

BACKGROUND DOCUMENT ON GENDER, INNOVATION AND TECHNOLOGY IN AFRICA

ON THE CSW67 THEME “INNOVATION AND TECHNOLOGICAL CHANGE,
AND EDUCATION IN THE DIGITAL AGE FOR ACHIEVING GENDER
EQUALITY AND THE EMPOWERMENT OF ALL WOMEN AND GIRLS”

Addressing Opportunities and Gaps in Technology and Innovation towards achieving Gender Equality for African Women and Girls

1. Introduction

Technology has affected almost every aspect of our lives – communication, work, relationships, economies, industries, governments, and entire communities. The invention of semiconductors and microchips in the 1950s led to the home computers in the 1970s and the Web in the 1980s. In the 2000s, cell phones and personal computers entered the market, and by the 2010s, these devices were accessible to people worldwide. Today, across remote villages to cities that never sleep, a technology like the mobile phone has permeated the globe, with more people potentially having smartphones than running water.¹ In Africa, 88.4 percent of the continent has mobile cellular coverage.² Across Africa’s borders ‘cash is king’ has transitioned to digital payments, with electronic transactions generating up to \$24 billion in revenue in 2020 alone.³ The COVID-19 pandemic accelerated the continent’s creation and use of innovations, digital and otherwise, in all sectors from health to education. Such progress

shows that the wheels are turning the global and African technological landscape; a strategic position to participate in and contribute to the Fourth Industrial Revolution (4IR).

Technology is a crucial driver of the 4IR, with the unprecedented growth of Information Communication Technologies (ICT) intersecting our daily lives. Emerging technologies like artificial intelligence (such as voice assistants in smartphones), the digitalization of things (such as fitness trackers), big data (such as data used in forecasting smart agriculture), and fifth generation (5G) wireless networks, all offer the promise of moving the world forward. As Professor Klaus Schwab, founder of the World Economic Forum (WEF) said, these resulting disruptions in technology have the potential to connect billions more to digital networks significantly improving the efficiency of organizations, raising global income levels, improving our quality of life, and even manage assets in ways that can help rebuild our environment potentially undoing the damage of

1. Clark, J. (2017). [Cisco: By 2021 more people will have smartphones than running water.](#)

2. ITU. (2021). [Digital trends in Africa 2021.](#)

3. McKinsey & Company. (2022). [The future of payments in Africa.](#)

previous industrial revolutions.⁴ And as a report by the United Nations Economic Commission for Africa (UNECA) asserts, the current technological trends are reshaping the development and sustainability of the future labour market that is highly dependent on science, engineering, and mathematics (STEM).⁵ Thus, the 4IR, along with its potential benefits and impact on human life, calls for reskilling and upskilling by acquiring future-proof competencies such as basic and advanced technical skills, problem-solving, technology design and programming, and active learning.⁶ Therefore, to fully participate in this industrial revolution, it is imperative that we re-prioritize knowledge, tools, and policies that will empower people to use, create and influence the innovations developed. Further, for the benefit of all and to cater to the diverse ways that technologies affect men and women, gender inclusion should be at the centre of 4IR.

While the fourth industrial revolution promises great benefits, its scale, speed, and velocity pose a risk of widening already existing gaps, such as gender inequality. If women and girls do not acquire the skills needed to thrive in this revolution, they will be excluded in future labour markets or economic gains. They will also be left behind as future jobs emerge and take shape.⁷ Such inequality would significantly impact African women and girls, where digital and social gender inequalities are already high. Yet, women make up at least 50 percent of Africa's population⁸ and deserve equal opportunities and rights in the technology

landscape. However, Africa's women and girls are disproportionately represented in the use and creation of technologies and often bear the brunt of its harmful effects. For example, while the mobile internet use gender gap is the widest in South Asia and sub-Saharan Africa, the smartphone ownership gender gap has increased in 2022.⁹ Further, the COVID-19 pandemic exacerbated the gender gap in access to education,¹⁰ health and employment.¹¹ Also, limitations in digital skills puts women and girls at higher online risk than men and boys.¹² Additionally, where women have limited access to mobile phones, the internet, or digital literacy, introduction of online social and government services deepens their exclusion and leads to negative outcomes like delayed payments.¹³ Thus, the digital gender divide leads to exclusionary innovations, poor digital literacy among women, and high economic costs, among other drawbacks.

As the digital gender divide persists in Africa, countries have progressed in streamlining regulations, supporting tech ecosystems, and designing innovations for socio-economic benefit. For example, after Tunisia, Senegal became the second African country to enact a Start-up Act that supports entrepreneurship, whose adoption followed a participatory and collaborative process among stakeholders.¹⁴ Additionally, the technical expertise of Africa's computer programmers has seen a surge in contribution to GitHub,¹⁵ the world's largest code hosting platform, with Nigeria, Ethiopia, Ghana, Kenya, and Morocco having a minimum 30

4 Schaub. K. (2017). [The Fourth Industrial Revolution](#).

5 ECA. (2021). [Harnessing productive jobs: equipping women and girls with the skills of tomorrow](#).

6 Whiting. K. (n.d.). [These are the top 10 job skills of tomorrow – and how long it takes to learn them](#).

7 ECA. (2021). [Harnessing productive jobs: equipping women and girls with the skills of tomorrow](#).

8 World Bank. (2021). [Population, female \(percent of total population\) – sub-Saharan Africa](#).

9 GSMA. (2022). [The Mobile Gender Gap Report](#).

10 Amaro.D, Pandolfelli.L, Sanchez-Tapia.I, Brossard.M. (2020). [COVID-19 and education: The digital gender divide among adolescents in sub-Saharan Africa](#).

11 World Bank. (2022). [Assessing the Damage: Early Evidence on Impacts of the COVID-19 Crisis on Girls and Women in Africa](#).

12 UNICEF. (n.d). [What we know about the gender digital divide for girls](#)

13 Molala. T, Makhuele.J. (2021). [The connection between digital divide and social exclusion](#).

14 Creation et promotion de la startup. [Loi N° 2020-01, 2020](#).

15 <https://github.com/>

percent growth in the number of new developers on the platform in 2021.¹⁶ Innovative approaches in Africa have also transcended digital forms, such as the West Africa Agricultural Productivity program that has involved 13 countries in developing climate-smart crops.¹⁷ Unfortunately, even with such regulatory progress, on-the-ground innovations, tech talent development, and the attraction of investors to the continent's technology space, women and girls are still left behind in Africa's digital transformation. Yet, to achieve the ambitious Sustainable Development Goals (SDGs),¹⁸ Africa's women and girls should be fully included in the continent's industrial revolution, thus addressing Agenda 2030's vision that no one will be left behind.¹⁹

Mainstreaming gender into technological innovations and progress is underpinned in the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW),²⁰ which calls for the realization of equality between men and women by ensuring women have equal access to and opportunities in public and political life, health, education, and work. The fourth world conference on Women's 1995 Beijing Declaration and Platform for Action supports CEDAW's vision and is committed to the global advancement of equality, development, and peace for all women in the interest of all humanity.²¹ Twenty-five years post-adoption of the Beijing Platform for Action, the African regional Beijing+25 declaration asserted the importance of education for girls in Science, Technology, Engineering, and Maths (STEM) and proposed the prioritization of digital

technology and innovation in national development policies.²² This call for gender inclusion at the policy and implementation level is also captured in the Maputo Protocol, which aims to promote education and training for women at all levels and disciplines, especially in science and technology.²³ Agenda 2063²⁴ and the African Union's (AU) 2024 Science, Technology, and Innovation Strategy for Africa (STISA-2024)^{25,26}, collective aspirations include a prosperous continent with skilled citizens supported by science, technology, innovation, and an enabling environment towards a knowledge-based economy. These global and regional guidelines iterate the need for collective responsibility and intentional social, economic, policy, and legal infrastructure to advance gender equality, and recognize the significant role Africa's women and girls can play in the attainment of the Pan-African vision of - *'an integrated, prosperous, and peaceful Africa, driven by its citizens, representing a dynamic force in the international arena.'*²⁷

Because of the global and regional commitments made by member states in the various frameworks on gender equality and women's rights, it is of utmost importance to close the gender divide in technology and innovation. Indeed, if digital transformation is to benefit all, it must include women in the entire cycle of innovation - from creation to utilization. A comprehensive review of the implications of gender equality and women's rights 25 years after Beijing shows that efforts are needed to consider the political, economic, and social factors that drive the design, development,

16 GitHub. (2022). [A global community of developers.](#)

17 World Bank. (2021). [Climate-smart agriculture.](#)

18 <https://sdgs.un.org/goals>

19 United Nations. (2015). [Agenda 2030.](#)

20 <https://www.un.org/womenwatch/daw/cedaw/cedaw.htm>

21 United Nations. (1995). [Beijing Declaration and Platform for Action.](#)

22 UNECA. (2019). [Africa Regional Conference on Women \(Beijing+25\).](#)

23 AU. (2005). [Protocol to the African charter on human and policies' on the rights of women in Africa.](#)

24 AU. (2015). [Agenda 2063.](#)

25 AU. (2014). [On the Wings of Innovation: Science, Technology and Innovation Strategy for Africa 2024.](#)

26 Juma. C, Serageldin.I. (2016). [Rebooting African Development: Science, Technology, and Innovation Strategy for Africa.](#)

27 AU. (2014). [On the Wings of Innovation: Science, Technology and Innovation Strategy for Africa 2024.](#)

and use of digital technologies, a process that should include both men and women.²⁸ The benefits of gender inclusion in Africa's technological transformation form the foundation of two of AU's key strategies - the 2020-2030 Digital Transformation Strategy for Africa²⁹ and the Gender Equality and Women's Empowerment (GEWE) strategy³⁰ - both committed to promoting and implementing gender-inclusive opportunities, frameworks, policies, laws, leadership, and skills development for women and girls. Additionally, the 2020 African Regional Science, Technology, and Innovation (ARSTI) forum for the SDGs recommended the inclusion of gender equality in STI

