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# Women in the STEM Education in Azerbaijan: A Policy Note

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## A. EXECUTIVE SUMMARY

In the swiftly changing landscape of today's global economy, the importance of Science, Technology, Engineering, and Mathematics (STEM) education is becoming increasingly evident. Recent studies indicate that education in science, technology, engineering, and mathematics (STEM fields) is a more effective gauge of human capital. This is because STEM education promotes innovation and develops a workforce that can propel and adapt to technological progress, a key factor in economic growth and development.<sup>1</sup>

STEM education catalyzes sustainable economic growth by enhancing competitiveness and preparing the workforce for the digital era. It lays the foundation for innovation, offering nations opportunities to explore new economic pathways and address contemporary challenges effectively. Empirical evidence supports this, as Croak (2018) found that, on average, a 1% increase in the number of first university STEM degrees per worker is associated with an approximate 2% increase in annual GDP per labor force, all else being equal<sup>2</sup>.

For Azerbaijan, the STEM sector is particularly indispensable. This focus on STEM education is mirrored globally, with most of the top 20 countries, according to the proportion of STEM tertiary graduates, being in the developing world. This trend indicates that policy-makers in emerging economies, including Azerbaijan, are promoting technical subjects to drive innovation and economic development. By prioritizing STEM education, Azerbaijan can harness the potential of its workforce, foster innovation, and secure sustainable economic growth.<sup>3</sup>

Moreover, ensuring gender equality in the STEM sector is principal. Women remain underrepresented in STEM fields globally, despite their significant potential contributions. Promoting gender parity in STEM not only strengthens diversity and inclusivity but also harnesses a broader talent pool essential for tackling complex global issues. By empowering all individuals with equal access to STEM education and opportunities, societies can maximize innovation, economic prosperity, and societal progress in the 21st century.

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<sup>1</sup> [The Effects of STEM Education on Economic Growth](#)

<sup>2</sup> [The Effects of STEM Education on Economic Growth](#)

<sup>3</sup> [The push for Stem graduates in developing countries](#)

In Azerbaijan, women make up 52% of the population aged 15 and older but face significant challenges in the labor market and leadership roles. Historically, 674 occupations across various sectors, including transport, energy, and agriculture, were reserved for men until 2022. Until then, women were prohibited from working as train engineers, driving city buses, and more. Additionally, women are legally prohibited from being hired into a wide array of jobs that involve underground work, potentially hazardous conditions, or hard physical labor. These restrictions, carried over from the laws of the former Soviet Union, were likely meant to safeguard women's health, but were not necessarily grounded in a specific risk assessment for each job. Despite women now constituting nearly half of the employed population, they suffer higher unemployment rates and dominate the economically inactive demographic, often classified as housewives. Women earn 70-80% of men's salaries on average, with significant gender pay gaps and underrepresentation in higher-paying fields. Leadership positions are predominantly held by men, reinforcing gender inequality. Women tend to work in lower-wage sectors like healthcare and education, while men dominate higher-paying fields like transportation and construction, resulting in one of the highest gender pay gaps in Europe and Central Asia at 35.2%. In Azerbaijan, Azerbaijani women are significantly underrepresented in STEM fields and earn substantially less than men. Despite women making up 40% of STEM graduates in the country, which is higher than the global average of women researchers, they face barriers like glass ceilings and stereotypes that hinder their careers. Efforts by UNDP and USAID aim to inspire more women and girls to pursue STEM careers, crucial for achieving Sustainable Development Goals and promoting gender equality through innovation.

## **B. STEM EDUCATION**

Considering the significant role of innovation and technology-driven change in modern economies, it is no surprise that policy-makers worldwide prioritize STEM education. According to Marginson et al. (2013), international evidence shows that the quality of education, especially as indicated by cognitive skills in science and mathematics, is a

more accurate predictor and a more significant influence on economic outcomes than the overall quantity of education.<sup>4</sup>

Top-performing Asian economies in science and math, according to the OECD's Programme for International Student Assessment, have also seen exceptional economic growth, suggesting a direct link between strong-performing education and research-based science systems and leading economies. Economic models consistently show a connection between cognitive skills in math and science, and long-term economic development. UNESCO highlights the critical role of science and technology in achieving sustainable development and accessing the knowledge economy. Consequently, there has been a global increase in STEM enrollment and degrees, with significant growth in science and engineering degrees awarded worldwide.

