Digitally Empowered Generation Equality: Women, Girls and ICT in the context of Covid-19 in selected Western Balkan and Eastern Partnership Countries

Executive Summary

This report is the result of the collaborative efforts of the International Telecommunication Union (ITU) and United Nations Entity for Gender Equality and Women's Empowerment (UN Women). This study aims at identifying key factors and trends in the participation of women in the digital sector in education, career and entrepreneurship at a national level. The analysis concluded into country-specific recommendations to develop a set of national initiatives fostering participation of women and girls in the ICT sector.

International Telecommunication Union (ITU) is the United Nations specialized agency for information and communication technologies – ICTs. ITU is committed to connecting all the world's people – wherever they live and whatever their means. Through our work, ITU protects and supports everyone's right to communicate. This report was developed under the umbrella of the regional initiatives for Europe, within the framework of accessibility, affordability, and skills development for all to ensure digital inclusion and sustainable development. ITU is deeply committed to implementing these objectives as a means of paving the way to sustainable development. At the European level, ITU is conducting several activities promoting gender equality and seeking ways how digital technologies can empower all groups of society, including the girls and women. Through these activities, support is provided in building inclusive policies, developing digital skills, and providing capacity building. In this context, this report developed under the ITU regional initiative is an important milestone leading towards the establishment of actionable recommendations at the country level.

United Nations Entity for Gender Equality and Women's Empowerment (UN Women) is the UN organization dedicated to gender equality and the empowerment of women. A global champion for women and girls, UN Women was established to accelerate progress on meeting their needs worldwide. UN Women supports UN Member States as they set global standards for achieving gender equality and works with governments and civil society to design laws, policies, programmes and services needed to implement these standards. It stands behind women's equal participation in all aspects of life, focusing on five priority areas: increasing women's leadership and participation; ending violence against women; engaging women in all aspects of peace and security processes; enhancing women's economic empowerment; and making gender equality central to national development planning and budgeting. UN Women also coordinates and promotes the UN system's work in advancing gender equality.

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The team would like to acknowledge the valuable contribution of the interviewees from Albania, Bosnia and Herzegovina, Georgia, Moldova, Montenegro, North Macedonia, Serbia and Ukraine.

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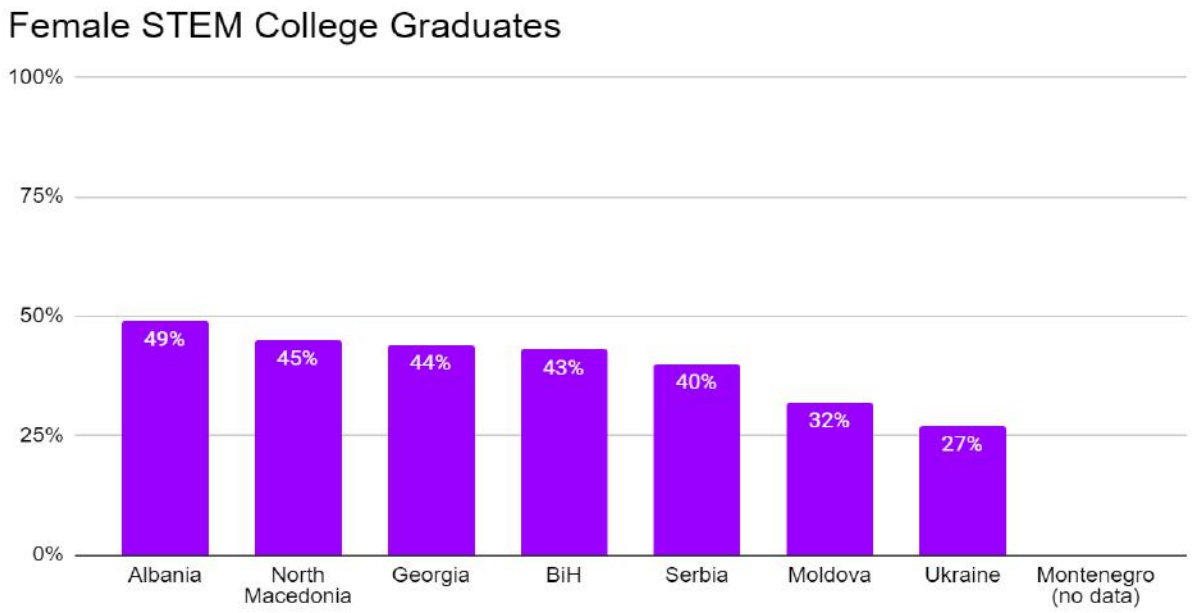
Executive Summary

Digital technology has never been more integral to people's lives. Over 90% of jobs worldwide already have a digital component and many will soon require sophisticated digital skills[1]. In the wake of Covid-19, digital technology has become a lifeline for millions around the world, and a critical tool to cope with the crisis--and its aftermath. While the pandemic is causing dual health and economic crises, it also represents a historical opportunity to accelerate the digital revolution.