2. Technology Landscape in Africa: Gender Lens

2.1 Framework

The *Roadmap to Digital Cooperation*, a 2020 report by the UN Secretary-General, provides five recommendations for optimizing digital technologies and mitigating associated risks.³³ These guidelines are to; build an inclusive digital economy and society; develop human and institutional capacity; protect human rights and agency; promote digital trust, stability, and security; and foster global digital cooperation. The guidelines reflect four foundational pillars on which a digitally transformed continent could thrive as described by AU's Digital Transformation Strategy³⁴ - an enabling environment, digital infrastructure, digital skills and human capacity, and digital innovation and entrepreneurship. Further, the

2.2 Building an inclusive digital economy and society

This section discusses the gaps and best practices in two subsections - access to digital technologies

because member states stand to benefit exponentially from a diverse workforce.³¹ Against this backdrop, this report explores Africa's technology and innovation landscape using a gender lens to highlight innovations, best practices, and legal frameworks that seek to eliminate the gender divide. This background aims to inform policy and processes that place African women and girls at the centre of change in tech and innovation and the inevitable transformation to Africa's development. After all, *a digital economy without the full participation of women cannot scale to reach its potential because digital inclusion is not only good policy - but it also is good economics.*³²

five recommendations address GEWE-targeted SDGs as presented in UN women's 2022 gender snapshot on the progress of the SDGs,³⁵ such as good health and wellbeing, quality education, gender equality, and industry, innovation and infrastructure. Therefore, this section references the recommendations from the *Roadmap to Digital Cooperation* to frame the analyses and discussion of the technology landscape in Africa, specifically with a gender lens. Each section focuses on current gender gaps in technology and innovation and their possible causes, followed by, regional best practices presented across four sectors – government entities, development partners, civil society, and the private sector.

(devices, the internet, and content) and open data innovations to serve women and girls.

28 Wacman, J., Young, E., Fitzmaurice, A. (2020). [The Digital Revolution: Implications for Gender Equality and Women's Rights 25 years after Beijing.](#)

29 AU. (2020). [Digital Transformation Strategy for Africa \(2020-2030\).](#)

30 AU. (2022). [AU Strategy for Gender Equality and Women's Empowerment.](#)

31 ECA. (2020). [2020-2030: A Decade to Deliver a Transformed and Prosperous Africa through the 2030 Agenda and Agenda 2063.](#)

32 A4AI. (2021). [The cost of exclusion: economic consequence of the digital gender gap.](#)

33 UN. (2020). [Report of the Secretary-General: Roadmap for Digital Cooperation.](#)

34 AU. (2022). [AU Strategy for Gender Equality and Women's Empowerment.](#)

35 UN Women, Women Count. (2022). [Progress of the Sustainable Development Goals - The Gender Snapshot.](#)

2.2.1 Access to digital devices, the internet, and relevant content for women and girls

An article on digital inclusion in the 2019 Mozilla Health Report³⁶ headlined, '*More than half of the world is online, but...*' is evidence of a digitally unequal world in the use and ownership of digital tools. While gender parity in internet use has increased in Africa from a score of 0.58 in 2018 to a score of 0.67 in 2020,³⁷ there are gaps in digital access and ownership among women. Global System for Mobile Communications (GSMA) 2022 Mobile Gender Gap report³⁸ highlights that women are 16 percent less likely to use mobile internet in low and middle-income countries. This figure is 37 percent in sub-Saharan Africa, with variance across countries. In Egypt, for example, the gender gap in internet use stands at 12 percent, while in Kenya, the rate is 38 percent.³⁸ In some rural areas, owning a mobile phone may not mean its availability for use especially in regions that are off the national grid. Phone owners must therefore walk to the nearest centres to charge their phones.³⁹ Additionally, some areas of Africa are not within mobile network coverage further exacerbating the lack of access to the benefits of digital devices. Even though Africa experienced a 21 percent increase in 4G network coverage since 2020, 18 percent of the population has no mobile broadband network and 11 percent are still within the range of 2G networks.⁴⁰

Barriers to access to the internet are further exacerbated by internet shutdowns across various African countries, leading to significant negative effects on women and girls.⁴¹ In 2021 alone, 12 African countries shut down the internet at least 19 times.⁴² Women and marginalized persons use the

internet for various benefits such as to overcome the imbalance of power and social restrictions,⁴³ to access information on reproductive health due to taboo on the topic, and to access online businesses. For instance, a study on the effects of internet shutdowns in Uganda showed that women often access developmental programs online; thus, lack of access curbs their contribution to national programs.⁴⁴ For women with disabilities, the same study shows that internet shutdowns bar their access to health emergencies and information applications. Further, women incur additional costs when they migrate their online business offline due to the shutdowns.⁴⁴ On mobile phone ownership, the International Telecommunication Union (ITU) notes varying gender parity scores across Africa, with some countries having more ownership equality than others. For instance, South Africa and Egypt have scores of 1.04 and 1.03, respectively, indicating a high proportion of women, just like men, owning mobile phones.⁴⁵ On the other hand, Guinea has a score of 0.80, indicating a higher ratio of men than women owning mobile phones. However, the distribution of ownership among African women is non-homogenous such that women who are most likely not to own mobile phones are unemployed with little income, live in rural areas, have low literacy levels, have a disability, or are over 55 years old.⁴⁶

Despite these barriers to affordability and quality, mobile phones still retain their ubiquity in use and ownership, unlike other computing devices such as computers and laptops; for example, only

36 Mozilla. (2019). [Internet Health Report](#).

37 ITU. (2020). [Gender digital divide](#).

38 GSMA. (2022). [Mobile Gender Gap report](#).

39 Forsund. H. (2019). [The Next Big Revolution: Off-Grid Solar Powering Mobile Phones](#).

40 ITU. (2021). [Mobile network coverage](#).

41 Anthonio.F. (2022). [Why internet shutdowns are even worse for women](#).

42 [Internet shutdowns in 2021 report: resistance in the face of blackouts in Africa](#).

43 Aceng.S. (2021). [The gendered impact of intentional internet shutdowns](#).

44 Aceng.S. (2020). [Internet Shutdowns: An Evaluation of Women's Online Expression and Participation in Uganda](#).

45 ITU. (2022). [Mobile phone ownership](#).

46 GSMA. (2021). [The mobile gender gap report](#).

7.7 percent of households in Africa own a home computer.⁴⁷ But, even when a computer is present, boys use the computer and the internet more frequently than girls.⁴⁸ As learning shifted online during the COVID-19 pandemic, access for millions of girls would have been disproportionately limited because of their low use pre-pandemic, further widening the gap.

For women with disabilities, the barrier to using the internet and owning digital devices increases with online experiences and devices mainly designed for non-disabled users, societal stereotypes and stigma, and exclusion from day-to-day life. In Uganda, the gender disability gap (between women and men with disabilities) in mobile ownership is 51 percent, while in Kenya, the gender disability gap is 72 percent.⁴⁹ The most significant barriers to mobile ownership by Ugandan women living with disability are perceptions that the mobile phone will not be beneficial and concern about the security of their information,⁵⁰ Such barriers may lead to lack of awareness on how to use accessibility features on mobile phones, such as text-to-speech, alternative text, or screen and audio adjustments.

Access to and ownership of digital tools and access to relevant content among women and girls are part of the digital access equation. In a study by the World Wide Web Foundation (WWWF) across 23 countries on the rights of women online,⁵⁰ Namibia scored 3.5 and Uganda 7 out of 10; though relevant content about reproductive and sexual health rights in Uganda is available it is not comprehensive and is often only in English. Kenya had a higher score of 8, as up to 55 percent of women have access to digital financial services. This shows that access to the digital

economy empowers women to be more active users of digital content. Sexual and reproductive health and digital financial services, are two areas identified as particularly important to women's rights and opportunities.⁵¹ In Egypt, female users recommended the presence of women-friendly websites or websites dedicated to women only.⁵¹ One reason for limited access to content is lack of information and awareness about what information can be found online. For example, many women and girls equate the internet with social media; for instance, Facebook, now Meta, was often called 'the internet' by many African users.⁵²

Such limited or incorrect information about the internet leads to reduced participation and content creation on other myriads of platforms across the Web. For instance, a study conducted in South African universities shows that in 2020, just 36.8 percent of research publications were by women authors.⁵³ In a study across four countries including Uganda and Ghana, the WWWF study noted a gender gap in publishing content such as videos, blogs, commentary on social issues, and selling products online, with female internet users less likely to contribute to these types of content.⁵⁴ A female respondent in the study cited a barrier to content creation as gender norms that translate online, such as the cultural expectations that women should not be seen as too vocal. At Wikipedia - one of the world's largest platforms of crowdsourced information - of all biographies about African people, only 17.9 percent are biographies of women.⁵⁵ Further, less than 20 percent of all contributors on the platform are women. This data supports the fact that when women are not contributors to online content, there will be less online content about women.

47 Statista. (2021). [Share of households in Africa with a computer at home from 2005 to 2019](#).

48 Amaro,D, Pandolfelli.L, Sanchez-Tapia.I, Brossard.M. (2020). [COVID-19 and education: The digital gender divide among adolescents in sub-Saharan Africa](#).

49 GSMA. (2020). [Digital exclusion of women with disabilities](#).

50 World Wide Web Foundation. (2016). [Women's rights online: report cards](#).

51 Intel. (n.d). [Women and the Web](#)

52 Malik. N. (2022). [How Facebook took over the internet in Africa – and changed everything](#).

53 Mouton J, Van Lill M, Prozesky H, Redelinghuys H. (2022). [Trends in the publication output of women at South African universities](#).

54 World Wide Web Foundation. (2016). [Women's rights online: report cards](#).

55 <https://pro.europeana.eu/post/women-in-culture-and-tech-isa-haddow-flood>

Some causes of these gender gaps include limited literacy and skills, fear of losing money while trying out new features, lack of incentives to learn, affordability, relevance of materials for women, social barriers and norms, lack of identification documents to register for devices, and concern for safety and security.^{56,57,58} One of the most significant barriers to mobile phone ownership and use is affordability. In a survey conducted by the Alliance for Affordable Internet (A4AI) among 9,000 people across low-and-middle-income countries, it was found that many people would need to spend more than 30 percent of their monthly income to buy the cheapest smartphone.⁵⁹ The status of employment can also dictate affordability. Thus, those who earn an income can afford a mobile phone. Also, in some African communities, patriarchal cultures mean that men gatekeep women's access to phones; such as in a study conducted among Maasai women in Northern Tanzania.⁶⁰ A study by UNICEF also pointed out that poorly designed mobile handsets and content not in local languages are a greater barrier in digital use for women and girls than for men and boys.⁶¹

Best practises

To address the gaps and opportunities that drive innovation across accessibility, some governments and organizations have implemented exemplary programs and movements.

