Digital4Women: how to enable women empowerment in Africa through mainstreaming digital technologies and services in EU development programmes

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS

ACP	African Caribbean Pacific
ACWICT	African Centre for Women & ICT
AFAWA	Affirmative Finance Action for Women in Africa
AGCC	African Girls Can Code
AI	Artificial Intelligence
APROSOC	Programa de Apoyo Social
AU	African Union
CEDAW	Convention on the Elimination of Discrimination Against Women
COMESA	Common Market for Eastern and Southern Africa
D4D	Digital for Development
DETF	Digital Economy Task Force
DESI	Digital Economy and Society Index
DFID	Department for International Development
DTS	Digital transformation strategy
ECOWAS	Economic Community of West African States
EDF	European Development Fund
GAP II	The European Union's Gender Action Plan II
GBV	Gender Based Violence
GESP	Ghana on employment and social protection
GGG	Global Gender Gap
GEWE	Gender Equality and Women's Empowerment
GGGR	Global Gender Gap Report
GSMA	Global System for Mobile Communications
ICT	Information Communication Technology
IFC	International Finance Corporation
ITU	International Telecommunications Union
LDP	Local Development Programme

MDGi	Accelerating Progress Towards Maternal, Neonatal and Child Morbidity and Mortality Reduction
MMI	Motherland Mogul Insider
NPCA	Planning and Coordinating Agency
NINI	National ICT Strategy Plan
OCWAR-C	Organised Crime: West African response on cyber security and fight against cybercrime, in Sub-Saharan Africa
PIDA	Programme for Infrastructure Development in Africa
PNSD	Plan National Stratégique de Développement
SDG	Sustainable Development Goal
SEEMP	Social and economic empowerment
SIGI	Social Institution and Gender Index
SMS	Short Message Service
SSA	Sub-Saharan Africa
SSRSP	Security Sector Reform Support Programme -Defence Component
STI	Science Technology Innovation
STEM	Science, Technology, Engineering and Mathematics
SWD	Staffing working document
TSB	Trans-Saharan Fibre Optic Backbone
UN	United Nations
UNESCO	The United Nations Educational, Scientific and Cultural Organization
USSD	Unstructured Supplementary Service Data
VAS	Value Added Services
VAWG	Fighting violence of any kind against women and girls
VP	Voice and Participation
WEF	World Economic Forum
WEE	Women's Economic Empowerment
WRO	Women Rights Online

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INTRODUCTION

Since the end of the 20th century, lives and societies have increasingly become digitalised, with internet, digital technologies and tools as significant drivers for sustainable development. Their "leapfrog" potential has put the topic at the core of the development agenda, in particular of emerging markets, such as in Sub-Saharan Africa (SSA). However, to unleash its potential, the **digital divide**[1], known as the gap in terms of accessibility and use of digital technologies, among individuals, businesses and geographies with different socio-economic levels, needs to be carefully considered and addressed.

Furthermore, the **gender digital divide**[2] refers to the inequalities between women and men with relation to resources, capabilities and opportunities to access and effectively utilise digital technologies[3][4]. This disparity is widely observed in Least Developed Countries and still remains deeply entrenched in many Sub-Saharan African societies. Despite a sparsity of data in some countries, a 2019 report indicated that unlike other regions the gender digital divide has increased in Africa since 2013, where 25% fewer women than men use the internet[5].

Critical factors underpinning the digital divide and the **digital gender gap**[6] are wide ranging and can vary from one context to another. Key barriers preventing women from accessing digital technologies include financial and socio-cultural constraints that impede women from accessing digital, including low literacy levels, lack of skills and aptitude, lack of personal identification[7], safety and security concerns and perceptions of irrelevance[8]. Social economic inequalities for women and girls including disadvantages in education, health and income-generating activities, further limit their digital usage[9].

More explicit gender gaps are observable in many ways, and do not only relate to digital access. Whether it relates to women being able to develop skills or the number of women in leadership or decision-making roles in society, the overall picture is much more complex.

1 'Understanding the Digital Divide', OECD. 2011. Link: https://www.oecd.org/sti/1888451.pdf (consulted on September 08 2020)

2 *The term "digital gender divide" is frequently used to refer to these types of gender differences in resources and capabilities to access and effectively utilise ICTs within and between countries, regions, sectors and socio-economic groups (see World Bank Bridging the Digital Divide 2018*).

