



Supporting girls and women to pursue STEM subjects and careers - Insights from the Global Education Monitoring Report 2023 and Gender Report 2024

2023

Eminent 2024

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Some quick facts

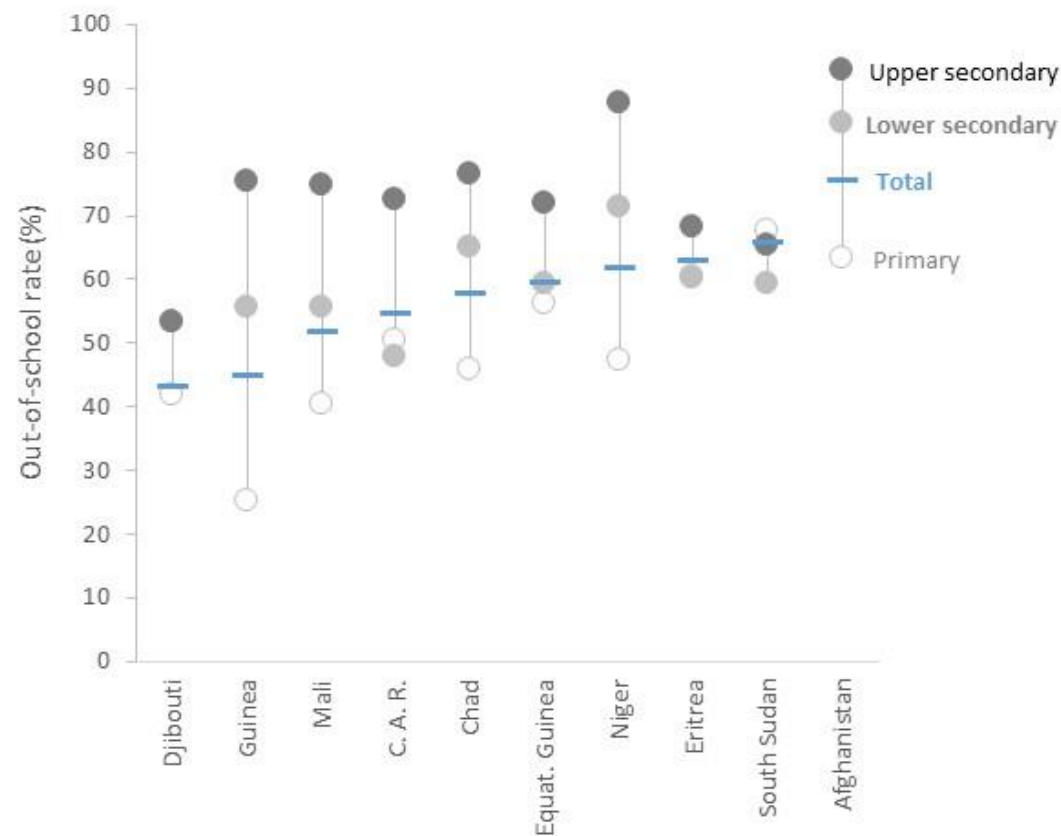


Millions of girls continue to be excluded from education

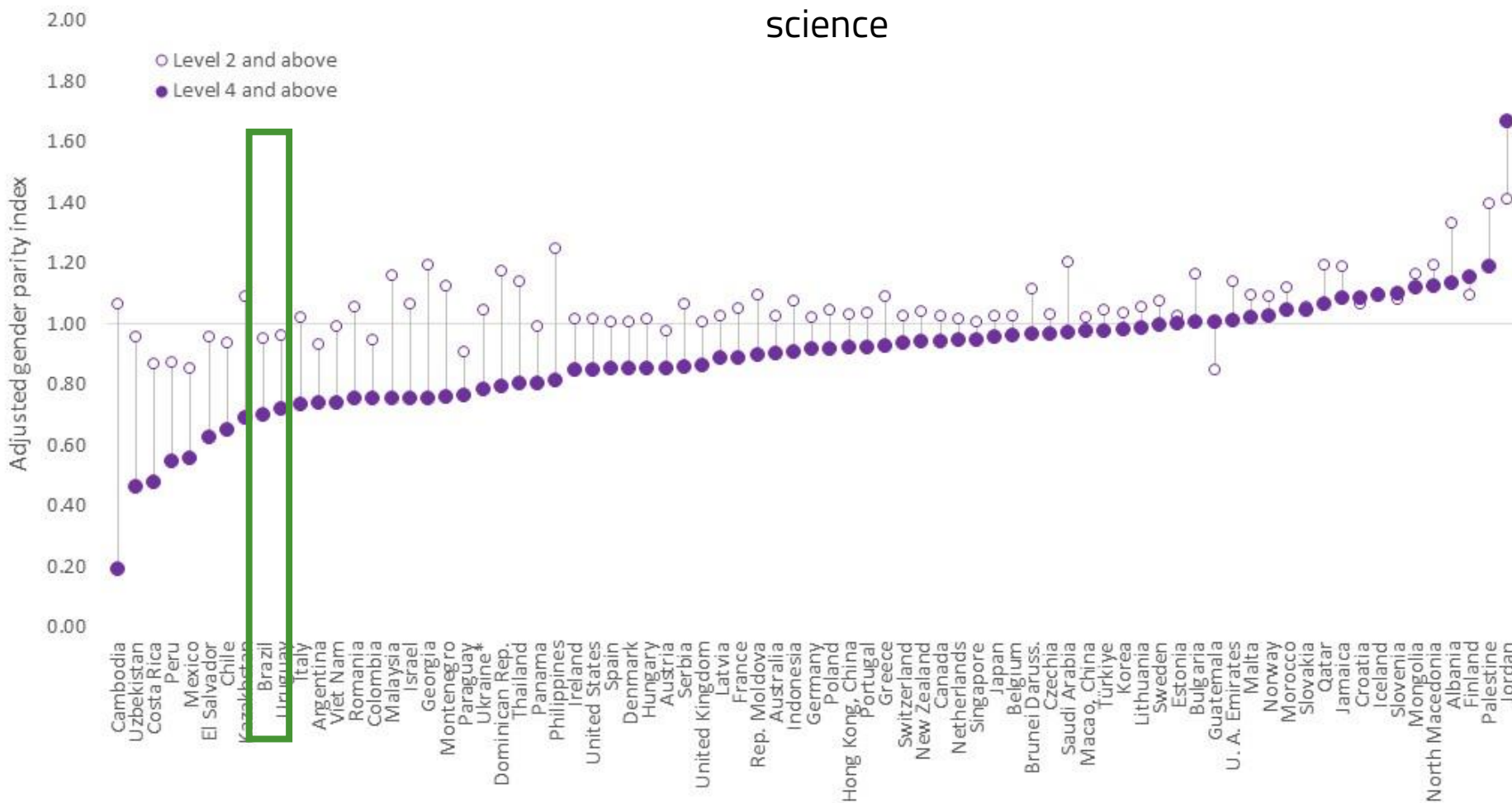
Globally, the number of out-of-school girls has fallen by 41% to 122 million between 2000 and 2022

In Sub-Saharan Africa there are more girls of primary and secondary school age who are out of school than boys

Apart from Afghanistan, 9 of the 10 countries with the highest education exclusion rates for girls are in SSA



Girls are catching up with boys in math and science, but boys tend to have a considerable advance over girls at 'high' level of performance



Boys have a small advantage over girls in minimum proficiency in mathematics in primary education, but this is reversed in lower secondary education.

But boys tend to have a considerable advantage over girls in science and mathematics at the higher end of performance.



Girls and women continue to face barriers in access to technology

Girls are on the wrong side of the digital divide
81% of men and 75% of women owned a mobile phone in 2023

Biased social and cultural norms inhibit equitable access to the internet
244 million fewer women still have no access to the internet

ICT can improve learning for disadvantaged girls, including in crisis contexts
Radio (Afghanistan); Tablets (Jordan), Mobile phones (Nigeria); Learning apps (Kenya)



The enabling environment for STEM varies from country to country

68% of countries in the world have policies to support STEM...