In 2020, the Rwandan Ministry of Trade and Industry, through the Connect Rwanda Initiative, pledged to issue over 30,000 smartphones to those

who cannot afford them.⁶² In 2022, the Ministry donated 900 smartphones to cross-border women traders to support their access to cashless transactions and government services.⁶³ In 2019, Rwanda's President inaugurated Mara Group, a high-tech smartphone factory, that would create job opportunities and develop skills.⁶⁴ The factory employed 200 people in that year, 60 percent of whom were women.⁶⁴ It went on to launch Mara X and Mara Z phones; the first smartphones made entirely in Africa. Further, Rwanda's government developed the 2020 SMART Rwanda Master Plan (as part of the Digital Acceleration Project), which received \$100 million in funding from the World Bank.⁶⁵ One of the objectives of the digital plan is to expand digital access by financing households to acquire smart devices as well as train three million people in digital literacy, with targets for women and girls. These initiatives promote SDG 9 by enhancing women's access to ICT infrastructure, SDG 8 by increasing the opportunities for women to work within the ICT industry, and SDG 5 by using ICT to empower women.

Partnerships with development agencies, civil society and the private sector are also helping bridge the gaps in accessibility and content. The partnership between ITU and UNICEF to provide Giga, whose objective is to connect every school to the internet,⁶⁶ has connected at least 1,500 schools across Sierra Leone, Rwanda, and Kenya.⁶⁷ To implement the program, Giga assesses the connectivity demands across schools before providing broadband internet; a process lauded as one that enhances comprehensive connectivity

56 GSMA. (2019). [The mobile gender gap: Africa](#).

57 GSMA. (2015). [Digital Literacy](#).

58 GSMA. (2021). [Digital identity access to mobile services and proof of identity](#)

59 A4AI. (2022). [The cost of smartphones falls, but they remain unaffordable for billions around the world](#).

60 Summers.K, Baird.T, Woodhouse.E, Christie.M. (2019). [Mobile phones and women's empowerment in Maasai communities: How men shape women's social relations and access to phones](#).

61 UNICEF. (n.d). [What we know about the gender digital divide for girls](#).

62 Ntirenganya. E. (2020). [Over 30,000 smartphones pledged under Connect Rwanda challenge](#).

63 Nzabonumoa. P. (2022). [Connect Rwanda: MINICOM donates 900 smartphones to cross-border women traders](#).

64 Monks. K. (2019). [Rwanda opens 'first entirely homemade' smartphone factory in Africa](#).

65 World Bank. (2021). [World Bank Provides \\$100 Million to Accelerate Rwanda's Digital Transformation](#).

66 <https://giga.global/about-us/>

67 UNICEF. (2021). [Annual report](#).

plans.⁶⁸ The mapping is then translated to a live display of access and need through Giga's Project Connect.⁶⁹ For example, in Sierra Leone, the map shows that 11,088 schools have been mapped, and 165 have been connected.⁷⁰ Some benefits of Giga's connection include increased access to resources by school children. In a community in Rwanda, where Giga has connected the internet, community members benefit from the connectivity at a local school, with some using the connection to apply for jobs.⁷¹ Such an initiative is promoting SDG 9 by increasing ICT infrastructure that can be used by all.

Digital technologies are used to meet the needs of women farmers in Africa, enhancing their access to information and agricultural practises. For example, the partnership between UN Women and UN Capital Development Fund (UNCDF) implemented a gender-responsive innovation approach in Mali and Senegal.⁷² Through the program, women small-holder farmers are provided with access to mobile-enabled microinsurance solutions, financial literacy, climate services, and early warning systems tailored to their specific needs. In Mali, for example, UN Women partnered with OKO to address the income losses faced by female farmers as a result of drought, floods, heavy rainfall, and a gender-blind approach to the choice of crops to sell. The solution offered a multi-pronged model; forming a team of female sales agents to sell to other women and designing an insurance product for crops that women planted, such as peanuts.⁷³ Through such a gender-responsive innovation process, OKO reduced the gender gap in insurance uptake by 15 percent and registered over 1000 new female farmers. Such an initiative promotes SDGs 1 and 2 by using ICTs to

increase the food production by female farmers and improve their income levels, and SDG 5 by using gender-responsive innovations to bridge the gap between female and male farmers.

Innovative approaches in clean energy are used to increase women's access to digital technologies, thus driving forward the attainment of SDG 7. For instance, Solar Sister provides women with clean energy that fosters entrepreneurship and agriculture.⁷⁴ The program has served women like Patricia from Tanzania, who lives off-grid in a rural community, to acquire skills and mentorship in clean energy that have enabled her to make and sell nutritious flour. Solar Sister's solutions include a solar lantern and mobile phone charger, which results in cumulative savings of \$225 in kerosene usage and mobile charging fees in the same period.⁷⁵

To defend and increase women's rights online, feminist digital movements create an important platform for awareness, information, and tools. For example, the event by APC Women's Rights Program, 'Making a Feminist Internet,' provided a platform for African feminists from 18 countries to discuss experiences, challenges, and possible solutions to access the internet.⁷⁶ The discussions focused on women who are internally displaced persons whose lack of access to devices, or the internet means they cannot tell their own stories, and women in rural areas who do feminist work but whose lack of access to the internet means they are not included in the mainstream conversation online.

Grace Health, an application optimized for low data use launched in 2018, is a female health assistant

68 UN. (2020). [Report of the Secretary-General: Roadmap for Digital Cooperation.](#)

69 <https://giga.global/about-us/>

70 <https://projectconnect.unicef.org/map/country/sl>

71 ITU. (2022). [Giga transforms lives in rural Rwanda, one school at a time.](#)

72 [Gender-responsive innovation: what, how, and why?](#)

73 <https://microinsurancenetwerk.org/resources/oko-for-un-women-and-uncdf-case-study>

74 <https://solarsister.org/>

75 UN Climate Change. (n.d.) [Solar Sister.](#)

76 Ingabire. F. (2019). [Making a Feminist Internet in Africa: The importance of including the most marginalized among us.](#)

application that has served 3.7 million users in Kenya, Ghana, and Nigeria.⁷⁷ Grace provides health information to women, like cycle predictions and responds to sexual and reproductive health questions. Social media has also been used to increase awareness against sexual harassment. For example, Tunisia's #EnaZeda movement, a local appropriation of the #metoo movement, offered a digital platform for survivors of sexual abuse to break the silence, recording more than 500 stories.⁷⁸ These initiatives promoted SDG 3 that enhances the use of ICT to increase good health and wellbeing, physically and mentally.

Apart from content that directly benefits women, there seems to be a shortage of digital content in local languages, thus excluding women who do not speak English and reducing the preservation of local culture. Mozilla is addressing

this gap through the Common Voice Kiswahili Awards, which grants eight projects \$50,000 each to leverage Kiswahili and voice technology to increase socio-economic opportunities for marginalized communities in Kenya, Tanzania, and the Democratic Republic of Congo (DRC).⁷⁹ Some of Mozilla's grantees building women-centric innovations include Tanzania's 'Kiazi Bora' that informs women living in rural areas on the nutritional value of sweet potatoes, Kenya's 'Wezesha na Kabambe' that serves small-holder women farmers with an audio chatbot mobile phone, and DRC's 'Haki de femmes' that aims to leverage voice technology to offer legal information and support for women. These initiatives increase women's income through agriculture (thus promoting SDGs 1 and 2) and enhance local content and collaboration (thus enhancing SDG 11).

2.2.2 Data availability toward gender-responsive innovations

*'Limited data availability is like navigating without instruments.'*⁸⁰ Innovators and policy-makers are hampered in their processes without measured, concrete, and accurate available data. Unfortunately, most countries do not collect the data they need to make informed decisions or build innovations to bridge gender inequality.⁸¹ For example, as of 2016, only 64 countries submitted gender-disaggregated data to ITU.⁸² In the 2016 study by the WWWF across 10 countries, including 6 African countries, only Egypt submitted sex-disaggregated data.⁸³ The foundation also analysed and created report cards for various African countries, with a measure for the availability of sex-disaggregated data, with most countries scoring below 5 out of 10.

The disadvantages of having a shortage of sex-disaggregated data include difficulty in policy proposition and progress monitoring, reduction in transparency of processes, and lack of data to build innovations that aim to reduce gender inequality. Also, improvement in gender data will create improvement in countries' statistics in general, especially for socially excluded populations.⁸⁴ During a pandemic like COVID-19, lack of reliable gender indicators leave women and children more vulnerable and at risk of being left out of recovery efforts. In some countries, while gender data is present, they are often infrequent, sparse, and out of date, leading to low reliability of information.

77 <https://www.grace.health/about-us>

78 <https://cmestunisia.fas.harvard.edu/event/enazedathe-birth-movement-against-sexual-harassment-tunisia>

79 <https://foundation.mozilla.org/en/what-we-fund/awards/common-voice-kiswahili-awards/>

80 A4AI. (2021). [The cost of exclusion: economic consequence of the digital gender gap.](#)

81 UN. (2020). [Report of the Secretary-General: Roadmap for Digital Cooperation.](#)

82 World Wide Web. (2016). [Gender Report Card.](#)

83 World Wide Web Foundation. (2016). [Women's rights online: report cards.](#)

84 Buvinic. M, Badiee.S. (2021). [Gender Data Systems: Better Data for All.](#)

In curating data, it is imperative that women are involved in the entire lifecycle of the process, not just as sources of data. Beyond designing security measures in data access and use, a gendered approach to open data involves gathering data for different types of users. For women in agriculture, it could, for example, be availing data about women farmers, gathered by women and for women. It means moving the priority setting and primary data collection closer to women's realities and involving them.⁸⁵ Further, it could also mean allocating leadership responsibilities to women working on data collection projects about women.