3 'What is the fourth industrial revolution?', World Economic Forum. 2016.

4 'African women face widening technology gap', Association for Progressive Communication. 2019.

5 Araba, S. & Hafkin, N. 'Taking stock: Data and evidence on gender equality in digital access, skills and leadership', United Nations University Institute on Computing and Society/International Telecommunications Union: Macau. 2019.

6 *The Gender Gap in mobile phone ownership is calculated by: male owners/users (% of male population) minus female owners/users (% of female population) divided by male owners/users (% of male population) according to the GSMA Mobile Gender Gap Report 2019.*

7 Klapper, L. 'Mobile Phones are key to economic development. Are women missing out?', Brookings. April 2019.

8 Porter et al. 'Mobile phones, gender, and female empowerment in sub-Saharan Africa: studies with African youth', Information Technology for Development, Vol. 26, No 1, 2020, Pp 180-193.

9 'Africa's Pulse: An Analysis of Issues Shaping Africa's Economic Future', World Bank Group Open Knowledge, 2019.

There are large regional variations: some countries across Sub-Saharan Africa are close to parity when it comes to their overall Gender score according to the World Economic Forum 2020 Global Gender Report (Zimbabwe, Zambia, Burundi, Namibia and Rwanda) while others still have persistent gaps (Côte d'Ivoire, Democratic Republic of Congo, Togo, Mali, Gambia, Burkina Faso, Nigeria, Guinea, Benin and Angola)[10]. To fully deliver the potential of digital opportunities, it is critical to understand these gender gaps as well as the gender digital divide - the barriers specific to women - and consider where genuine opportunities exist. Digital transformation could provide new avenues for economic empowerment for women, otherwise **women are at greater risk of being left behind in rapidly changing and digitizing societies and economies**.

To address this, gender inequalities in and through digital have increasingly become a higher priority for many stakeholders; nationally, regionally and globally, with a variety of actors (governments, civil society, international organisations, inter-governmental bodies, private sector and others) seeing digital transformation as a way to unlock the economy and create jobs and income opportunities for women. The digital gender gap is addressed through policy, laws, resources programming, education and services, to transform of the economy and society of individual countries and regionally across Sub-Saharan Africa.

In line with the **Digital for Development (D4D)**[11] approach developed in 2017 and the recommendations delivered in 2019 by the EU-African Union **Digital Economy Task Force (DETF)**, the European Commission has identified four priority areas of work to support and a human-centric digital transformation in African partner countries: Governance, Policy and Regulatory Frameworks; Connectivity - Accelerating the achievement of universal access to affordable broadband; Digital skills and support to digitally enabled entrepreneurship; Accelerating the adoption of e-Services and the further development of the digital economy

In light of these EU priorities, this study aims to identify the key factors and trends regarding gender and digital as well as the barriers that are holding women back from accessing the opportunities of digitalisation in Sub-Saharan Africa. Based on desk research and interviews with key stakeholders across Sub-Saharan countries, regionally and internationally, this study analyses the state-of-the-art initiatives and good practices enabling girls' and women's participation in the digital world, digital as an enabler of gender equality, and the policies that support the shift in the current gender digital divide in Sub-Saharan Africa. The findings provide evidence for recommendations on decision and policy making as well as future programming.

The first section of this report provides an overview of the state of affairs (including trends and policy frameworks) challenges and opportunities related to women's empowerment through digital in Sub-Saharan Africa. The second section provides a compendium of good practices and lessons learnt. The third section focuses on EC initiatives concerning digital and gender, and the final chapter provides recommendations to further mainstream gender in the EC digital initiatives. The detailed methodology for this report and twelve country case studies are presented in the annexes.

[10] 'Global Gender Gap Report 2020', World Economic Forum, 2019.

[11] 'Digital4Development: mainstreaming digital technologies and services into EU Development Policy. Commission Staff Working Document.' European Commission, 2.5.2017. SWD, 157 final, Brussels, 2017.