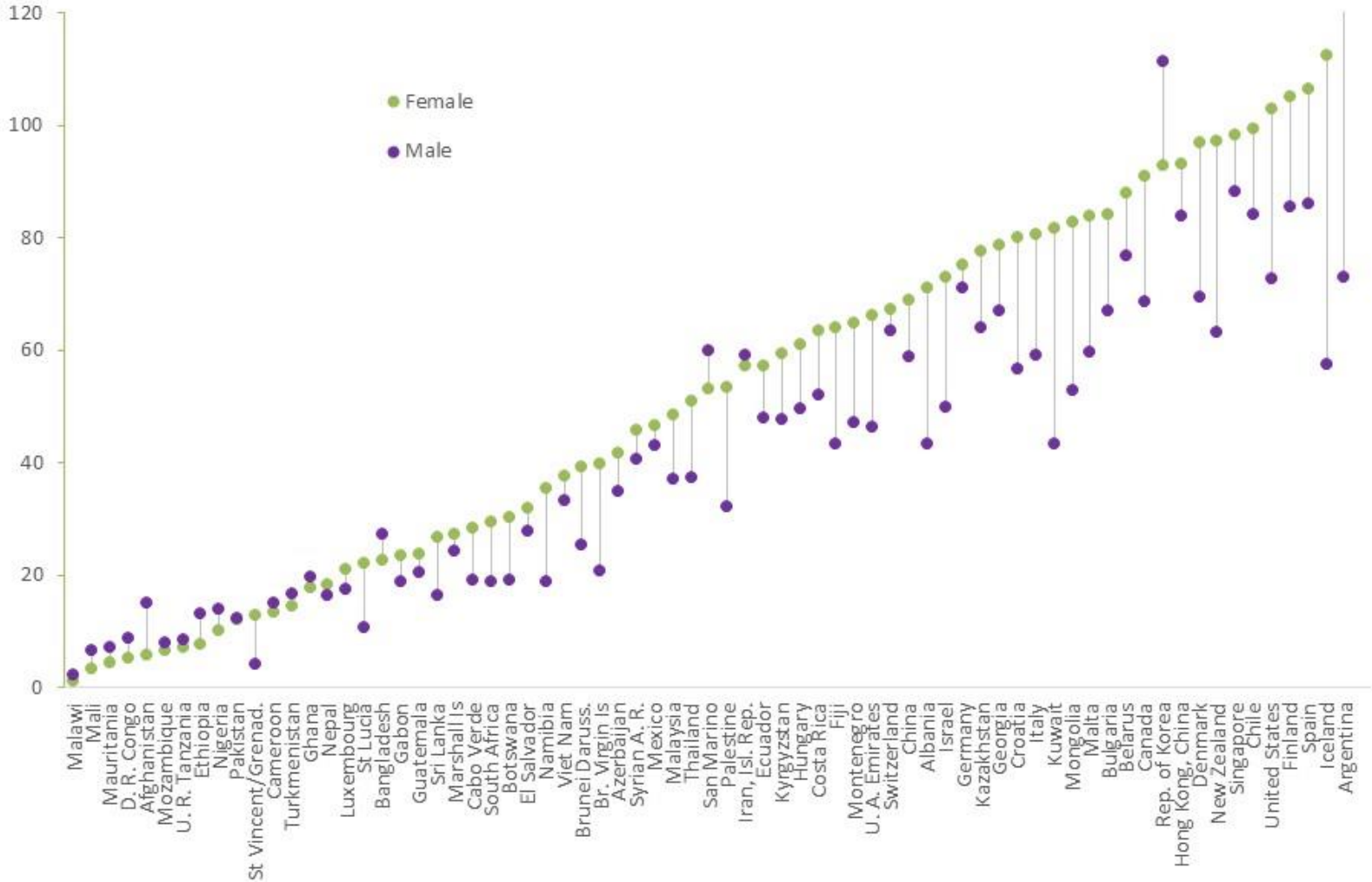
... But only half explicitly support girls' inclusion in STEM

PEER on education and technology:
Education-profiles.org



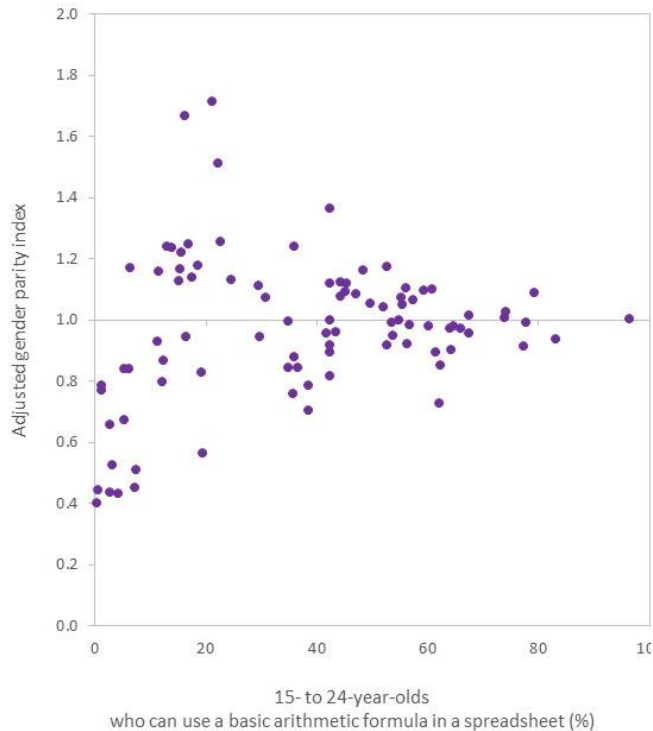
More girls and women are enrolled in tertiary education, but the choice of fields of study remains gendered