ITU and UN Women joint efforts as per the necessity to conduct a study on the gender digital divide occurring in five Western Balkan states (Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, Serbia) and three Eastern Partnership countries (Ukraine, Georgia, Moldova). The main objective of the evaluation trends is participation of girls and women in the ICT sector and its dynamics, while analyzing the women's participation in the digital world, with a special focus on COVID-19 repercussion.

This report focuses on women and girls using, studying, and working in digital technology in eight countries. On the surface, these eight countries are well poised to take advantage of the new digital economy: They have a high degree of digital access and connectivity, and populations with strong academic foundations in math and science. In fact, in five of the eight countries profiled, women comprise more than 40% of university graduates in STEM related fields. Emphasis on STEM in primary and secondary schools is critical in light of the importance of academic preparation prior to higher education for enrollment and retention of STEM college students.[2]

[1] https://plan-international.org/education/bridging-the-digital-divide
[2] Research in Higher Education, 2019, Student Faculty Interaction and Discrimination from Faculty in STEM: The Link with Retention, available at https://link.springer.com/article/10.1007%2Fs11162-019-09564-w



Share of female STEM college graduates, Source: Worldbank[3]

However, women's involvement in STEM in the Western Balkans and Eastern Partnership countries does not translate into strong participation in technology sectors: Across all eight countries, the number of women working in ICT industries, founding or investing in technology startups, or serving as high level managers or directors in technology companies remains remarkably low. Challenges ranging from cultural norms and biases, to lack of self-confidence, to online and offline harassment hinder girls and women's full participation.

In Moldova, for example, almost one third of high school girls who reported liking computer science in school believed programming is "*not an appropriate domain for girls*". Amongst girls living in rural areas, that number was even higher at 39%.[4] In Georgia, a traditional saying labels girls who are good at math and science as "thinking like a boy".[5] In North Macedonia, a self-evaluation amongst secondary school students, showed that while girls and boys believed they were equally competent in math and science, boys evaluated themselves much higher than girls in IT.[6] In Albania, issues ranging from

[3] https://blogs.worldbank.org/opendata/there-are-fewer-female-male-stem-graduates-107-114-economies
[4] UNW, 2014, Motivations & Barriers for Girls and women in STEM and ICT Domains, available at https://www2.unwomen.org/-/media/field%20office%20moldova/attachments/publications/2020/en%20ggitraport%20final240820.pdf?la=en&vs=705
[5] Nino Nanitashvili, Women Techmakers Tbilisi, Georgia in discussion with author
[6] APC, 2019, Mapping of the Gender and ICT Sphere in Macedonia, available at https://metamorphosis.org.mk/wp-content/uploads/2019/05/Gender-and-IT-Assesement-.pdf

"*loneliness*" to "*being subjected to sexualized comments that diminish you as a professional*" were some of the challenges to keeping women in the field. As a former IT manager noted in Albania, "*women need to work twice as hard to be taken seriously and respected*".[7] Covid-19 digital acceleration represents a historic opportunity to change this scenario, transforming women's involvement in technology in the region.

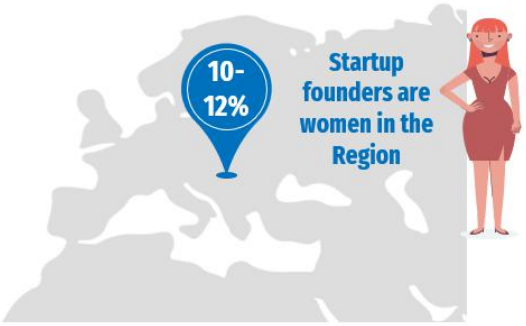
STEM education is the first key area ripe for change: Well before the pandemic hit, demand for digital skills across Eastern Partnership and Western Balkans countries was already prompting curriculum overhauls. While schools across all eight countries are evolving--incorporating digital literacy and 21st century skill building into coursework--education ministries are not doing enough to ensure girls equally benefit.