Evidently, some of the causes of limited open data, and gender-disaggregated data, include a lack of surveys to collect this data,⁸⁶ governments not conducting on-the-ground needs assessments that would generate data, minimal involvement of women in the process of creating open data innovations, limited skills or resources to secure the data, collect and arrange gender-disaggregated data, and data locked behind copyrights and licenses. Further, while big data has been lauded as a source of gender data,⁸⁷ inherent privacy and data protections must be implemented. To curb these challenges, countries can utilize the global gender data systems such as the Open Data Watch,⁸⁸ No Ceiling,⁸⁹ Data2X,⁹⁰ and Digital Public Goods Alliance.⁹¹

Best Practices

Several governments and organizations have implemented multiple programs to realize the importance of gender-disaggregated data for Africa's development.

Senegal has laid a strong foundation in building gender data, with an exceptional track record of the number of national data sets produced such as five labour force surveys, two agricultural surveys, four health and wellbeing surveys, and one income survey. Through the country's National Agency of Statistics and Demography, Senegal adopted a national strategy for developing statistics in 2019 and designated a gender pillar for the first time.⁹² The country's Ministry of Women has also institutionalised a unit dedicated to statistics and data, which will report on gender indicators. Further, Senegal conducted a first time-use survey among women, revealing that 90 percent of women contribute to unpaid work; information that can help the government understand how to incentivise unpaid work and assess its value to the country's GDP. As a result of these milestones, Senegal was the pilot country of a PARIS21-UN Women joint effort to support countries in implementing gender statistics in their national statistical system.⁹³ Senegal's efforts promote SDG 9 by enhancing data infrastructure, whose output can be used to design evidence-based policies and innovations targeted to support women.

Partnerships with development agencies, civil society and the private sector are also helping bridge the gaps in the availability of gendered

85 CTA. (2017). [Gender and open data: Is there an app for that?](#)

86 EQUALS. (n.d). [Lack of data on ICT access, skills, and leadership risks holding back gender equality in Africa.](#)

87 <https://data2x.org/resource-center/big-data-and-gender-brief-series/>

88 <https://opendatawatch.com/>

89 <http://www.noceilings.org/>

90 <https://data2x.org/>

91 <https://digitalpublicgoods.net/>

92 UN Women. (2019). [Making every women and girl count in Senegal.](#)

93 Paris21. (2020). [Making Gender Statistics a Top Priority in the Senegalese National Strategy for Development of Statistics.](#)

data. For example, World Bank's gender data portal provides free access to data and visualizations.⁹⁴ The portal is segregated into topics, such as data on female labour participation and violence against women. For example, the portal shows that within the last 12 months, 36 percent of women have experienced intimate partner violence (IPV) in the Democratic Republic of Congo, 29 percent in Equatorial Guinea, 28 percent in Zambia, and 27 percent in Liberia.⁹⁵ Such data can support governments and civil societies to act by creating policies to protect victims of IPV. The importance of data-centred monitoring of gender equality is promoted by UNESCO in its STEM and Gender Advancement (SAGA) program, whose objective includes developing tools to monitor gender equality and collect sex-disaggregated data.⁹⁶ Of the 300 policymakers trained under SAGA, 75 percent are women.

Further, across various countries, the Consortium of International Agricultural Research (CGIAR) collects sex-disaggregated data in agriculture to improve food security and increase agricultural productivity. For example, using a 9-country dataset from sub-Saharan Africa, CGIAR shows that gender relations affect agriculture practices and adaptation, with women farmers having less control over healthy and arable land and are less likely to use improved seeds and fertilizer. Lastly, work by UN-HABITAT shows that

sex-disaggregated data on safety and security around cities create safer environments.⁹⁷

Digital technologies can be used to involve the community in identifying and curbing gender-based challenges. For example, USHAHIDI,⁹⁸ founded in Nairobi in 2008, is a crowdsourcing tool to collect user data, create solutions, and mobilize communities. USHAHIDI was used during Kenya's 2007/2008 post-election violence period to map out what was happening on the ground. The platform has also been instrumental in helping women address sexual violence in Egypt.⁹⁹ Lastly, the African Open Data portal¹⁰⁰ contains an impressive number of data sets focused on gender. For example, a data set that assessed 60 leading companies in Kenya on workplace equality found that the best performing Kenyan company, with a gender equality score of 63 percent, is Standard Chartered Bank.¹⁰¹ Another data set assessed the needs and demands for family planning among Tanzanian women.¹⁰² These initiatives show that using digitally driven data to derive patterns of issues that affect women can lead to solutions for GBV (thus promoting SDG 3), agricultural practices (SDG 2), safety for women (SDG 11), and female leadership within organizations (SDG 16).

2.4 Developing human and institutional capacity

'*She who learns, teaches*' is a saying adapted from an Ethiopian proverb implying that the benefits of educating women and girls cascade to their communities. For instance, each additional year a girl spends in school dramatically boosts her

earnings as an adult by 12 percent, with returns on the same investments higher in sub-Saharan countries.¹⁰³ Further, better-educated women and girls tend to be more informed about nutrition and health care, and thus more likely to lead healthy,

94 <https://genderdata.worldbank.org/>

95 <https://genderdata.worldbank.org/data-stories/overview-of-gender-based-violence/>

96 <https://en.unesco.org/saga>

97 UN HABITAT. (2010). [Gender for smart cities](#).

98 <https://www.ushahidi.com/>

99 <https://www.ushahidi.com/features/>

100 <https://africaopendata.org/dataset/gender-equality-in-kenya>

101 Equileap. (2019). [Assessing 60 leading companies on workplace equality](#).

102 USAID. (2020). [Need and Demand for Family Planning among Women in Tanzania](#).

103 Montenegro, C, Patronus, H. (2021). [New comparable dataset finds that investments in education, tertiary in particular, lead to higher earnings](#).

productive lives.¹⁰⁴ Unfortunately, even with the exponential benefits of educating women and girls, sub-Saharan Africa is home to the largest number of out-of-school girls,¹⁰⁵ a crisis that was further aggravated by the COVID-19 pandemic. For those who attend school, promising data shows that the percentage of girls who complete primary school has caught up with the percentage of boys at the same level.¹⁰⁶ In Science, Technology, Engineering, and Mathematics (STEM) education, 47 percent of the students who graduate at tertiary level are female. Unfortunately, one challenge that faces girls studying STEM is sexual harassment, an experience that negatively affects the students' motivation and career aspirations.¹⁰⁷ Data indicates that women in STEM have the highest rate of sexual harassment of any profession outside the military.¹⁰⁸

Narrowing down to the field of technology shows a promising picture in some countries and a not-so-promising one in others. For example, Tunisia and Algeria record 55.6 percent and 48.9 percent of the share of female tertiary graduates in ICTs, respectively.¹⁰⁹ On the other hand, Ghana, and Mozambique record 19.9 percent and 21 percent of the share of female tertiary graduates in ICTs, respectively. However, a high graduation rate of female students at the tertiary level does not translate to their high labour participation rate. For instance, the female labour participation rate in Algeria is at 17.1 percent, while in Tunisia, it is at 26.5 percent.¹¹⁰ Some of the reasons for the attrition include the inability to find work, which affects

young women more than it does young men.¹¹¹ Other factors include poor recruitment and job searches, gender bias in the labour market, as well as political and economic instability.

For some African women, entrepreneurship is an option from formal employment, but one that is not without challenges. Female African start-up founders face difficulties such as access to finance. For instance, between 2013 and 2021, less than 5 percent of the total funding to Africa went to female founders.¹¹² This trend is confirmed by a study conducted by Bayer Foundation across 35 African countries among female entrepreneurs,¹¹³ all of whom utilized technologies such as AI, biotechnology, 3D printing, big data, and online marketplaces in their businesses. 66.9 percent of the respondents indicated lack of funds as the main obstacle facing their business, 23.3 percent cited a discriminatory culture, 17.7 percent cited not being taken seriously, and 15.2 percent cited a lack of skills and training.¹¹³ Women entrepreneurs also face limited access to loans due to gender gaps in asset ownership¹¹⁴ and an already existing gap in device access that limits their use of digital financial platforms. These drawbacks faced by female-led enterprises may lead to limited access to financial inclusion and mentors (especially coupled with few women in the field), hampered business results, and even the closure of their companies.

Due to such factors that contribute to the attrition of women through the education-to-labour-force

104 UNICEF. [Girls' Education : Gender equality in education benefits every child.](#)

105 UNESCO Institute for Statistics. (2019). [New Methodology Shows that 258 Million Children, Adolescents and Youth Are Out of School.](#)

106 Armstrong. M. (2022). [Education: Girls are catching up with boys in sub-Saharan Africa.](#)

107 Leaper. C, Starr.C. (2018). [Helping and Hindering Undergraduate Women's STEM Motivation: Experiences With STEM Encouragement, STEM-Related Gender Bias, and Sexual Harassment.](#)

108 <https://metoostem.com/>

109 UNESCO. (2021). [UNESCO Science report: the race against time for smarter development.](#)

110 International Labor Organization. [Country profiles.](#)

111 Dimova. R, Elder.S, Stephan. K. (2016). [Labour market transitions of young women and men in the Middle East and North Africa.](#)

112 Bhalla. N. (2021). [Move over 'tech bros': Women entrepreneurs join Africa's fintech boom.](#)

113 Bayer Foundation. (2022). [Accelerating Change in Sub-Saharan Africa By Supporting Female Entrepreneurs.](#)

114 Zottel. S. [Here is a We-Fi innovative approach that helps unlock commercial financing and dreams for women-led businesses in Nigeria.](#)

pipeline and low motivation to stay in tech-related work, the number of women in technology-related jobs is low. For example, South Africa is the only African country listed as one of the top 20 for the share of professionals with Artificial Intelligence (AI) skills, with just 28 percent of AI professionals as women.¹¹⁵ Yet, AI is at the core of driving technological advancements. Still, half the population in Africa is missing from this digital revolution. The risks of having such gender imbalance in the AI space include the adverse gender bias and prejudice built in technologies when women are left out of the design process. For instance, in 2016, Microsoft launched a chatbot to use AI to engage with Twitter users. But within hours, the chatbot was repeating the same sexist messages sent to it by users, such as 'feminism is a cancer,'¹¹⁶ a reflection of how a virtual world can reflect the offline violent world.