Atkinson and Mayo (2010) argue that STEM education is crucial for a technology-driven economy, as technological innovation has been a major driver of economic growth in the U.S. since WWII. Innovation, facilitated by STEM education, enhances productivity and is essential for economic growth. Following China's example, they suggest prioritizing STEM education because of its significant societal contributions.<sup>5</sup>

Both Atkinson and Mayo (2010) and Marginson et al. (2013) agree that the benefits of research and innovation largely spill over to society rather than being confined to individual companies or workers. Studies, including those by Psacharopoulos and Patrinos (2004), show that human capital enhances the productivity of other production factors, with social returns often matching private ones.<sup>6</sup> Therefore, STEM education, by generating technology-specific knowledge, is vital for overall economic growth driven by innovation. Not only directly, but also through positive spillovers, STEM education plays a transformative role in empowering women and advancing gender equality in societies worldwide. Despite significant progress in recent decades, gender disparities persist in STEM fields, with women often underrepresented in STEM-related careers and

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<sup>4</sup> (PDF) STEM: Country Comparisons International comparisons of science, technology, engineering and mathematics (STEM) education (Marginson, Tytler, Freeman & Roberts)

<sup>5</sup> REFUELING THE U.S. INNOVATION ECONOMY: Fresh Approaches to Science, Technology, Engineering and Mathematics (STEM) Education

<sup>6</sup> Returns to Investment in Education

leadership positions. Addressing this disparity is not only a matter of equity but also critical for unlocking the full potential of women as drivers of innovation, economic growth, and sustainable development.

The underrepresentation of women in STEM fields globally presents a significant challenge, highlighted by the fact that only 25% of leading innovation firms are led by women. This statistic underscores the systemic barriers hindering women's progression into top leadership roles within the technology sector. Furthermore, recent data from 2018 reveals that women comprised just 20% of Fortune 500 Chief Innovation Officers, indicating entrenched inequalities. In STEM occupations, women continue to face a wage gap, earning 16% less than their male counterparts, perpetuating gender disparities. Despite these challenges, organizations like Femmes Digitales are dedicated to addressing these issues. Through advocacy for women's inclusion in tech leadership and the promotion of supportive environments, efforts are aimed at achieving equal representation and opportunities. These initiatives are driven by concerning trends, such as the decline in women holding computing jobs to 25%, signaling a need for proactive intervention. Moreover, with only 5% of top tech sector leadership positions occupied by women and minimal representation in major venture capital firms at 7%, urgent action is required to foster a more equitable landscape. Empowering young women in technology early on and promoting female role models are pivotal strategies in narrowing the persistent gender gap in computing, a field where female participation has declined since 1995.<sup>7</sup>

Even in developed regions globally, including the United States and the European Union, gender disparities persist in STEM fields despite progress toward gender equality in the workplace. Women remain underrepresented in computer science, mathematics, engineering, and technology-related occupations. For instance, in the United States, although women constitute almost half of the workforce, they represent only 28% of computer science and math workers and hold just 26% of positions in the largest IT companies. Similarly, in the European Union, women make up only 17% of the ICT sector.

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<sup>7</sup> [Femmes Digitales](#)

Discrimination has historically contributed to low female participation in STEM, with studies indicating that 41% of women left the IT sector due to discrimination. However, recent surveys suggest a positive shift, with the percentage of women in the IT sector increasing from 6.8% to 22% over a decade. Additionally, 43% of women working in IT transitioned from other fields, indicating potential for further growth. However, in Azerbaijan, despite advancements towards gender equality in the workforce, particularly in the IT field, women still constitute only 26% of the technological workforce. Moreover, only 11% of Azerbaijani women pursue STEM studies in higher education institutions.<sup>8</sup>