There is a large gender gap in tertiary education participation

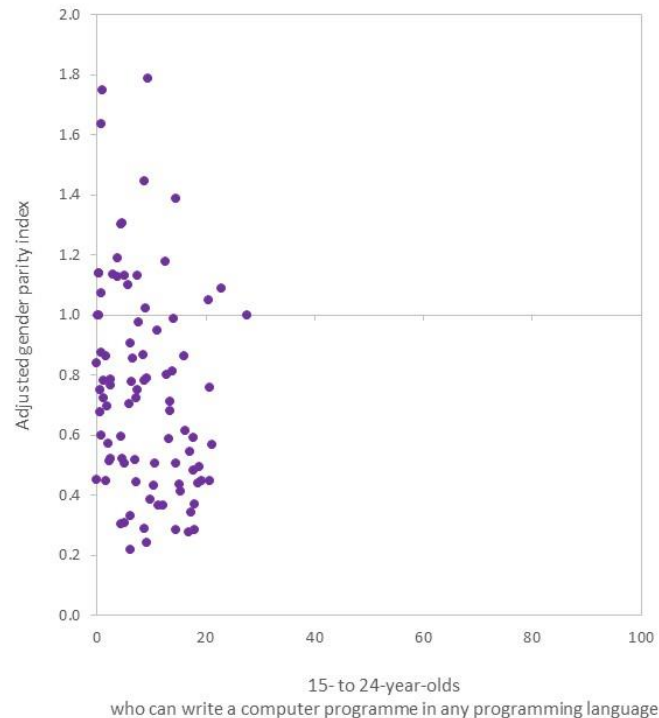


Gender gaps in digital skills are rapidly changing

a. Spreadsheet skills



b. Programming skills



ICT skills require a minimum level of literacy and numeracy skills.

Their distribution in the population determined by the availability of infrastructure, devices and relevant labour market opportunities

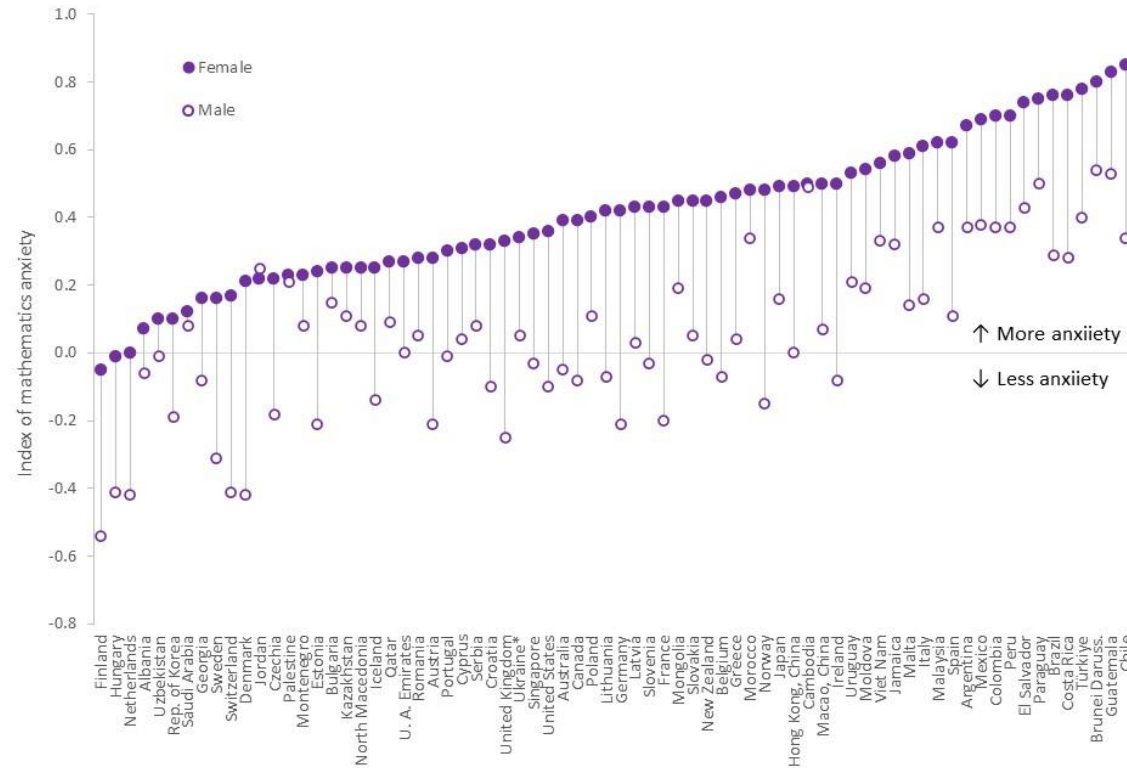
Two ICT skills can be used to demonstrate gender disparity among youth and adults:
being able to use a basic arithmetic formula in a spreadsheet and to write a computer program



Girls' confidence in STEM countries is harmed early

Girls are far more anxious about mathematics than boys
Largest gender gaps were reported in Denmark, France, Germany Norway