While AI skills are crucial to digital transformation, there are few women educators to provide the training at tertiary institutions. For example, in Kenya, data by the government agency, The Commission of University Education (CUE), shows that there are only 1.32 percent professors, 2.44 percent associate professors, and 7.93 percent senior lecturers teaching ICT across public and private universities.¹¹⁷ With just 30 percent of all teaching staff being women across Kenyan universities, it implies that the universities across Kenya have only a handful of female senior academics and researchers teaching in ICT fields, if at all. Yet, a 2021 report by Coursera, a global online learning platform, showed that women learners enrol more than men in courses taught by women instructors.¹¹⁸ Such representation in teaching and learning may curb the masculine associations with technological fields and consequently assist in

bridging the digital gender divide.

Best Practices

Some governments and organizations have shown the way by including women and girls in the training of digital skills, the design of educational tools, and working within technological fields for the benefit of all.

Egypt's Ministry of Planning and Economic Development launched the *She is for a Digital Future* training program in partnership with UNDP and CISCO. The program aims to equip at least 5,000 women from Egyptian universities and government sectors with digital skills, financial literacy, and gender mainstreaming. The program seeks to equip women with skills to contribute to the country's digital transformation. In collaboration with UNESCO, the Government of Mali, initiated the Miss Science Competition in 2018.¹¹⁹ Since then, 340 girls have won the contest. In a similar model, Miss Geek Africa, which started as Miss Geek Rwanda in 2014, provides a platform for girls between 13 and 21 years old to pitch an idea with a technological approach.¹²⁰ Solutions from the competition have included an app to help accident victims by Salissou from Niger.¹²¹

At a policy level, governments have also worked on inclusive plans to enhance digital literacy among women and girls. For example, In Nigeria, the 2020-2025 National Broadband Plan¹²² requires that women are educated on the use and benefits of ICT and that 100 percent of women in national social investment programs are provided with digital access. Recently in Kenya, coding was introduced in the primary and high school curriculum, making the country the first in Africa to teach

115 UNESCO. (2021). [UNESCO Science report: the race against time for smarter development.](#)

116 Tennery, A, Cherelus, A. (2016). [Microsoft's AI Twitter bot goes dark after racist, sexist tweets.](#)

117 CUE. (2017). [University Data.](#)

118 Coursera. (2021). [Women and skills report.](#)

119 <http://www.miss-sciences-mali.net/>

120 <https://girlsiniict.rw/msgeekafrika>

121 Gambino, L. (2018). [Brilliance overtakes beauty as Ms Geek Africa spotlights tech genius.](#)

122 <https://www.ncc.gov.ng/documents/880-nigerian-national-broadband-plan-2020-2025/file>

programming at these levels,¹²³ where five million girls enrol in primary school in Kenya.¹²⁴ Thus, if effectively implemented, the program would benefit millions of girls. In 2021, Algeria inaugurated two higher schools of mathematics and AI to enhance the country's higher education sector. These government-led initiatives promote SDG 4 by enhancing quality digital skills education for women and girls, SDG 9 by empowering girls to use ICTs to build socio-economic innovations, and SDG 16 by including a gendered approach to digital training within national policies.

Partnerships with development agencies, civil society and the private sector are also helping bridge the gaps in developing human and institutional capacity. For example, The African Girls Can Code Initiative (AGCCI) initiated by UN Women in collaboration with the AU and ITU has benefited young women like twenty-year-old Yordanos Genenaw from Ethiopia, whose participation in the initiative equipped her with 21st-century skills like public speaking and game design and led her to meet Malala Yousafzai.¹²⁵ Since its inception in 2018, AGCCI has completed the first phase of the program, benefitting 600 girls from multiple African countries. Now in its second phase, the initiative aims to impact 2000 girls by 2023 with digital skills, provision of tech equipment, and mentorship towards all-rounded skills.

ITU also partnered with Enhanced Integrated Framework, which uses digital approaches to expand women's entrepreneurship opportunities in Burundi, Ethiopia, and Haiti.¹²⁶ Between 2019

and 2021, 88,000 women were trained in value chain skills, 10,000 adopted new technologies, and 809 participated in trade fairs. Additionally, ITU initiated the Girls in ICT Day, which takes place every April, and runs at the global and regional levels.¹²⁷ The program works with mentors and partners to empower girls to build skills and knowledge in ICT, increase awareness of studies and careers in STEM, and conduct a thematic session on various digital topics. Since its inception in 2011, the program has served more than 370,000 girls and young women across 171 countries.¹²⁸ To further empower young people with digital skills and awareness, ITU's Generation Connect – Africa Youth Envoys (GC-AFR) provides a virtual platform for young Africans to discuss the opportunities and challenges that they face while using and creating digital technologies.¹²⁹

The Action Coalition on Technology and Innovation, one of the coalitions of the Generation Equality Forum, is a co-designed impact-oriented movement that helps advance digital gender equality¹³⁰ by working with partners across countries including Tunisia and Rwanda. The coalition's approach includes creating gender-transformative hubs, developing policies to boost women and girls' leadership, financing 21st-century skills and making digital tools accessible. In Liberia, UN Women partnered with Orange Foundation to launch the Women's Digital Centres, where women receive basic literacy, financial skills, and business development training.¹³¹ Beneficiaries like Satta Flomo have lauded the project for empowering her to read and write, and calculate

123 Kiunguyu.K. (2022). [Kenya becomes the first African country to teach coding in primary and secondary school.](#)

124 Statista. (2020). [Primary school enrollment in Kenya from 2015 to 2020, by gender.](#)

125 <https://unwomen.org.au/addressing-the-digital-gender-divide-in-africa-through-the-african-girls-can-code-initiative/>

126 ITU. (2020). [ITU and EIF join forces to reduce the digital gender divide in Burundi, Ethiopia and Haiti.](#)

127 <https://www.itu.int/women-and-girls/girls-in-ict/>

128 <https://www.itu.int/women-and-girls/girls-in-ict/home/history/>

129 <https://www.itu.int/generationconnect/regional-youth-groups-africa/>

130 <https://techforgenerationequality.org/about/>

131 UN Women. (2022). [Liberia: UN Women, Orange Foundation's Digital Inclusion for Women's Economic Empowerment \(D4WEE\) Project Set to Become a Game Changer for Women.](#)

her business finances.¹³² Digital technologies can also be used to increase health education. In Mozambique, where women and youth are disproportionately affected by HIV, USAID, in partnership with Viamo, created behaviour-change messaging using mobile data to provide digital training for healthcare professionals toward HIV reduction.¹³³ In 2019, a story aired on BBC Africa Eye exposing a sex for grades scandal in Nigerian and Ghanaian universities,¹³⁴ sparked widespread debate and awareness on sexual harassment in schools. Consequently, some of the perpetrators were dismissed from their positions.

These initiatives increase information about health (promoting SDG 3), enhance the attainment of digital skills among women and girls at a regional level (SDG 4), increase safe communities for women and girls (SDG 11). Their collaborative nature increases the impact and reach of efforts toward bridging the digital gender divide (SDG 17). In Nigeria, the Women Entrepreneurship Finance Initiative (We-Fi) has reached women in at least 24 African countries to increase access to digital financing.¹³⁵ For example, in Nigeria, We-Fi launched a digital cash flow loan program that enables entrepreneurs to access loans via an online platform.¹³⁶ It uses women's business cashflow to determine their creditworthiness enabling them to overcome collateral constraints. In Morocco, more than 500 girls and 100 mentors have been impacted by eSTEM, an organization that is changing the way Moroccan girls and women think about STEM,¹³⁷ thus promoting SDG 4. One of their main activities is supporting

the Technovation global competition, where girls work in teams to build a mobile solution and create a business plan. As a result, eSTEM has supported the creation of 40 mobile applications by girls who were introduced to coding for the first time. Such community-led movements have shown incredible promise to filling the gender gap in advanced tech fields like AI. For instance, the Women in Machine Learning and Data Science (WiMLDS) has seen the growth of chapters in cities like Nairobi, Dakar, Yaounde, Gaborone, Kinshasa, and Khartoum.¹³⁸ In Khartoum, Sudan, Safilia and Aisha lead the WiMLDS chapter, both with interest to use machine learning in security issues and natural language processing.¹³⁹

To build institutional capacity where female entrepreneurs and leaders thrive in tech, the Bayer Foundation Women Empowerment Award, launched in 2021, provides up to \$25,000 in funding to women entrepreneurs in sub-Saharan Africa with businesses that tackle challenges in agriculture and health.¹⁴⁰ Some of the digital solutions that have been built through this initiative include Vetsark, founded by Nigeria's Cynthia Mene, which supports farmers to digitize their business.¹⁴¹ This approach promotes SDG 8 by empowering women to have decent jobs where they build technological solutions, thus also promoting SDG 9.