## **B.1. STEM SECTOR IN AZERBAIJAN**

According to a 2021 study by the World Intellectual Property Organization (WIPO), **Azerbaijan excels in the ease of starting a business (ranked 9th) and getting credit (1st), with notable performances in the pupil-teacher ratio in secondary education (8th), graduates in science and engineering (ranked 35th) and microfinance gross loans as a percentage of GDP (13th). The country also demonstrates solid rankings in areas such as the business environment (33rd), state of cluster development (27th), and FDI net inflows as a percentage of GDP (25th). However, Azerbaijan faces significant challenges in several areas. The country ranks poorly in general infrastructure (127th), knowledge absorption (128th), and applied tariff rate (125th). Other weaknesses include low rankings in QS university rankings for the top 3 universities (74th) and gross capital formation as a percentage of GDP (118th). Additionally, Azerbaijan's performance in intellectual property payments and receipts as a percentage of total trade (124th and 113th, respectively) and creative goods exports (122nd) indicate areas for improvement in fostering innovation and creative industries. Azerbaijan ranked 80th among 132 economies in the Global Innovation Index (GII), 89th in human capital and research, and 115th in knowledge and technology output.** According to this study, Azerbaijan performs best in Market sophistication, and its weakest performance is in Knowledge and Technology outputs.<sup>9</sup>Due to a lack of data availability, the dynamics of the STEM field cannot be

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<sup>8</sup> [Empowering Azerbaijani Women in IT: Progress and Prospects](#)

<sup>9</sup> [https://www.wipo.int/edocs/pubdocs/en/wipo\\_pub\\_gii\\_2021/az.pdf](https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/az.pdf)

directly observed; thus, sectors, such as ICT, IT, and professional, scientific and technical activities will be used as proxies to analyze the current situation and dynamics in Azerbaijan's STEM field (Figure 1). Data from the 2022 Census in Azerbaijan reveals that **only 22% of enrolled students study technology and 4.7% study natural sciences. Additionally, only 1.8% of the employed population works in the ICT sector, and 3.5% work in professional, scientific, and technical activities.** These figures are lower than the EU average of 4.8%<sup>10</sup> and 7.4%<sup>11</sup>, respectively. However, these indicators have shown an upward trend from 1999 to 2022, reflecting the increasing importance of these sectors in the economy, driven by advancements in technology and the demand for specialized skills and services.

Over nearly three decades from 1995 to 2023, data from the State Statistical Committee of the Republic of Azerbaijan reveals a fluctuating yet generally upward trajectory in key metrics related to Research and Development (R&D) organizations (Figure 2). While the number of R&D organizations has shown minor variations, with a 7.6% decrease over the last 14 years, the number of employees engaged in R&D steadily increased until peaking in the mid-2010s before stabilizing at a 12.6% lower level by 2023. The number of Doctor of Science and Ph.D. holders in R&D demonstrated significant growth, 95.2%, and 51.1% respectively, from 1995 to 2013, with a peak around 2012-2013, followed by some variability. A 2020 study by Dayanat Ahmadov found that **a 28% increase in STEM jobs in Azerbaijan would increase GDP per employee by \$1,944, which is approximately \$1,102 in GDP per capita.**<sup>12</sup>

## **B.2. AZERBAIJANI WOMEN IN STEM SECTOR**

In Azerbaijan, despite women constituting 52% of the population aged 15 and older, they face significant challenges in the labor market and leadership positions. Until 2022, 674 occupations across many sectors of Azerbaijan's economy were legally reserved only for

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<sup>10</sup> [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=ICT\\_specialists\\_in\\_employment#Relative\\_share\\_of\\_ICT\\_specialists\\_in\\_total\\_employment](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=ICT_specialists_in_employment#Relative_share_of_ICT_specialists_in_total_employment)

<sup>11</sup> [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Businesses\\_in\\_the\\_professional\\_scientific\\_and\\_technical\\_activities\\_sector](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Businesses_in_the_professional_scientific_and_technical_activities_sector)