1 CONTEXTUAL ANALYSIS: WOMEN'S EMPOWERMENT THROUGH DIGITAL IN SUB-SAHARAN AFRICA

1.1 State of Affairs: Trends and Ecosystem

1.1.1 Regional and National Trends

1.1.1.1 Regional Trends

A regional increase in mobile and internet access that does not equally benefit women

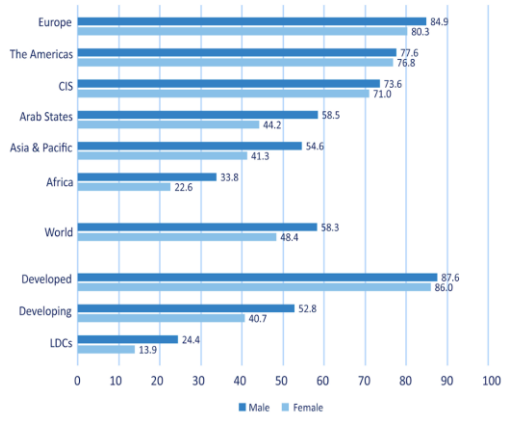
The spread of **digital technologies and tools** across Sub-Saharan Africa has the potential to shape economic, political and social systems. Over the past decade, the region witnessed an impressive increase in overall mobile phone usage[12], with 73% of Africa's population now having a **mobile phone subscription**[13]. Mobile connections have leapt to 475 million in Sub-Saharan Africa, compared to just 12.3 million fixed line connections[14], representing the highest proportion of mobile versus fixed line connections in the world. According to GSMA, in 2018 mobile technologies and services generated 8.6% of GDP in Sub-Saharan Africa, accounting for over €103 billion of economic value added[15]. To a lesser extent, access to internet has also increased significantly in Sub-Saharan Africa (and at the fastest rate worldwide), jumping from 2.1% in 2005 to 28.2% in 2019.[16] According to GSMA, "with the uptake of mobile internet growing quickly, there is some evidence that the gender gap has narrowed[17]. Still, a gender gap persists both in terms of access to mobile phones and the internet, and in Sub-Saharan Africa, the gender gap in mobile ownership has remained constant between 2017 and 2018[18].

[12] *However figures do not capture individuals with multiple devices or shared devices.*
[13] 'The Mobile Economy Sub-Saharan Africa', GSMA, 2019.
[14] 'Mobile is catalyst for explosive growth in Sub-Saharan Africa', GSMA, 2020.
[15] 'Does digital technology stimulate economic growth in Sub-Saharan Africa', The BF Online, 2020.
[16] 'Measuring Digital Development Facts and Figures', International Telecommunication Union, 2019.
[17] 'The Mobile Gender Gap Report 2019 GSMA', 2019,
[18] Ibid

In the region, women are 13% less likely to own a mobile phone[19] and the **gender digital gap in mobile internet usage in Sub-Saharan Africa is 34%**[20]. According to the International Telecommunication Union (ITU), internet usage is equal between men and women in only four countries in Sub-Saharan Africa: DR Congo, South Sudan, Eritrea and Somalia. However, it is important to note that in these countries internet usage and mobile subscriptions rates are very low (with an estimated teledensity of 43.383; 72.008; 20.364; 50.992 respectively[21]) for both men and women. The ITU global indicator (85 countries) for the gender gap in mobile phone ownership by sex for 2015-2018 (Indicator 5.b.1) indicates that there are 58 countries where more men than women own a mobile phone and of those countries, in 23 of them, the gender gap is over 10%, and in 14 of them it is over 20%.

Most countries with a large gender gap in mobile phone ownership also have a large gender gap among internet users, in line with the fact that mobile phones are the most frequently used means of accessing the internet. As such, addressing this gender gap could also help to reduce the internet usage gender gap[22]. This indicator is more useful than looking at mobile subscription access, as often subscriptions are held in the name of the male member of the household although the mobile or line may be shared amongst household members. Increased mobile phone ownership can reflect women's ability to own and use a personal mobile device[23]. ITU also provides a global indicator of internet access disaggregated by gender (Indicator 17.8.1)[24]. Globally, more men than women are accessing the internet, but this gap is significantly higher in Africa, as shown below.