132 Mehnepaine.T.S. (2022). [Liberia: UN Women, Orange Foundation Digital Project Beneficiaries Extols Support.](#)

133 Viamo. Digital Training is supporting a project to achieve 95 percent HIV reduction in Mozambique.

134 <https://www.youtube.com/watch?v=we-F0Gi0Lqg>

135 <https://we-fi.org/mission/>

136 Zottel. S. [Here is a We-Fi innovative approach that helps unlock commercial financing and dreams for women-led businesses in Nigeria.](#)

137 <https://estem-morocco.org/>

138 <http://wimlds.org/chapters/>

139 <http://wimlds.org/about-the-khartoum-team/>

140 <https://www.bayer-foundation.com/wea>

141 <https://vetsark.com/>

2.5 Protecting human rights and agency

The internet is a space that needs governing, otherwise, it has the potential to be inaccessible and unsafe for those already excluded and with high risk for those who use it, including women and girls. To ensure that the rights of women and girls are protected online, this section covers: (i) technology-facilitated violence because of the pervasive nature of Gender-Based Violence (GBV)

2.5.1 Technology-facilitated violence

'Virtual violence is violence. Online abuse is abuse' are words etched on the immersive website, *Virtual is Real*,¹⁴² by United Nations Population Fund (UNFPA). These words reflect the eerie reality of many women online. A reality that underpins the UN's resolution on the right to privacy in the digital age, which notes that violations of the right to privacy in the digital space may particularly affect women, children, persons with disabilities, and marginalized communities.¹⁴³ Indeed, women are more concerned about personal data privacy more frequently than men.¹⁴⁴ An African feminist study conducted across five countries (Ethiopia, Kenya, Uganda, Senegal, and South Africa) showed that 1 in every 3 women who participated in the project experienced online gender-based violence, with 36 percent having experienced sexual harassment online.¹⁴⁵ Yet only 36 percent of the respondents indicated they had taken active steps towards increasing their online safety, perhaps because some did not know where to find information on online safety. In Arab states, 49 percent of female internet users reported feeling

against women and girls, and the digital world which is the new frontier where GBV is experienced; (ii) digital identity because the lack of access to digital technologies limits the access to social and government services, thus excluding women and girls from financial inclusion, financial independence, personal agency, and national identity.

unsafe online, while 36 percent of women who experienced online violence were told to ignore it; 23 percent were blamed for the incident, and 21 percent were told to delete their social media.¹⁴⁶ In Egypt, the organisation for Women's Centre for Guidance and Legal Awareness receives up to 70 percent complaints related to online harassment. This rate went up by 45 percent during the COVID-19 pandemic.¹⁴⁷ Unfortunately, such trends sometimes lead women to be less likely to contribute to online content¹⁴⁸ so they completely miss out on the benefits of the internet.

While efforts are in place in many countries to have more women in public office, these efforts become counterproductive when female politicians are targeted with online harassment – when running for office and while in office. For instance, Poliicy's study showed that women running for office in the 2021 Ugandan elections were more likely to experience trolling, sexual violence, and body shaming on social media, than their male counterparts.¹⁴⁹ And the Inter-parliamentary

142 UNFPA. [The Virtual is Real](#).

143 United Nations. (2019). [The right to privacy in the digital age: resolution adopted by the Human Rights Council on 26 September 2019](#).

144 Chair.C, Brudvig.I, Cameron.C. (2020). [Women's rights online: closing the digital gender gap for a more equal world](#).

145 Iyer. N, Nywamwire.B, Nabulega.S. (2020). [Alternate Realities, Alternate Internets : African Feminist Research for a Feminist Internet](#).

146 UN Women. (2021). [Nearly half of female internet users in the Arab States fear online harassment](#).

147 Cuthbert. C. (). ['I blamed myself': how stigma stops Arab women reporting online abuse](#).

148 Chair.C, Brudvig.I, Cameron.C. (2020). [Women's rights online: closing the digital gender gap for a more equal world](#).

149 Poliicy. (2021). [Understanding Violence against Women in Politics and Leadership: A study on the 2021 Uganda General Elections](#).

Union (IPU) conducted a study among 123 women parliamentarians and found that 46 percent had been targeted by sexist remarks online.¹⁵⁰ Majority of the women in parliament who experience such violence do not report nor talk about it for fears such as being blamed for provoking the harassment, having their grievance questioned, or being seen as embarrassing their political parties.¹⁵⁰ As a result, female candidates whose reputations are tarnished online due to targeted attacks or doctored images often drop out of running for office, experience negative psychological and emotional effects, or ultimately discourage other women from running for office.

Sadly, the negative impact of technology does not remain only online but sometimes extends to offline domestic abuse, violence, and even death. For instance, severe physical and sexual violence has been reported in cases where five Nigerian women met romantic partners on Facebook.¹⁵¹ Also, sextortion cases, where one partner threatens the dissemination of explicit or intimate pictures unless some request is met,¹⁵² have been documented in Uganda and Malawi.¹⁵³ Even with such extreme scenarios of technology-facilitated offline violence, a study conducted in three African countries showed that none of the respondents who experienced such issues reported the matters to the police or any other security agencies.¹⁵⁴ The hesitation by victims to report may stem from the lack of explicit laws dedicated to gender-based data protection for women, lack of awareness of such laws where they exist, and limited knowledge among technology users on where to find information on online safety. For example, in the cross-country feminist study, 86 percent and 95 percent of the women in Senegal and Uganda,

respectively, were unaware of any regulations in place to protect them against online gender-based violence in their countries.¹⁵⁴ This may show that it may not be enough to create laws to protect and mitigate cases of technology-facilitated gender violence but such efforts need to include intentional dissemination of information within local contexts.

Best Practices

Gaps in protecting women's rights to use the internet safely, and the consequent horrific outcomes, have led various entities to provide legal frameworks and solutions that aim to enhance rights for digital and societal inclusion.

In March 2022, the South African Government amended the Films and Publications Bill to include new prohibitions against sharing a person's intimate images and videos without consent and publication of any media that incites violence.¹⁵⁵ Also, Namibia's Minister of Justice, Yvonne Dausab, is one of the country's senior government officials to speak out against online violence. For example, in June 2022, she gave a speech on OGBV, with a commitment that the government is working on a bill to address cybercrimes, including online gender-based violence.¹⁵⁶ In Tunisia, Law 58 on Combatting Violence against Women became the first such national law to be introduced in 2017.¹⁵⁷ Further, 13 Arab countries have implemented laws against cybercrime, including cyber violence against women and girls.¹⁵⁸ These countries include Algeria, Egypt, Libya, and Sudan. Further, in Algeria, the Ministry of Justice, in partnership with the European Union, trained judges and prosecutors on handling and presenting electronic evidence and providing information on

150 IPU. (2021). [Sexism, harassment and violence against women in parliaments in Africa](#).

151 Makinde.O, Olamijuwon.E, Kokomma.N, Onyemelukwe.M, Ilesanmi.M. (2021). [The Nature of Technology-Facilitated Violence and Abuse among Young Adults in Sub-Saharan Africa](#).

152 Patchin. J, Hinduja.S. (2018). [Sextortion Among Adolescents: Results From a National Survey of U.S. Youth](#).

153 Chisala-Tempelhoff, S., Kirya, M. T. (2016). [Gender, law and revenge porn in subSaharan Africa: A review of Malawi and Uganda](#).

154 Iyer. N, Nywamwire.B, Nabulega.S. (2020). [Alternate Realities, Alternate Internets : African Feminist Research for a Feminist Internet. The Films and Publications Amendment. Act 11 of 2019](#).

156 Republic of Namibia Ministry of Justice. (2022). [Understanding online gender-based violence in Southern Africa](#).

157 UN Women. (2017). [Tunisia passes historic law to end violence against women and girls](#).

158 UN Women. (2022). [Mapping of laws and services for online and ICT-facilitated violence against women and girls in Arab States](#).

cybercrime.¹⁵⁹ These examples show that existing policies, laws, and training of legal practitioners can be updated to accommodate the new realities of the digital world (thus promoting SDG 11) and in so doing increasing the knowledge and trust of legal processes (SDG 16). Consequently, when women and girls are protected from OGBV and have justice, their well-being improves (SDG 3). Partnerships with development agencies, civil society and the private sector are also helping bridge the gaps in technology-facilitated violence. In August 2022, the African Commission of Human and People's Rights (ACHPR) adopted a resolution that aims to protect women against digital violence, further urging member states to take actions such as adopting legislations, undertaking research on digital violence against women, educating practitioners including law enforcement, on digital violence, and providing safeguarding measures to protect women journalists from digital violence.¹⁶⁰ At the forefront of this movement is an online platform by UNFPA, *The Virtual is Real*, that increases awareness on OGBV with the tagline '*Virtual violence is violence. Online abuse is abuse.*'¹⁶¹ The platform shares the stories of women who have been victims of digital violence, like Ndey Ngoneh Jeng from The Gambia, who was attacked online after publishing a blog post. This experience later strengthened her resolve to work as a human rights lawyer. Additionally, the Action Coalition on Technology and Innovation advocates for no space for online violence by promoting the gender-sensitive design of monitoring tools, shaping a restorative justice response system, and sensitizing young people, care givers and educators on prevention

and mitigation mechanisms for OGBV.¹⁶² Such examples show that international agencies can be at the forefront of complimenting efforts by governments and individuals by supporting initiatives to combat OGBV, thus, creating safe communities for women and promoting SDGs 3 and 11.

In 2020, the Women of Uganda Network (WOUGNET) conducted an online campaign dubbed #SayNoToOnlineGBV that provided awareness of OGBV, coupled with digital security training for victims and survivors.¹⁶³ Later, in 2021, WOUGNET partnered with Makerere University to conduct a multi-district-research-across Uganda on the types, spread, and effect of OGBV.¹⁶⁴ They used their results to create training materials and radio jingles in five languages, to increase awareness on women's rights online. In Central Africa, in the Democratic Republic of Congo, Si Jeunesse Savait trains women and survivors of violence on online security, online advocacy, and how to create online content and access online services.¹⁶⁵ In Kenya, the Kenya Women Parliamentary Association (KEWOPA) partnered with Google to launch 'Heshimu Dada,' a video-based awareness campaign that aimed to curb online violence against female politicians.¹⁶⁶ In Tunisia, SafeNet, a mobile application which increases awareness on sexual harassment in public spaces and connects victims with specialized NGOs was developed¹⁶⁷ with the aim of creating safe spaces for women and girls, thus promoting SDG 11.

159 CyberSouth Activities. (2022). [Judicial training on e-evidence and international co-operation.](#)

160 ACHPR. (2022). [Resolution on the Protection of Women Against Digital Violence in Africa - ACHPR/Res. 522 \(LXXII\) 2022.](#)

161 UNFPA. [The Virtual is Real.](#)

162 [https://techforgenerationequality.org/about/#:~:text=We percent20are percent20a percent20group percent20of,join percent20us percent20in percent20this percent20commitment.](https://techforgenerationequality.org/about/#:~:text=We%20are%20a%20group%20of,join%20us%20in%20this%20commitment.)