Furthermore, formal educational reforms are slow. The onset of Covid-19 exposed weaknesses within school systems, from a lack of digitally competent teachers to gendered differences in access to devices and technology platforms. For example, girls and women's technology is more often controlled by family members, and they may have less access to digital devices within their families. The pandemic also highlighted the intersectional nature of digital divides which are wider in rural areas and amongst communities with lower educational and socio-economic status. In Bosnia, 33% of girls say their family would not encourage them to take up university studies in a STEM field. In Ukraine, even parents who encourage girls to get good grades in all subjects--including STEM--may not be supportive when it comes to girls choosing a science or technology career. Similarly, teachers may not take girls' ambitions seriously. [8]

As formal and informal STEM education systems evolve, the ICT industry suffers from a shortage of qualified talent. Outdated teaching methods lead to a mismatch between academic skills and real-world industry needs. This has particular implications for women, less likely to apply for high tech positions without practical experience and knowledge. Investigating and fixing the "leaky pipeline" of women leaving technology is key both for promotion of gender equality, as well as for growing national economies.

[7] Edlira Kasaj, Digital Entrepreneur, ICT Specialist in conversation with the author
[8] Polina Boichuk, STEMISFEM Ukraine, in conversation with the author

Similar challenges were found in the startup sector across the region: While a nascent ecosystem of startup and innovation hubs in the Western Balkans and Eastern Partnership countries has emerged, the number of women startup entrepreneurs remains low. Across the region, women account for no more than 10-12% of founders. As a matter of fact, only 12% of Serbian startup founders are women[9] with the number of technical female founders even smaller: Only 1 out of 175 Serbian CTOs who raised Series A or B funding rounds is female.[10] In Bosnia, only 10 percent of start-up founders are women.[11] Women may be reluctant to start their own businesses due to avoidance of risk-taking, lack of available support services, limited exposure to the business world, and lack of access to capital. Women motivated to advance in their careers may sacrifice more: Research in North Macedonia found that women in ICT were not using their full maternity leave for fear of falling behind in their careers.[12]



[9] Digital Serbia Initiative, 2019, Startup Scanner: How are startups doing in Serbia, available at https://www.dsi.rs/wp-content/uploads/2020/01/Startup-skener_2019_ENG.pdf
[10] Digital Serbia Initiative, 2019, Startup Scanner: How are startups doing in Serbia, available at https://www.dsi.rs/wp-content/uploads/2020/01/Startup-skener_2019_ENG.pdf
[11] The International Journal of Engineering and Science, 2018, Perspectives of Bosnian Women in the Field Of IT, available at http://www.theijes.com/papers/vol7-issue7/Version-1/F0707014956.pdf
[12] Zaklina Gestakovska, Lead researcher, integrating gender into ICT company policies, North Macedonia, in conversation with the author

Lack of women working in technology is also concerning because of the pervasiveness of digital violence in Western Balkans and Eastern European countries. While governments do not keep official statistics, available studies attest to the pervasiveness of digital violence amongst girls and women in all walks of life, with incidents of violence likely increasing in the wake of Covid-19. While all eight countries are signatories to the Budapest Convention on Cyber Crime, none has developed adequate mechanisms for redress or legal frameworks to address online violence.

Without greater involvement of girls and women in technology, the kinds of products, services and platforms being created won't address the needs of half the population. Throughout the region, technology is being used to promote gender equality, for example mobile apps to aid survivors of domestic violence or virtual reality tools to train law enforcement on gender-sensitive codes of conduct. In Albania, Georgia, and Montenegro, mobile apps were developed to help women access support services.

In addition to providing educational information, such apps provide an instant, discreet, and confidential way to summon help-whether from trusted contacts or local or national helplines. In Georgia, the app-created in cooperation with Emergency Services-contains a silent SOS button to inform the police about incidents. Women's involvement is critical both to recognizing these problems in the first place, as well as to address them in responsible ways.

While there is a long way to go, digital divides in the Western Balkans and Eastern Partnership countries are slowly changing. Whereas families and educators may have discouraged girls from pursuing STEM in the past, there is increasing recognition of new technologies as lucrative career paths. In the profiled countries, ICT careers pay between two to eight times higher than average national wages. Gaps in women studying and working in technology continue to close as more women are attracted to the prospect of better salaries, in secure yet flexible companies. Economic instability brought about by Covid-19 will only increase the attractiveness of the technology field. Now is the time to take bold steps to ensure that girls and young women enjoy the full fruits of the digital revolution.