<sup>12</sup> <https://ieeca.org/journal/index.php/JEECAR/article/view/236/273>



men.<sup>13</sup> The list of restricted occupations included jobs that are located underground, involve hard physical labor, or are potentially hazardous. Nowadays, nearly half of the employed population are women, but they are disproportionately affected by unemployment, with over half of the unemployed being women. Additionally, a majority of economically inactive individuals are women, often categorized as housewives without clear statistics on their choice of employment status. Women also have lower rates of higher education compared to men, impacting their access to higher-paying jobs. Labor laws prohibit women from working in certain hazardous environments but allow them to work in managerial and social service roles. Despite these protections, women face a significant gender pay gap, earning 70-80% of men's salaries on average across various sectors. In terms of leadership positions, men predominantly occupy decision-making roles in both the public and private sectors, contributing to gender inequality in politics and economics.<sup>14</sup>

Despite relatively small gender gaps in Azerbaijan's labor market in terms of overall employment rates, a substantial divide persists in the types of jobs held by men and women. Women tend to gravitate towards lower-wage professions like healthcare and education, while men dominate higher-paying fields, such as transportation, energy, and construction. This workplace segregation, exacerbated by legal restrictions, contributes to a significant gender pay gap in Azerbaijan, with men earning 35.2% more than women on average, one of the highest reported pay gaps in Europe and Central Asia. These barriers include gender stereotypes that influence educational choices, with many positions and fields of study perceived as male-dominated. **Encouraging girls and young women to pursue STEM subjects at school and university is crucial for breaking down these stereotypes.**

According to the State Statistical Committee **in 2023, there is a significant gender gap in employment in STEM sectors in Azerbaijan. For example, women represent only 30% of the ICT labor force, 36.5% of financial activities, and 43.5% of professional,**

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<sup>13</sup> <https://blogs.worldbank.org/en/jobs/With-legal-restrictions-lifted-it-is-time-to-break-soft-barriers-to-womens-employment-in-Azerbaijan>

<sup>14</sup> [https://eprc.ge/wp-content/uploads/2022/10/gender-equality-in-work-domain-the-case-of-azerbaijan-and-georgia\\_04.10.22-1.pdf](https://eprc.ge/wp-content/uploads/2022/10/gender-equality-in-work-domain-the-case-of-azerbaijan-and-georgia_04.10.22-1.pdf)

**scientific, and technical activities.** Additionally, there exists a pay gap with women earning 80.6%, 58.1%, and 49.4% of men's wages in these fields, respectively. Even more disparity is observed in the Azerbaijani IT sector, where women make up only 26% according to the 2024 data from the Statistical Committee. However, data on researchers by fields of science shows that there is a lower disparity in technical and social sciences, women represent 47.9% and 52.1% of researchers in these fields, respectively.<sup>15</sup>

Although only 11% of Azerbaijani women pursue careers in STEM, the share of women researchers in this field in Azerbaijan is higher than the global average. Remarkably, women make up 40% of STEM graduates in the country. One reason for this is the influence of famous Azerbaijani women who have made significant contributions to science and serve as inspiring role models for future generations. However, obstacles for women to take an equal place in STEM research and practice still exist. While recent statistics highlight girls outperforming boys in entrance exams and having a higher acceptance rate in most Azerbaijani universities, their acceptance rate in university-level STEM subjects is dramatically lower. Moreover, while more women are now graduating with science doctorates, they frequently encounter glass ceilings and often find jobs only in the public sector.<sup>16</sup> Girls in Azerbaijan face stereotypes about STEM fields. Even though they don't believe these fields are unsuitable for them, they often think that careers like being a doctor or teacher are more appropriate for girls than other STEM careers.<sup>17</sup>

Scientific and technological progress at this level requires women and girls to be creators, owners, and leaders in science, technology, and innovation. Closing the gender gap in STEM is crucial for achieving the Sustainable Development Goals and for developing infrastructure, services, and solutions that benefit everyone. Therefore, UNDP has partnered with USAID in Azerbaijan to inspire the next generation of women and girls. According to the UN Resident Coordinator, involving women and girls in technology will lead to greater potential for innovations that address women's needs and promote gender equality.