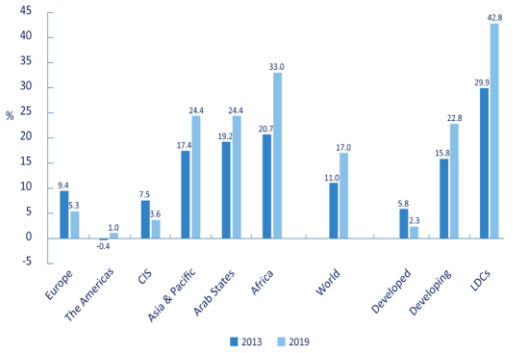
Internet penetration rate for men and women, 2019*



Note: * ITU estimate. Penetration rates in this chart refer to the number of women/men that use the Internet, as a percentage of the respective total female/male population.

Source: ITU.

The Internet user gender gap (%), 2013 and 2019*



Note: * ITU estimate. The gender gap represents the difference between the Internet user penetration rates for males and females relative to the Internet user penetration rate for males, expressed as a percentage.

Source: ITU.

Women still face complex and interlinked inequalities and barriers[25] that hamper their socio-economic empowerment. Factors hindering women's access to mobile phones and the internet in the region include the cost of devices and data, lack of awareness and understanding of the internet, lack of digital skills, a feeling that the internet is not relevant, concerns around safety and security, and/or lack of access to infrastructure, such as electricity

19 'The Mobile Gender Gap: Africa', GSMA, 2019.

20 Araba, S. & Hafkin, N. 'Taking stock: Data and evidence on gender equality in digital access, skills and leadership', United Nations University Institute on Computing and Society/International Telecommunications Union: Macau. 2019.

21 'Teledensity: Mobile by Country Comparison' The World Bank and CEIC, 2018. Link: https://www.ceicdata.com/en/indicator/sudan/teledensity-mobile (consulted on September 08 2020)

22 'Wide gender gap in mobile phone ownership often coupled with a wide gender gap in Internet use', ITU. 2020. Link: https://itu.foleon.com/itu/measuring-digital-development/mobile-phone-ownership/ (consulted on September 08 2020)

23 'Women's rights online does the web reduce or magnify offline inequalities', Web Foundation, 2015.

24 'ICT SDG indicators', ITU, Link: https://www.itu.int/en/ITU-D/Statistics/Pages/SDGs-ITU-ICT-indicators.aspx (consulted on September 08 2020)

25 'Realising the full benefit of mobile for women in Africa', GSMA, 2019.

or quality network coverage, particularly for women living in rural areas[26]. Although these factors also concern men, they disproportionally affect women, and paired with structural and broader socio-economic constraints (low education, literacy and economic dependence) further impact women's access to the internet and digital technologies.

A push towards a "digital economy" that requires addressing digital skills and literacy gender gaps

Many Sub-Saharan countries have already started following the path towards a digital economy. According to the OECD, "digital economy" encompasses commonly used digital tools and technologies and a wide range of activities undertaken through them, especially trade of information, goods or services through electronic commerce[27]. For example, Senegal has set a target of generating 10% of its Gross Domestic Product (GDP) from the digital economy by 2025 and Kenya has been a pioneer in mobile money across Sub-Saharan Africa and is exporting its model to other countries[28].

Technology focused companies are seeing the potential of this rapid growth of the digital economy in Sub-Saharan Africa to expand their offer of digital solutions and services across many of the countries. Nairobi, Johannesburg and Lagos are the top cities for African tech attracting international actors and are host to several **tech start-up hubs and tech entrepreneurs**. These hubs act as incubators for technology enabled businesses and offer a supportive ecosystem for tech entrepreneurs to share ideas, innovate and collaborate. A study by Briter Bridges and AfriLabs in 2019 found that of the 643 tech hubs in Africa "41% of these facilities are incubators, 24% are innovation hubs, 14% are accelerators and 39% offer co-working space[29]." **The Africa tech sector's attractiveness for investment is at the highest level it has ever reached, gaining the attention of a number of large-scale investors.** In the first half of 2019, the top 15 venture-capital funding rounds for African tech start-ups raised €250 million, compared to €150 million in the first half of 2018 – a growth of more than 60%[30].