163 Aceng, S. (2020). [Online GBV – why it is crucial to raise awareness.](#)

164 WOUGNET. (2021). [Enhancing Women's Rights Online through Inclusive and Effective Response to Online Gender-Based Violence in Uganda.](#)

165 APC. (2016). [Exploring technology-related violence against women in the Democratic Republic of Congo and Kenya.](#)

166 KeWoPa. (2022). [Heshimu Dada.](#) [Youtube Video].

167 UN Women. (2018). [From where I stand: "It would be a better world if women felt safe in public spaces."](#)

2.5.2 Digital Identities

'Women refer to men as their ID card,' said a female respondent in a study conducted in Rwanda by GSMA. The World Bank indicates that 1 in 2 women in low-income countries does not own an identity card (ID), limiting their access to crucial services, such as mobile connectivity, digital financial services, and participation in political and economic life.¹⁶⁸ Approximately 500 million people without IDs live in Africa. In Low-Income Countries, 45 percent of women do not have an ID compared to 28 percent of men.¹⁶⁹ For example, in Nigeria, 8 million fewer women than men have a national ID.¹⁷⁰ Therefore, some women without identity cards rely on their male partners or family members to access services on their behalf, which limits their agency and digital rights. In a study conducted in Nigeria and Rwanda, men are expected to need identity cards more than women since women are expected to remain at or near home.¹⁷¹ Without the option to access these services, women are further excluded from participating in digital transformation. The causes of lack of access to IDs include costs for getting the IDs and supporting documents, technical difficulties in printing the IDs, and the perception that the ID is unnecessary.

Best Practices

During the COVID-19 pandemic, several African countries relaxed the regulations that required the use of IDs for government services. Further, governments also lifted transaction costs of mobile money transfers and listed mobile phones as an essential service. In sub-Saharan Africa, 50 policy changes were made to regulations¹⁷² to make it easier for consumers to access digital services. In

Ghana, for example, this increased awareness and adoption of mobile money. Some mobile operators relaxed requirements for ID verification, which was helpful in onboarding underserved groups. In some countries where women do not have IDs, they can get a letter from the local chief to access services.¹⁷³ Countries such as Togo, Gabon, Ethiopia, and Guinea, have removed the requirement to prove nationality or legal residence to get an official ID.¹⁷⁴ These government-led initiatives improve financial inclusion (thus promoting SDG 1), increase access to digital services (SDG 9) and strengthen regulatory frameworks (SDG 16).

Partnerships with development agencies, civil society and the private sector are also helping increase digital identities for women and girls. In Nigeria, the partnership between the World Bank, ID4D Nigeria, and the National Identity Management Commission plans to implement good practices for digital identity inclusion, such as the development of a legal and regulatory framework that adequately protects individuals' data and privacy, a legal and regulatory framework that promotes non-discriminatory, inclusive, and universal access to ID, and training people on enrolment procedures and technology, including digital skills,¹⁷⁵ thus promoting SDG 4 by enhancing quality education in digital rights.

In Burkina Faso, iCivil¹⁷⁶ undertakes birth registration of children using a hospital bracelet, which gets attached to a new-born baby by health professionals. Using unique IDs attached to each bracelet and connection to an app, the baby's information is entered into the app with the flexibility of additional information in the future. This innovation tackles the low registration of

¹⁶⁸ <https://id4d.worldbank.org/global-dataset/visualization>

¹⁶⁹ ID4D. (nd). [Global ID Coverage, Barriers, and Use by the Numbers: Insights from the ID4D-Findex Survey.](#)

¹⁷⁰ Jarrahi. J. (2021). [Massive gender disparities in digital ID systems persist.](#)

¹⁷¹ GSMA. (nd). [Digital identify opportunities for women.](#)

¹⁷² GSMA. (2021). [Digital Identity Access to Mobile Services and Proof of Identity.](#)

¹⁷³ GSMA. (nd). [Digital identify opportunities for women.](#)

¹⁷⁴ <https://id4d.worldbank.org/node/2096>

¹⁷⁵ <https://projects.worldbank.org/en/projects-operations/project-detail/P167183>

¹⁷⁶ <https://icivil.org/en/home/>

children due to the long distance to the hospital and preserves local and religious customs, such as

2.6 Digital safety for women and children

*'Many children in Kenya did not tell anyone the last time they were subjected to online sexual exploitation and child abuse.'*¹⁷⁷ Using the internet risks data theft, personal data breach, surveillance, child abuse, and fraud. For example, Africa is losing around \$4 billion annually to cybercrime.¹⁷⁸ Digital technologies must be implemented in a safe and trustworthy manner that narrows the digital divide. Unfortunately, Africa's commitment to cybersecurity and capacity for response to threats remains low compared to other continents. For example, out of 54 African countries analysed using ITU's Global Cybersecurity Index (GCI) in 2020, just 29 passed legislation to promote cybersecurity.¹⁷⁹ Further, only six African countries have capacity-development incentives for cybersecurity.

Women face bigger online risks due to existing gaps, such as lower digital literacy and concerns about personal safety and privacy. Yet only 2 out of 10 women work in cybersecurity globally.¹⁸⁰ Therefore, women's contribution to the challenges of digital safety is minimal. Even when women and girls experience digital crime, most are unaware of existing legislation or reporting mechanisms. Unfortunately, most African data protection laws are inadequate due to the limited implementation of issues like data breaches, limited resources by data protection authorities, and low level of data literacy in the general population and among policy makers.¹⁸¹ Further, most data protection laws in Africa are heavily influenced by General Data Protection Regulation (GDPR), increasing the risk of non-contextualised laws to Africa's realities.¹⁸¹ An analysis of Kenyan digital

the naming of a child at least a week after birth.

safety laws, for example, showed that some of the existing legislation does not adequately offer protection against online violence, lacks digital forensic examiners and limited knowledge of existing laws.¹⁸²

A study conducted in Kenya among over 1000 children (aged 12-17 years) showed that most children accessed the internet at home, with at least 30 percent using it to watch videos, use social media, use instant messaging, play online games, watch a live-stream, and do schoolwork.¹⁸³ Yet, even in the perceived safety of their homes, children face tremendous risk such as contact with strangers online and in person, or viewing sexual images online. Unfortunately, at least 30 percent of children who experienced these issues did not share the experience with anyone, possibly leading to greater harm and psychological distress. The survey also shows that some children experienced someone else sharing sexual images of them without their permission, with 27 percent of the perpetrators a friend.¹⁸³ Of the children in the study whose cases were reported to the justice system, the majority indicated that they would be unwilling to interact with the criminal justice system in the future for reasons such as a sense of exclusion, re-traumatisation, language barriers, and victim-blaming. Such legal barriers further deepen the reluctance of minors, or their guardians, to report digital violence.

Best Practices

In 2020, Mauritius earned the highest Global Cybersecurity Index (GCI) out of all the countries

¹⁷⁷ [Disrupting harm in Kenya.](#)

¹⁷⁸ TechCabal. (2022). [Africa must act now to address cybersecurity threats. Here's why.](#)

¹⁷⁹ <https://www.itu.int/en/ITU-D/Cybersecurity/Pages/global-cybersecurity-index.aspx>

¹⁸⁰ World Bank. (2022). [Women and Cybersecurity: Creating a More Inclusive Cyberspace.](#)

¹⁸¹ [Pisa, M, Nwankwo, U. \(2021\). Are Current Models of Data Protection Fit for Purpose? Understanding the Consequences for Economic Development.](#)

¹⁸² Muya. C. (2021). [The law should work for us.](#)

¹⁸³ [Disrupting harm in Kenya.](#)

in Africa,¹⁸⁴ with high ratings in legal measures (such as data breach notifications), technical measures (such as having a computer incident response team), organizational measures (such as up-to-date cybersecurity strategies), and capacity building measures (such as public awareness raising). Some of Mauritius' interventions include CERT, a division of the National Computer board, aimed at educating the citizens about internet issues such as internet dangers and carrying out research to stay ahead.¹⁸⁵ Further, the country has a cyber security portal with a section for children safety, that gives useful tips to parents. Mauritius also launched an online report system for cybercrime,¹⁸⁶ enabling the public to report cybercrime securely. In other parts of the region, governments are using technology to safeguard women and children from violence, one of the targets of SDG 9. For example, in 2021, the Ministry of Women, Family, and Seniors in Tunisia partnered with Internet Watch and UNICEF to launch an online portal for reporting child sexual abuse.¹⁸⁷ These initiatives promote SDG 9 by enhancing the use of ICT to increase digital safety.

Partnerships with development agencies, civil society and the private sector are also helping bridge the gaps in digital safety. The AU Convention on Cybersecurity and Personal Data Protection is a commitment by member states to safeguard information and data, regulate technology domains, and promote cyber security.¹⁸⁸ The treaty has been ratified by 15 countries so far.¹⁸⁹ This Convention offers a reliable framework that member states can integrate in their national

laws thus promoting SDG 16. In August 2022, the African Commission of Human and People's Rights (ACHPR) provided the right to freedom of expression and access to information, with additional guidelines for the digital age and principles for protecting personal information.¹⁹⁰

To equip women with skills in digital safety, ITU launched the Women in Cybersecurity mentorship program, which aims to train and inspire more women to take up leadership roles in cybersecurity.¹⁹¹ The program hosts female mentors like Abeer Khedr, the Information Security Director of the National Bank of Egypt. Also, the Defenders Coalition,¹⁹² a group of East-African women who promote digital safety and rights, have so far consisted of members from eight African countries. Further, at the 2022 ITU's annual Girls in ICT Day, the theme covered was 'Access and Safety', which focused on training girls about digital skills and information for online safety. Children Online Africa,¹⁹³ is a non-profit organization that provides information awareness, digital literacy on safety, and a leadership program (African Digital Leaders) to children aged 8-16 years. Since its inception, the program has organized 500 events and impacted 30,000 girls. These approaches promoted SDG 4 by enhancing quality education in digital safety for women and girls.