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<sup>15</sup> The State Statistical Committee of the Republic of Azerbaijan

<sup>16</sup> <https://undp.medium.com/azerbaijan-leads-for-women-in-stem-6f53efa4f79d>

<sup>17</sup> <https://ipress.ge/en/news/justice/empowering-azerbaijani-women-in-it-progress-and-prospects>

## C. POLICIES AND PROGRAMMES

Azerbaijan's approach to integrating technology into its education system involves a multifaceted strategy encompassing legislative frameworks, infrastructure development, competency-building initiatives, cybersecurity measures, and governance structures. Despite lacking specific constitutional provisions for educational technology, laws like the 2009 Education Law and subsequent regulations prioritize access to education and the application of new technologies. Key policies, such as the 2019 Law on General Education and the State Strategy for the Development of Education, emphasize the provision of digital resources and the modernization of teaching methodologies with ICTs. Efforts to enhance technology infrastructure include the annual distribution of computer equipment to schools and ensuring internet connectivity for educational institutions. During the COVID-19 pandemic, measures were taken to facilitate distance learning, including partnerships with private institutions to provide internet access and technology devices for students and educators. The Ministry of Science and Education oversees technology integration, collaborating with other government agencies. However, specific roles for schools regarding technology use are not clearly defined in legislation. While there are no comprehensive regulations for data privacy in education, measures such as internet filtering systems aim to protect students from harmful online content. Initiatives like the Digital Skills Project and STEM Azerbaijan focus on developing students' digital and engineering skills, while professional development programs for teachers aim to increase their ICT proficiency. Despite progress, there's a need to establish clear standards for digital skills, define school-level responsibilities, and address data privacy concerns to ensure a comprehensive and secure technology-enhanced learning environment.

While considerable nexus exists between STEM and ICT sectors, programs like **Femmes Digitales** have a significant impact. Femmes Digitales – Public Association: "Supporting Women in TECH" is a non-profit organization in Azerbaijan dedicated to bridging the gender gap in the technology industry. The main donors and partners of this organization are USAID, Azerbaijan Republic Special Communication and Information Security State Service, Enterprise Azerbaijan and the Innovations Center. Founded in December 2014 and officially registered in May 2021, it boasts over 200 members and is among the

largest communities in the country advocating for women in tech. The organization brings together a diverse group of professionals, including scientists, engineers, ICT specialists, students, and individuals from legal, accounting, HR, and marketing backgrounds, all with a shared interest in the tech sector. While primarily focused on women, Femmes Digitales also welcomes male allies who support their mission of achieving fair recognition and opportunities for women in technology. Their mission revolves around fostering an inclusive workforce and supporting women amidst the digital transformation wave. This involves creating a strong network for members, forging partnerships with government, academia, and industry, advocating for women's presence and status in technology, and providing development opportunities. Emphasizing inclusivity, diversity, and climate change awareness, Femmes Digitales aims to ensure that everyone, regardless of background or skillset, feels accepted and valued in the tech industry. The organization has achieved significant milestones, including inspiring and motivating over 5000 girls to pursue career in technology, hosting more than 100 events, conducting roadshows in 50 schools, and engaging over 200 participants in their initiatives. Through their efforts, Femmes Digitales is actively contributing to building a diverse and inclusive tech workforce in Azerbaijan, striving for equitable participation and benefits in the country's growing digital economy.<sup>18</sup>

Similar importance has **UNDP's STEM mentorship program** which aims to support women and girls in Azerbaijan interested in pursuing careers in STEM. Developed in partnership with the Azerbaijani Women in Science (AWIS) organization and managed by AWIS colleagues, the program's primary goal is to assist young female professionals and students in STEM by providing the tools and advice needed to overcome challenges in their education and careers.

To raise public awareness, ten webinars featuring around 40 specialists covered various aspects and benefits of STEM education. Additionally, the program hosted a special roundtable on the 'Role of Women in STEM Fields,' bringing together government representatives, CSOs, and the private sector. This roundtable facilitated new

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<sup>18</sup> [Femmes Digitales](#)

partnerships with the private sector and created new internship and job opportunities for young women. The program also included psychological training, mentoring support, and coaching sessions during its final phase.<sup>19</sup>

As part of its commitment to advancing STEM education and fostering gender equality, the French-Azerbaijani University (UFAZ) is launching the "**Empowering Girls in Engineering**" project. This initiative is designed to inspire and support young girls in pursuing careers in engineering, a field where women remain significantly underrepresented.