While Sub-Saharan Africa has many examples of excellence, there is still a need to build more inclusive tech-enabled businesses that create employment opportunities and open up new markets. Furthermore, there is a need to develop more supportive environments for women to access and utilise existing tech hubs. A 72% increase Year over Year (YoY)[31] in the number of financial deals (equity deals only) signed by women digital entrepreneurs across Africa as compared to the 49% increase YoY of male-only founded deals is illustrative of a tendency of growing female participation in the tech sector[32]. Even though female digital entrepreneurs (female founded tech start-ups) in Sub-Saharan Africa are a growing part of the tech transformation of the continent, women are still underrepresented in the field and face challenges in acquiring and benefitting from investments as compared to their male counterparts.

The gap in digital skills and literacy, including the proportion of women in STEM needs to be addressed to provide equal opportunities in the growing digital economy. According to UNESCO, only 35% of Science, Technology, Engineering and Mathematics (STEM) students

[26] 'Gendering Surveillance', Internet Democracy, 2019.
[27] 'The Digital Economy', OECD, 2012.
[28] 'African Leaders Committed to Building Digital Economy', World Bank Blog, 2019. Link: https://blogs.worldbank.org/voices/african-leaders-committed-to-building-digital-economy (consulted on September 08 2020)
[29] Shapshak, T. 'Africa Now has 643 Tech Hubs which play "Pivotal" role for Business', Forbes, 30 October 2019. Link: https://www.forbes.com/sites/tobyshapshak/2019/10/30/africa-now-has-643-tech-hubs-which-play-pivotal-role-for-business/#117eab8d4e15 (consulted on September 08 2020)
[30] 'Tech hubs across Africa to incubate the next generation ', The Africa Report, 2020.
[31] *Year-Over-Year (YOY) is a frequently used financial comparison for comparing two or more measurable events on an annualized basis.* Source: Majaski,C., "Year-over-year (YOY)", Investopedia, 2020.
[32] '2019 Africa Tech Venture Capital Report', Partech Africa Team, 2019.

in higher education globally are women[33]. Sub-Saharan Africa presents the lowest higher education enrolment rate for women (under 10%), however specific data about girls' and women's enrolment in STEM careers is largely unavailable for the region[34]. Alternative educational and training options to acquire IT skills such as boot camps and incubators have been emerging, as highlighted in section 3.2.3 of this report and in the country case studies annexed.

A proliferation of e-services that could leave women behind

As part of the digital economy, multiple services from various sectors (public, private, civil society, etc.) are increasingly being digitalised. However, a major challenge is whether the connectivity infrastructure is sufficient for people to access such services. Rwanda is an example of success, where at a national level, 4G and fibre connectivity has been rolled in order to deliver online e-government and other services across the country.

Disruptive technologies, known as an innovation that significantly alters the way that consumers, industries, or businesses operate[35], are also being used as a key tool in stamping out corruption and waste, especially in the public sector. These innovative tools are helping to overcome the traditional barriers of distance and limited access to healthcare, education, agriculture and other essential services.

With the development of targeted mobile apps, new channels are being developed to communicate information and provide service to target groups. As an example, the rapid growth of e-agriculture or AgriTech solutions are a means of distributing information about crops, livestock management and market information to farmers at scale across the continent. These solutions range from advice on animal husbandry such as "i-cow" to apps that give the latest market prices for crops helping remote producers to secure a fair deal from wholesalers[36]. Another example is Peek, a portable eye examination kit used in South Africa, which lets users carry out eye exams by taking high quality retinal images with their mobile phone.

Overall, e-services can offer "leapfrog" development opportunities for countries and populations. However, foundational inequalities, i.e. gender gaps in mobile phones and internet access, as well as digital skills and literacy, need to be bridged to ensure inclusion and leverage the potential of e-services for women, girls, men and boys.

1.1.1.2 Trends per cluster of countries

In order to identify regional trends in Sub-Saharan Africa, and given the lack of available and comparable regional and national statistics on 'digital gender' data, four indicators produced by international organisations were selected to provide an overview of trends at the intersection of digital connectivity, digital access and gender inequalities. The four indicators were selected to balance relevance, reliability and availability of data across the region. The table below provides a brief description of the indicators and a more comprehensive description can be found in Annex 1.

[33] 'Girls' and women's education in science, technology, engineering and mathematics (STEM)', UNESCO, 2019. Link: https://en.unesco.org/stemed (consulted on September 08 2020)

[34] 'Cracking the code: girls' and women's education in science, technology, engineering and mathematics', UNESCO, 2017. Link: https://unesdoc.unesco.org/ark:/48223/pf0000253479 (consulted on September 08 2020)

[35] Smith,T.'Disruptive Technology', Investopedia, 21 March 2020. Link: https://www.investopedia.com/terms/d/disruptive-technology.asp (consulted on September 08 2020)

[36] 'Disrupting Africa Riding the Wave of the Digital Revolution', PWC, 2016.