Digital technologies have also been used to create content on staying safe online, thus promoting SDG 9 in enhancing innovations that address online risk. SafeSisters is an East Africa-based platform that was founded in 2017 to make digital

184 <https://www.sovereigngroup.com/news/news-and-views/mauritius-the-most-cyber-secure-country-in-africa/>

185 ADF. (2021). [Island Nation Tackles Cyber Security](#).

186 <https://maucors.govmu.org/maucors/>

187 <https://www.tap.info.tn/en/Portal-Society/14086751-online-reporting>

188 AU. (2014). [AU Convention on Cybersecurity and Personal Data Protection](#).

189 https://au.int/sites/default/files/treaties/29560-sl-AFRICAN_UNION_CONVENTION_ON_CYBER_SECURITY_AND_PERSONAL_DATA_PROTECTION.pdf

190 ACHPR. (2022). [Resolution on the Protection of Women Against Digital Violence in Africa - ACHPR/Res. 522 \(LXXII\) 2022](#).

191 ITU. (2021). [Women in Cyber mentorship program](#).

192 <https://defenderscoalition.org/call-for-applications-the-womens-digital-safety-fellowship-for-east-africa/>

193 <https://www.childonlineafrica.org/>

security more accessible to African women and girls.¹⁹⁴ The program has fellows in 11 African countries and offers digital safety trainer's assistant and awareness guidelines on the risks of being online.

2.7 Foster Regional Digital Cooperation

The AU Digital Transformation Strategy highlights the need for the mobilization of effective cooperation between stakeholders and institutions, regionally and nationally,¹⁹⁶ a vision echoed in the UN Secretary General's *Roadmap to Digital Cooperation*.¹⁹⁷ With more harmonization between member states and organizations, strategies and policies can be implemented regionally and monitored. Further regional digital cooperation will support African countries to move together in the digital revolution where some are not left behind and support the cross-border transfer of knowledge, goods, and innovations.¹⁹⁸ Also, while a fair extent of innovation and digital transformation can come out of unregulated contexts, unregulated innovations can be a significant impediment to progress and undermine public policy needs.¹⁹⁸ For example, issues like data protection, the spread of disinformation using innovations, investment into the continent by big tech companies, digital labour brain drain, and financial technologies all have risks. Further, while 4IR can drive the continent's digital transformation forward, it is unlikely to impact most Africans without basic physical and social infrastructure positively and can increase digital inequalities. Lastly, over-reliance on imported digital solutions can lead to over-reliance on externally built innovations. Thus, developing a shared approach to digital issues is an essential aspect of digital governance,¹⁹⁹ with collaboration between countries, and between agencies and organizations.

Another example of a digital tool is the interactive game, Digital Safety, created by Poliicy and Paradigm which aims to equip African women with tips on staying safe online.¹⁹⁵

Best Practices

Partnerships with development agencies, civil society and the private sector are also helping bridge the gaps in digital cooperation. AU's Digital Transformation Strategy provides an overarching strategy for the continent's digital transformation and supports the development of a Digital Single Market.²⁰⁰ Other AU strategies that have also recently been developed include the 2023-2028 Digital Education Strategy,²⁰¹ which establishes a framework for adoption of digital technologies within Africa's education strategy. Also, the Data Policy Framework²⁰² develops a common model for digital data on the continent. Further, the Strategy for Gender Equality and Women Empowerment²⁰³ provides a multi-sectoral approach towards amplifying women's voices and effectively implementing gender legislation. Also of importance is regional charters like the Southern African Development Community Women in Science, Engineering, and Technology, which aims to have a database of women in STEM and support more women in decision-making positions.²⁰⁴

These examples show that a multistakeholder approach can provide frameworks applicable to different nations. However, support for implementing these frameworks would move the policies to the country-level implementation. Intergovernmental organizations like the Smart

194 <https://safesisters.org/about/#Harnessing-Digital-Safety>

195 <https://digitalsafetea.com/>

196 AU. (2020). [Digital Transformation Strategy for Africa \(2020-2030\)](#).

197 UN. (2020). [Report of the Secretary-General: Roadmap for Digital Cooperation](#).

198 <https://ecdpm.org/work/digital-geopolitics-africa-moving-strategy-action>

199 <https://ecdpm.org/work/digital-geopolitics-africa-moving-strategy-action>

200 AU. (2020). [Digital Transformation Strategy for Africa \(2020-2030\)](#).

201 <https://au.int/en/documents/20221125/digital-education-strategyand-implementation-plan>

202 <https://au.int/sites/default/files/documents/42078-doc-AU-DATA-POLICY-FRAMEWORK-ENG1.pdf>

203 <https://au.int/en/articles/au-strategy-gender-equality-and-womens-empowerment>

204 <https://treaties.dirco.gov.za/dbtw-wpd/images/20180621SADCCharterWomenScience.pdf>

Alliance Africa²⁰⁵ could help accelerate the unified vision of implementation, monitoring, and evaluation of the digital commitments made by member states. The alliance of 32 countries,

3. Lessons Learned

- a) From achievements: investments in digital infrastructure, national policies, legal frameworks, and talent development contribute to bridging the digital gender divide.
- b) From gaps in access: it is not enough to provide access to digital devices to women and girls. Additional issues include the quality of the internet, availability of energy sources, and relevant content for women and girls.
- c) From gaps in human and institutional capacity: Support for the digital education of women and girls should consider the entire pipeline from primary school to employment and leadership.

4. Recommendations

Building on the best practices and the lessons learned, the following action points are

4.1 Access to digital tools, the internet, and relevant content for women and girls

- Implement initiatives that equip women and girls with digital devices for free or at a subsidized cost.
- Create employment opportunities where women can be creators of technology.
- Place digital training for women and girls at the centre of partnership agreements and policies that aim to increase access to digital tools and the internet.
- Conduct on-the-ground assessment to understand connectivity and ownership needs.
- Use and provide data to inform connectivity plans.
- Build technologies that provide information in finance, agriculture, and sexual and

4.2 Data availability toward gender-responsive innovation

- Collect data to understand needs and patterns across all sectors.
- Involve women in the end-to-end cycle of open

with Sudan recently becoming the 32nd country member of the Smart Africa Alliance,²⁰⁶ form a formidable partnership to drive Africa's digital transformation for all.

- d) From gaps in human rights and agency: the design of digital technologies and laws should factor in online gender-based violence as a risk factor and provide resources and frameworks.
- e) From gaps in digital safety for women and children: empowerment of women and girls with skills on digital safety should not be an afterthought but a critical aspect of digital innovations.
- f) Regional frameworks should include monitoring and evaluation processes and models from gaps in global digital cooperation.

recommended.

reproductive health.

- Build technologies to support the day-to-day life of women with disabilities.
- Build partnerships with other players to support country-level digital sustainability.
- Empower women to lead ICT dockets at the government level.
- Provide access to clean energy.
- Infrastructure to broaden access to technology to underserved communities, including women and girls in remote rural areas and refugee camps.
- Embed the use of ICT in policy that promotes good health and well-being.

data, from collection to leadership.

- Utilize data to strengthen agricultural practices.

²⁰⁵ <https://smartafrica.org/>

²⁰⁶ <https://smartafrica.org/sudan-joins-the-smart-africa-alliance/>

- Partner with organizations that provide secure data solutions to safeguard open data.
- Increase awareness of the importance of open data as a means of tracking progress on the SDGs and achieving targets.
- Invest in developing open-source tools and operationalising land information systems to generate gender statistics.
- Form government units that focus on sourcing

4.3 Human and Institutional Capacity

- Use digital technologies to provide health, finances, entrepreneurship, and digital skills training.
- Empower women and girls to learn how to use digital skills to build innovations.
- Enhance governments' reach to finance and implement digital training skills as part of national curricula.
- Enhance intentional efforts to have gender-balanced classrooms.
- Equip women with skills to start a business or become employable in the technology and innovation sector.

4.4 Human rights and agency

- Research on digital violence against women in the private and public spaces.
- Prioritise women's mental health, in addition to physical health.
- Enhance skills and knowledge of existing laws related to online spaces.
- Create safe working environments and public spaces for women and girls.
- Involve the community to enhance safety for women and girls.
- Use digital skills to build innovations that enhance women's rights to participate online.
- Design digital tools that are accessible and relevant for female users.

and disseminating open data from various agencies.

- Implement verification features and steps to ensure the integrity of data.
- Empower communities with digital tools to track crime and instability.
- Create mechanisms and channels to keep governments accountable using open data.

- Provide financial support to women entrepreneurs in the technology sector.
- Employ more women to develop gender-responsive innovations.
- Equip communities and institutions with expertise, resources, and leadership to train women and girls on 4IR skills.
- Prioritise digital training of women and girls as a core aspect of national service policies.
- Take the appropriate legal, policy and programmatic measures to address the attrition of women through the education-to-labour-force pipeline.

- Design new methods and approaches to provide legal identity to underserved groups of women and girls.
- Design digital public service provision that is accessible to all women, girls, men, and boys.
- Adopt/revise existing laws and policies to cater to all types of technology-facilitated violence.
- Encourage the progressive implementation of CEDAW and the Maputo Protocol through the development and adoption of relevant policies, procedures and strategies, and the issuance of legislation that enhance women's human rights for protection in their participation in public life.

4.5 Digital safety for women and children

- Provide psychosocial support for women and girls affected by violations of their rights online.
- Provide training to legal and security practitioners on handling cases of online GBV.
- Enhance women and girls' knowledge of skills in digital safety.
- Use digital approaches to curb digital risks.
- Strengthen legal systems to protect children and women online fully.
- Ensure that African governments' efforts to digitalize land administration and management information promotes secure women's land rights.

4.6 Regional digital cooperation

- Enhance regional partnerships and strategies to address gender issues in digital transformation.
- Empower country-level agencies to implement proposed partnerships.
- Implement frameworks for monitoring and evaluation of projects.
- Inviting development agencies, civil society and private sector, employers' organisations, trade unions, professional associations, and the media to take appropriate actions to bridge the gaps in developing human and institutional capacity to support country-level digital sustainability.
- Building partnerships with other stakeholders to increase regional digital cooperation.
- Building a cooperation platform for all member states to share knowledge and good practices.



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