The program aims to reshape perceptions of engineering among young girls by highlighting it as a rewarding and viable career path. Participants will be introduced to the fundamental principles of engineering and informed about various career opportunities within the field. Additionally, the project focuses on developing essential skills, such as problem-solving and teamwork, which are crucial for success in engineering professions. Through this initiative, UFAZ seeks to dismantle persistent stereotypes and contribute to achieving gender balance in the STEM workforce.<sup>20</sup>

For the fourth consecutive year, the British Council is launching its global **Women in STEM scholarship program** in partnership with UK universities. This year marks the inaugural launch of the scholarship for women from Azerbaijan. The program seeks women with a STEM background who can demonstrate a need for financial support and aspire to inspire future generations of women to pursue careers in STEM.<sup>21</sup>

In addition, the first-ever "Gender Equality" hackathon, funded by the European Union and implemented jointly by UN Women and UNFPA, took place in Azerbaijan from February 19 to 21, 2021. During the hackathon, 16 teams comprising 64 participants worked on finding solutions to gender-related issues. These issues included combating violence against women, addressing son preference and the undervaluing of girls,

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<sup>19</sup> [More women and girls in Azerbaijan are getting involved in science | United Nations Development Programme](#)

<sup>20</sup> <https://www.ufaz.az/en/news/ufaz-is-launching-a-new-project/>

<sup>21</sup> [British Council Scholarships for Women in STEM](#)

eliminating gender stereotypes in career choices, and ensuring gender equality in domestic chores.<sup>22</sup>

Another notable initiative supported by the **European Union is the Women in International Security for Eastern Partnership project (WISEP)**. Organized in 2022, the main objective of this project was to unite and empower women from Eastern Partnership (EaP) countries by developing and enhancing their leadership skills. WISEP played a crucial role in strengthening the position of women in international security and politics, providing women from EaP countries with the inspiration to start their projects in their respective nations.<sup>23</sup>

#### **D. CONCLUSIONS AND RECOMMENDATIONS**

**To conclude, advancing women’s participation in the STEM sector in Azerbaijan will not only empower women but will also enhance human capital, ultimately improving the economic state.** Innovations in this field have a significant impact on the macro-economy. On average, STEM companies do not reap all the benefits from their research and innovation; most of these benefits spill over to society. Similarly, STEM workers do not fully capture the benefits of their work, with much of it benefiting others. Various studies, conducted in Azerbaijan?, attempt to measure these externalities (spill-over benefits) through the enhancement of individuals’ human capital, which in turn boosts the productivity of other production factors. Some findings suggest that social returns are comparable to private ones. Advancing women’s participation in the STEM sector in Azerbaijan will not only empower women but will also enhance human capital, ultimately improving the country’s economic state. The spill-over effects leading to the increased female participation in the labor sector will be particularly significant. Innovations in this field have a significant impact on the macro-economy. For instance, according to a 2020 study by Dayanat Ahmadov, 28% increase in the STEM labor force in Azerbaijan is predicted to cause \$1102 in GDP per capita approximately, when it is

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<sup>22</sup> [UNFPA, Regional Development Public Union organize 1st Gender Equality Hackathon in Azerbaijan, with the support from the European Union](#)

<sup>23</sup> [The Women in International Security for Eastern Partnership 2022 - European Academy of Diplomacy](#)

about \$7600 as of 2024, according to IMF.<sup>24</sup> Moreover, the government's efforts to modernize educational infrastructures, such as through the Digital Skills Project, are helping to develop a workforce skilled in STEM areas, which in turn benefits other sectors by enhancing overall productivity. Additionally, programs like the UNDP's STEM mentorship for women in Azerbaijan are not just empowering women but are also driving innovation that benefits the entire economy. These initiatives illustrate that STEM education and career opportunities contribute significantly to the improvement of the broader economic and social fabric of Azerbaijan, making them crucial for sustainable growth. In particular, the improvement of the social fabric involves strengthening societal structures, values, and relationships that enhance social cohesion, well-being, and the overall quality of life within a community or nation. **Therefore, STEM education, by producing technology-specific knowledge, is crucial for overall economic growth, which is largely driven by innovation.**