Table 1: Description of four indicators (developed by Conseil Santé)

	Description	Data producer	Year used	Availability per SSA countries
Global Gender Gap (GGG) Score	Benchmarks national gender gaps in economic, education, health and politics.	World Economic Forum	2020	35
Mobile Subscription Access per 100 inhabitants	Includes both the number of postpaid subscriptions and the number of active prepaid accounts.	World Bank	2017	47
% Individuals using the internet	Individuals who have used the internet in the last 3 months from any device (computer, mobile phone, personal digital assistant, games machine, digital TV, etc.)	Organisation for Economic Cooperation and Development (OECD)	2018	49
GSMA Connectivity Score	Measures the performance of 165 countries against the four key enablers of mobile internet adoption: (1) infrastructure, (2) affordability, (3) consumer readiness and (4) content and services.	GSMA	2018	41

For each country in Sub-Saharan Africa, the four indicators were assessed and attributed to one of three categories: low, medium or high. To build the categories relative to the Sub-Saharan African region, each indicator was divided by three, to create the interval bounds as demonstrated in the table below. A red (low), amber (medium) and green (high) colour coding system was applied.

Table 2: Intervals for each of the four indicators (developed by Conseil Santé)

	LOW	MEDIUM	HIGH
Global Gap Gender Score[37]	0.596 – 0.660	0.661 – 0.723	0.724 – 0.791
Mobile Subscription Access[38]	12 – 59.7	59.8 – 112.1	112.2 – 176.6
Internet Usage[39]	1.3 – 20.8	21.8 – 39	40 – 62
GSMA Connectivity Score[40]	18 – 34	35 – 50	51 – 65

The table hereafter presents this data for 49 countries. Data across all four indicators was only available for 35 out of these 49 countries; and is incomplete for the remaining 14 countries. The full dataset shows that there are regional and country-level trends, as several countries fall within the same category (low/medium/high) across at least two or three of the four indicators. There is also a greater number of countries categorised as low or medium rather than high across all indicators, which are relative to countries in Sub-Saharan Africa. The maps below present the score for all 35 countries against each of the four indicators, followed by a brief analysis of trends identified.

[37] *This indicator varies from 0 to 1, considered full gender parity. However, no country has achieved this to date.*

[38] *Greater mobile subscription access could imply greater access to internet where other barriers do not exist (e.g. affordability or network coverage).*