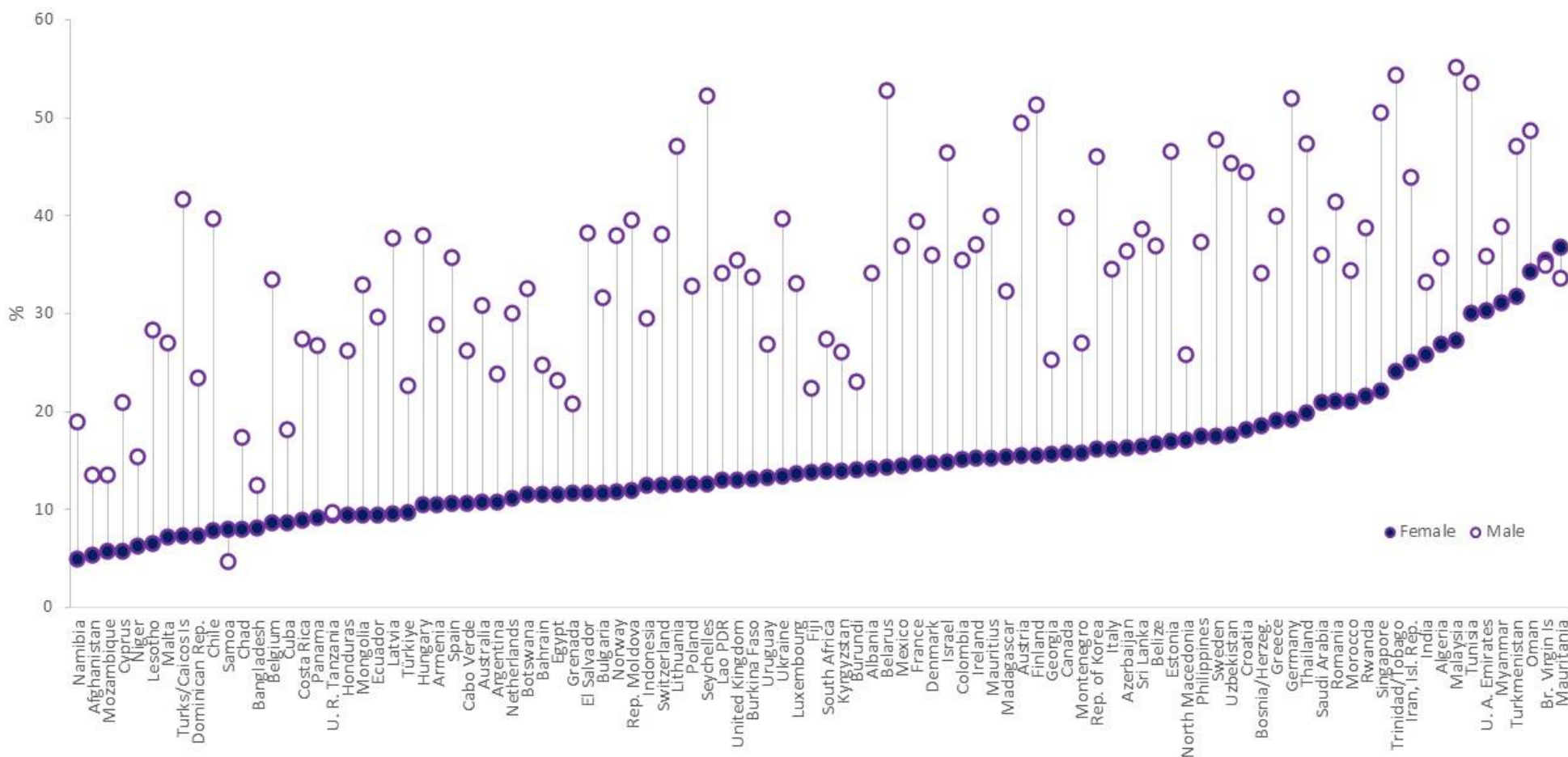
Boys' and girls' educational trajectories diverge at the age when they start deciding about their careers.
In Canada and Ireland, subject choices in secondary school explain the subsequent gender gap.



Girls are much less likely to choose STEM courses

15% of women, but 35% of men choose STEM courses

Women make up 52% of all graduates, but only 35% of STEM graduates, unchanged over the past decade.