Chart on Recommendations/Actors/Best Practices

Thematic Area	Recommendation	Responsible Actors	Best Practices/Opportunities
ICT Access	Refine ICT related indicators through meaningful access and connectivity targets	Governments, Academia, NGOs	The Alliance for Affordable Internet (A4AI) Meaningful Connectivity Target.
STEM Education	Support extra-curricular STEM enrichment programs for girls	International Organizations, United Nations, Private Sector, NGOs	IT Girls (Bosnia & Herzogovina), GirlsGoIT (Moldova), STEM IS FEM (Ukraine), Tech4Girls (International/GSMA & EQUALS partnership)
	Expand the reach of Enrichment Programs through Cooperation with National Educational Systems	Government (Education Ministry), Private Sector, NGOs and Nonprofits	Tekwill (Moldova), EU Code Week (regional), 21st Century Schools Program (Western Balkans, supported by British Council)
	Encourage gender sensitive STEM learning environments	Government (Ministries of Education), Academia, United Nations, NGOs and nonprofits, Private Sector (science/technology centers)	Best Gender-Sensitive STEM Lessons: How to Teach Contest (Ukraine), Hypatia (regional) consortium of European science centers/museums communicate STEM concepts in a gender inclusive way; Project Ada (Norway University of Science and Technology)
Women working in ICT	Facilitate partnerships between startups/ICT companies and technology training programs to offer girls real world experience	Private Sector (ICT companies), Academia, NGOs and Public Sector	Skills for Jobs-SJ4 (Albania) Business and Technical University (Georgia) in cooperation with technology sector
	Conduct research on the “Leaky Pipeline” between female STEM graduates and technology employment	Government (National Statistical Offices), Academia, Private Sector (ICT companies)	
	Collect Precise Gender-Disaggregated Data within the ICT Industry	Governments (National statistics offices), Private Sector (ICT Companies)	WIT Leadership Round Table Metrics Working Group
	Institute Gender-Sensitive Recruiting Efforts to encourage more women applications in ICT companies	Private Sector (ICT companies), Academia	TBC Bank (Georgia)

	Offer Company Benefits addressing Work Life Balance	Governments, Private Sector (ICT companies, larger startups)	Intelius (largest IT company in Ukraine) Comprehensive Family Benefits program; Moldova Labor Code offering generous paternity leave; Program *Expanding Choices: Gender-Responsive Family Policies for the Private Sector in the Western Balkans and Moldova* (UNFPA)
	Offer Flexible Professional Development Programs	Private Sector (ICT companies, larger startups)	
	Use Data Driven Guidelines to Integrate Gender Equality into Company Culture	Governments, Private Sector (ICT companies, larger startups), United Nations	Accenture Consulting (International) targets to achieve gender-balanced workforce and increase leadership diversity
	Upskill and Retrain Women to Work in ICT	Governments, Private Sector, NGOs and Public Sector, United Nations	Empowering Women in Technology Project (Moldova)
Women in Startups	Support gender-sensitive startup investing, including women investing in women	Private Sector (Venture Capital, Accelerators), International Organizations, United Nations	Serbia Women's Business angels, part of Impact Hub Belgrade; Fund for Innovation and Technological Development (Macedonia); Gender Equitable Investment in Tech (GEIT) EQUALS program to address diversity and inclusion in investing.
Digital Education	Conduct further research into online and hybrid learning models from a gender perspective	Governments, UN, NGOs and Nonprofits	
	Train teachers in digital literacy and competence to ensure effective use of technology in schools	Government (Ministry of Education), Academia	Serbia Digital Competence Framework, Serbian Moodle Network (collaborative network of digitally competent teachers)
Digital Safety	Build upon existing national programming for online child safety to include gender sensitive approaches	Governments, Law enforcement, NGOs	ITU Online Child Protection Guidelines (International)
	Reform legal frameworks and codes of conduct to address digital violence	Governments, Law Enforcement, International Organizations (United Nations, Interpol), NGOs	Augmented/virtual reality training for law enforcement (Moldova)
	Train Women and girls on Digital Safety	NGOs, Academia/schools	Women Rock IT Digital Safety Training (Bosnia & Herzegovina)