, scholarships are a lifeline for women pursuing STEM courses, while research grants are anchors for young researchers who represent the future of science. Yet, several worrying trends, including a rise in the age at which researchers receive their first funding and the decline in the portion of critical research grants going to younger scientists, are dealing a heavy blow towards fixing the leaky pipeline of women in STEM. Such gaps in funding place women at a disadvantage from the earliest stages of their careers

Globally, women are still underrepresented in academia as they face gaps in salaries, leadership, and funding. Closing the funding gap is particularly important because it may directly retain women in academia and foster closing the other gaps. The scramble for funding and age bias is among the top factors and gaps in grant funding that discourage young female researchers from pursuing careers in science.

Research funding restrictions, including age limits, perpetuates the gender gap. A significant number of participants noted this and highlighted that research funders need to be cognizant of the barriers posed by such requirements.

Targeted policies on research funding could impact the trajectory of scientific research, the next generation of scientists, and influence the next generation of science, demand more.

## Key Takeaways

Despite progress in narrowing the gender gap in STEM in Africa, women's low numbers in STEM careers remain stark. More than ever, there is a need for a multipronged approach that addresses the hurdles women face in pursuing STEM courses and practice.

The webinar highlighted that mentoring and innovative partnerships play a significant role in facilitating the inclusion of more women scientists in global conversations and STEM leadership. Most of the systemic barriers are at the institutional level and environmental level. Research funders and institutions need to pay more attention to their policies and priorities. For example, research funders need to be aware of the possible ways in which their requirements exacerbate the gender gap, such as stipulated age limits for grants and sponsorships.

Beyond institutional policies for gender equity, institutions need to be deliberate in ensuring their policies' socialization and establishing ways of monitoring the policies' implementation.

The table below summarizes the webinar discussions on establishing and strengthening frameworks to bridge the gender gap in science.

Table 1: Causes of gender gaps in science and possible solutions

Causes of gender gaps	Possible solutions
Lack of mentorship and networks	<ul style="list-style-type: none"><li>- Create a pool of mentors and mentoring programs to support girls studying STEM and early-career women in STEM</li><li>- Provide opportunities for women in STEM to network with their peers in different fields</li><li>- Networks to explore ways of collaborating to strengthen their impact</li><li>- Review membership options to ensure accessibility for target audiences</li><li>- Promote training and other knowledge opportunities</li></ul>

<p>Research funders' priorities and expectations</p>	<ul style="list-style-type: none"> <li>- Review age limits for awarding research funds</li> <li>- Scholarships for women pursuing STEM courses</li> <li>- Innovative funding models for early-career women in STEM</li> <li>- Develop deliberate policy options that financially support different categories of women in STEM</li> </ul>
<p>National policies and priorities</p>	<ul style="list-style-type: none"> <li>- Allocate more funding for training and research</li> <li>- Prioritize quality education that is widely accessible</li> <li>- Establish robust research governance and support structures</li> <li>- Affirmative action where required</li> </ul>
<p>Limited institutional support</p>	<ul style="list-style-type: none"> <li>- Creating enabling work environments</li> <li>- Laws to support equal representation within institutions</li> <li>- Support women to fit back easily after career disruptions such as maternity breaks</li> <li>- Flexible policies to assist women in STEM who must travel with their families</li> <li>- Socialization of policies among the staff</li> <li>- Disciplinary structures to handle sexual harassment cases in the work environment and provide clear communication on sexual harassment in institutions</li> <li>- Flexible work schedules and supportive leadership</li> </ul>
<p>Public perception and narratives among young populations</p>	<ul style="list-style-type: none"> <li>- Develop strategies to create awareness on the gender gap in STEM</li> <li>- Review the language and narratives used to portray science careers</li> <li>- Advocacy for more women and girls in STEM and to change perceptions on science fields as male-centric</li> <li>- Stakeholder engagement on gender equality interventions in STEM</li> </ul>

## Annex 1: Summarized Webinar Program

1600 to 1615	Opening session
1600 to 1605	Introduction and welcome; housekeeping announcements; Participants engagement via the chat function
1605 to 1615	Opening remarks and setting the scene
1615 to 1700	Moderated panel discussion (including audience engagement through Q&A)
1700 to 1720	AWARD's investment in women's skills and networks: The GoFoWiSeR Leadership Program for Emerging Women in Science
1720 to 1730	Closing remarks

## Annex 2: Webinar Speakers

1. Dr. Fiona Moejes, Director of Programmes, Mawazo Institute, Kenya
2. Ms. Nathalie Munyampenda, Chief Executive Officer, Kepler, Rwanda
3. Dr. Moses Osiru, Manager of the Regional Coordination Unit of the Regional Scholarship and Innovation Fund of the Partnership for skills in Applied Sciences, Engineering and Technology (PASET) at the International Center of Insect Physiology and Ecology (icipe) in Nairobi, Kenya
4. Dr. Anthony Egeru, Programme Manager, Training and Community Development at the RUFORUM Secretariat and Senior Lecturer at Makerere University, Uganda
5. Ms. Andrea Johnson, Program Officer, The Carnegie Corporation of New York (CCNY), New York, USA