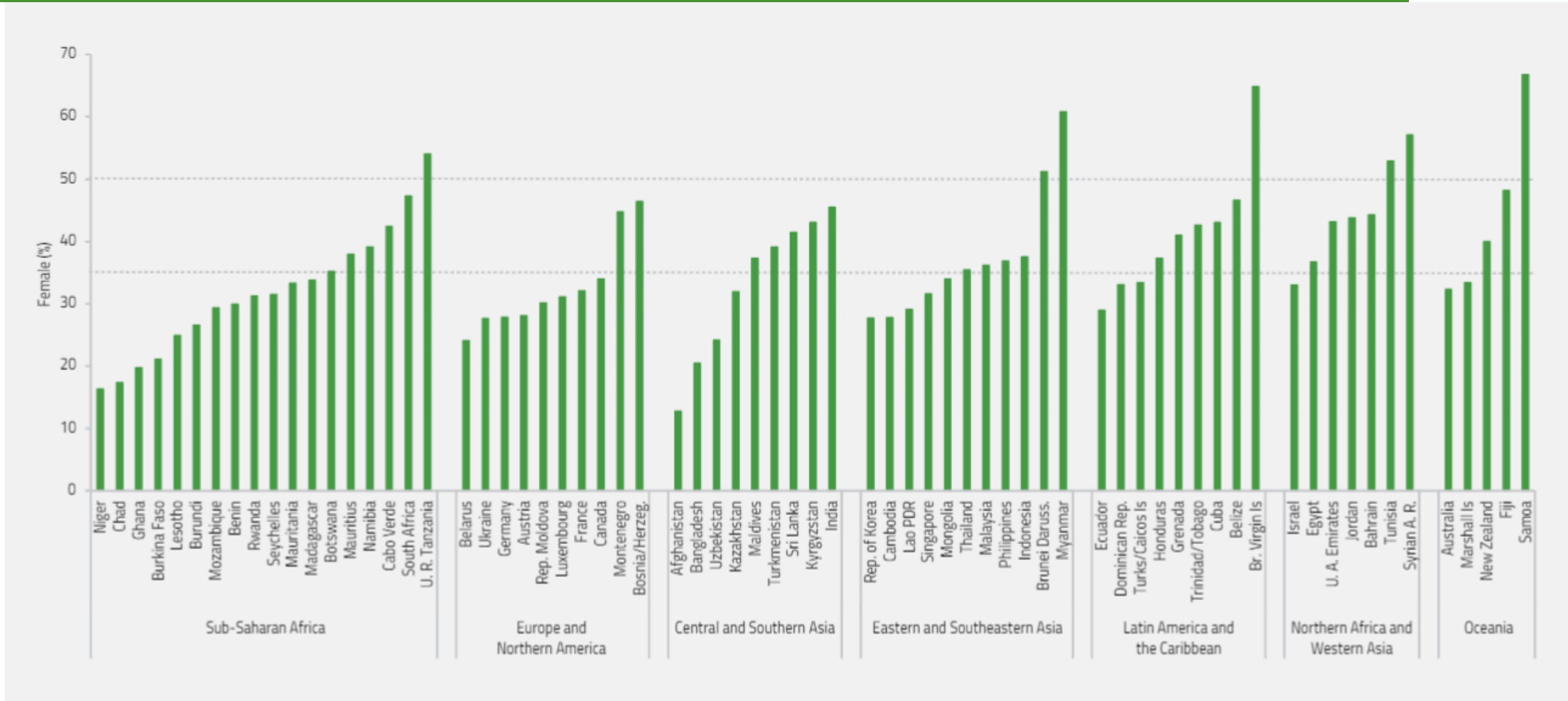


For a subset of 50 countries with data for 2010–11 and 2020–21, there has been no change in the share of female STEM graduates.

Source :
UIS database



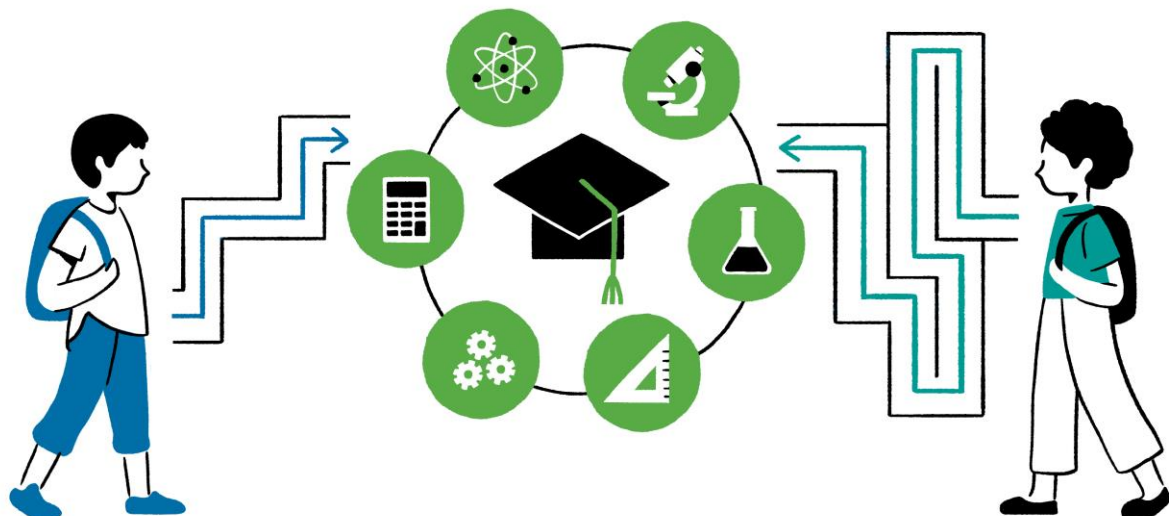
With differences across countries and regions however



Source: UIS database



Girls are far less likely to study STEM subjects and pursue STEM careers despite concerted efforts



The share of women among STEM graduates is 35% and has not changed in the past 10 years according to UIS data

Only in 9 out of 122 countries, the majority of STEM graduates were female, notably in the Syrian Arab Republic and Tunisia.