Women's involvement in the STEM sector has been boosted by various programs and government policies, but more initiatives and concrete policies could further aid advancements. Changes in the educational sector will have notable contributions, as they ensure equal opportunities for both girls and boys to be introduced to the STEM field.

Sachdev (2018) proposes that industrial and organizational (I-O) psychologists can play a crucial role in enhancing gender parity in STEM fields by understanding and leveraging cultural norms in different societies. By redesigning jobs and developing gender-neutral recruitment policies, they can attract a balanced pool of male and female candidates. Targeted recruitment efforts, such as visiting universities and sponsoring early intervention programs, can encourage more women to pursue STEM careers, especially in cultures, similar to Azerbaijan, where societal roles discourage them from doing so. Additionally, organizations can adopt culturally sensitive workplace practices, such as flexible work arrangements, to help women balance household and professional responsibilities, which is one of the primary hindrances for the lack of women's involvement in STEM in Azerbaijan, according to numerous surveys. Mentoring programs

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<sup>24</sup> <https://www.imf.org/external/datamapper/NGDPDPC@WEO/ARM/AZE/GEO>

and visible female role models can further support the retention and advancement of women in STEM. Managers, as key influencers of organizational norms, can be trained to understand and accommodate cultural expectations, ensuring that women have the support they need to succeed. By viewing gender disparity through a cultural lens, organizations can develop effective strategies to increase diversity in their workforce.<sup>25</sup>

Culture plays a significant role in shaping the gender gap in STEM fields, starting from early education. Han (2016) studied gender disparities in STEM careers across various countries, focusing on their secondary education systems. The analysis revealed that countries with more stratified education systems—offering varied curricula and academic performance levels—tended to exhibit a stronger negative correlation with girls opting for STEM careers. Counterintuitively, the study found that as the number of school types available to 15-year-olds increased, girls were less likely than boys to pursue STEM-related careers.<sup>26</sup> This can be attributed to families and female students tending to steer away from occupations perceived as more suitable for men, as is often the case with STEM fields in Azerbaijan. This observation underscores the importance of introducing both girls and boys to STEM fields on an equal footing, particularly in contexts where cultural norms reinforce gender-specific occupational roles. It also suggests that if STEM subjects are introduced to girls in a way that eliminates the option to decline due to preconceived biases, they are more likely to develop an interest in these fields.<sup>27</sup>

In conclusion, advancing women's participation in the STEM sector in Azerbaijan is crucial for empowering women, enhancing human capital, and driving economic growth. While progress has been made through initiatives like the Digital Skills Project and UNDP's STEM mentorship programs, more targeted efforts are needed to address gender disparities. The Azerbaijani government and organizations should focus on modernizing educational infrastructures and implementing policies that ensure equal opportunities for both girls and boys in STEM, starting with early education that eliminates preconceived biases. Additionally, culturally sensitive workplace practices, such as flexible work

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<sup>25</sup> [Gender Disparity in STEM Across Cultures](#)

<sup>26</sup> [Quality in blended learning environments – significant differences in how students approach learning collaborations. Computers & Education, 102, 90-102.](#)

<sup>27</sup> [Education for Growth: Why and for Whom? - American Economic Association](#)



arrangements, are essential for helping women balance household and professional responsibilities, a significant barrier in Azerbaijan. Mentoring programs and visible female role models are vital for retaining and advancing women in STEM careers. By understanding and leveraging cultural norms, organizations can develop gender-neutral recruitment policies and create a supportive environment that encourages more women to pursue and succeed in STEM careers. These combined efforts will foster a more inclusive and innovative economy in Azerbaijan, where the benefits of STEM advancements can fully spill over to society, driving sustainable economic growth.

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