Women held less than 25% of science, engineering and ICT jobs in 2022 and occupy just over one in five technology positions in companies



Academic achievement, gender and social identity determine aspirations for STEM education and careers

Girls don't opt for STEM careers even when they're among the top performers in math

Girls achieve the same learning outcomes before developing the idea that they are not good enough at math

On average, fewer than one in four 15-year-olds in OECD countries expected a career in STEM

High shares of female STEM graduates in Arab countries coincide with lower mathematics anxiety.

Boys in 4th grade were more willing to pursue a mathematics-related profession than girls in 87% of education systems

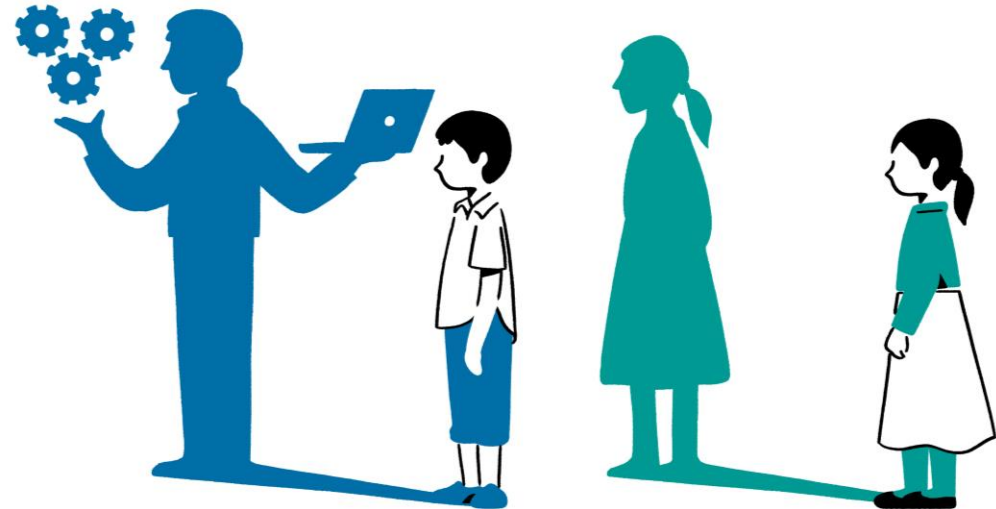


Gender and social identities and stereotypes shape STEM aspirations

Gender stereotypes about STEM studies and professions are generated and perpetuated at home and in school

Female teachers can positively influence aspirations towards STEM by acting as role models

Biased gender norms and stereotypes embedded in curricula and textbooks influence girls' choices of what to study and what careers to pursue



Even with equivalent qualifications, women are less likely to find relevant jobs

The gender gap widens as seniority levels increase

Less than a quarter of STEM researchers in OECD countries and less than one-third of the world's researchers are women

Divergence of STEM educational choices crystallizes in the labour market experiences

In Brazil, Costa Rica and Paraguay the gender wage gap in professional, scientific and intellectual occupations is above 20 pp

In 2022, **17%** of patent applications were filed by women globally compared to **83%** by men. At the current pace of patenting, the gender gap in patenting is calculated to be bridged in 2058

In the 20 largest economies, women make up 26% of employees in data and artificial intelligence, 15% in engineering, and 12% in cloud computing

In 2022, and ICTwomen held **less than 25%** of Science, engineering jobs globally

The countries with the largest gaps are Germany, Brazil, Mexico and Argentina, whereas the countries with the smallest gaps are Italy, Singapore and South Africa.

Women-owned startups face a significant funding gap compared to their male counterparts



Leaving girls out of equal opportunities to study and work in science and technology careers can have several consequences

Underrepresented groups contribute disproportionately less to technology advancement

Gender and racial bias and stereotypes in algorithms and product development, ideas and products, pose the risk of perpetuating inequality

In AI and machine learning: algorithms trained on biased data or without consideration of diversity, can reflect and amplify societal biases

Diverse educational backgrounds and experiences foster an environment where creativity and innovation flourish

Diversity enhances creativity

Broadens Innovation Scope

Improves Decision Making

Reflects Global Market

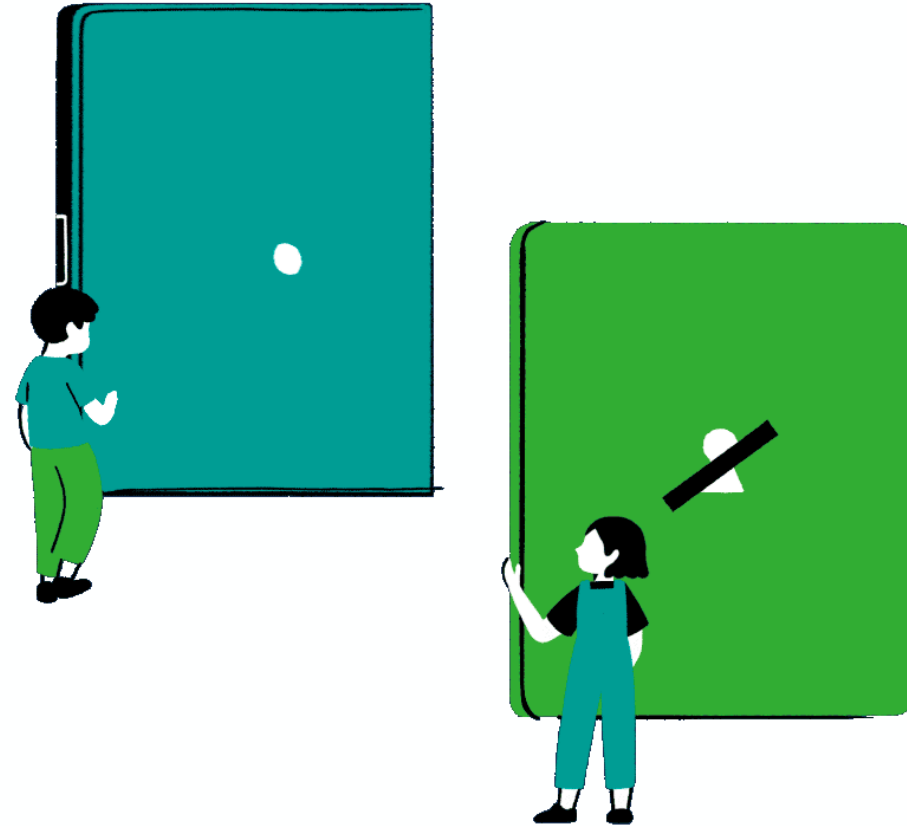


Empowering youth is crucial to overcome the gender and digital skills gap

Work with youth to establish broad framework for digital competences that provides guidance for the skills all learners should acquire **irrespective of their gender**

Adopt various approaches to close the gender digital divide in accessing and using technology
Avoid infrastructure-only approaches and invest in gender-responsive education and training programmes

Invest in programmes that can empower girls and young women to study in STEM fields and pursue STEM careers **encourage non-discrimination and gender balance in technological design**



How can diversity be encouraged in science and technology?

Start early: Early STEM learning can help overcome gender stereotypes and student biases towards math and science

Make STEM Relevant to diverse groups using science fairs, workshops, mentoring programs and networking

Change school culture: Schools can create a more inclusive and welcoming environment for girls and other vulnerable groups in STEM for example celebrating women's achievements, providing mentorship opportunities with mentors from similar backgrounds, and addressing biases

Provide relevant training to teachers and faculty in culturally responsive teaching techniques to engage a diverse student body effectively.

In at least 40 countries, more than 10 per cent of lower secondary science teachers have no formal education or training in this subject

Showcase Diverse Role Models

Develop orientation programs specifically designed to support the transition of underrepresented students into the STEM academic community

Offer professional development in diversity, equity, and inclusion (DEI) for faculty and staff to cultivate an inclusive campus culture

How can diversity be encouraged in Science and Technology?

Provide career guidance and counselling to help break inequalities linked to gender, ethnicity and socio-economic status

Enhance Visibility of Diverse Scientists

Attract students to STEM fields through scholarships and financial assistance: since 2006, STEM learning has accounted for nearly 30% of global scholarship holders

Promote Equitable Hiring and Advancement Practices:

Cultivate an Inclusive Workplace Culture

Encourage diverse teams

Address and prevent harassment and discrimination

Collect and Analyze Data on Diversity

Highlight the importance of a sustained commitment to breaking barriers in STEM, calling for ongoing efforts to cultivate an inclusive environment where diverse talents can thrive

Ensure cooperation across government departments, sectors and tiers

Share expertise and resources involving different stakeholders leveraging also universities and communities

The report proposes 7 policy recommendations to reduce the gender imbalance in STEM fields

1. Review STEM policies to integrate gender equality
2. Offer gender-responsive role models, mentorships, and advice
3. Train teachers and school leaders to combat bias
4. Strengthen girls' digital literacy
5. Review educational materials to eliminate stereotypes
6. Adopt cross-cutting and holistic approaches
7. Collaborate with external actors



Let's break barriers and empower #GirlsInSTEM!

Thank you!

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gemreport

<https://bit.ly/2024genderreport>