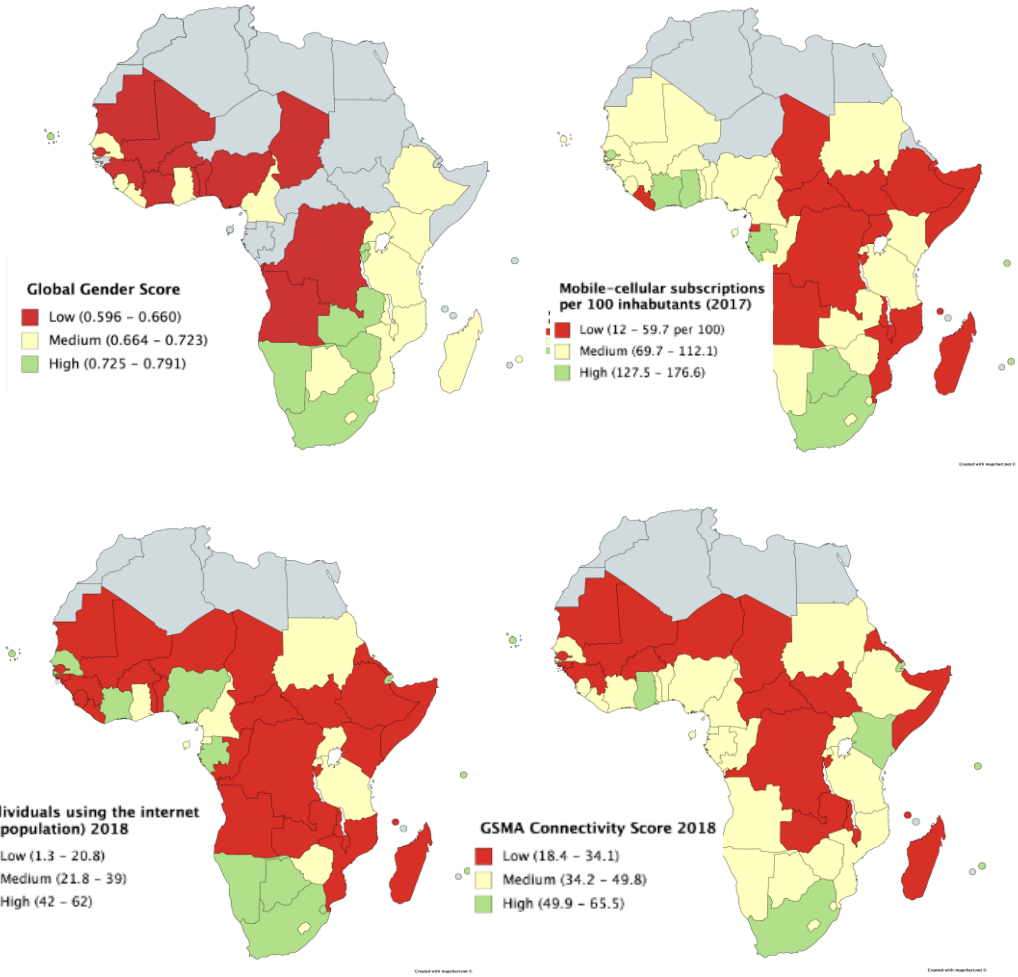
[39] *% individuals using the internet: Internet users are individuals who have used the internet (from any location) in the last three months*

[40] *35 indicators feed into 12 dimensions that are aggregated to give a score for each of the four enablers. Countries are scored within a range of 0 to 100 across a number of indicators, with a higher score representing stronger performance in delivering mobile internet connectivity.*

Table 3 : Four indicators analysis across 35 countries of Sub-Saharan Africa (developed by Conseil Santé)

	Gender Indicators	Technical and Digital Indicators		
Country	**Global Gender Gap Score (2020)**	**Mobile subscription access per 100 inhabitants (World Bank, 2017)**	**Individuals using the internet % population (OECD, 2018)**	**GSMA Connectivity Score (2018)**
West Africa				
Benin	0.658	78.5	20.0	39.4
Burkina Faso	0.635	93.5	16.0	31.3
Cabo Verde	0.725	112.1	58.2	50.8
Côte d'Ivoire	0.606	130.7	46.8	46.2
Gambia, The	0.628	141.2	19.8	32.7
Ghana	0.673	127.5	39.0	51.2
Guinea	0.642	85.2	18.0	29.5
Guinea-Bissau	NA	77.1	3.9	25.1
Liberia	0.685	56.2	8.0	38.7
Mali	0.621	97.1	13.0	30.8
Mauritania	0.614	92.2	20.8	33.6
Niger	NA	NA	5.3	19.3
Nigeria	0.635	75.9	42.0	47.7
Senegal	0.684	99.4	46.0	41.7
Sierra Leone	0.668	87.7	9.0	37.9
Togo	0.615	79.8	12.4	34.7
Central Africa				
Cameroon	0.686	81.9	23.2	46.1
Central African Republic	NA	25.2	4.3	18.9
Chad	0.596	38.3	6.5	18.4
Congo, Dem. Rep.	0.613	43.4	8.6	26.1
Congo, Rep.	NA	96.1	8.7	41.3
Equatorial Guinea	NA	49.0	26.2	NA
Gabon	NA	131.5	62.0	49.0
Sao Tome and Principe	NA	85.0	29.9	NA
East Africa				
Burundi	0.745	54.5	2.7	26.0
Djibouti	NA	39.0	55.7	NA
Eritrea	NA	NA	1.3	NA
Ethiopia	0.705	59.7	18.6	36.1
Kenya	0.671	86.1	17.8	50.8
Rwanda	0.791	72.2	21.8	43.0
Seychelles	NA	176.6	58.8	NA
Somalia	NA	48.3	2.0	NA
South Sudan	NA	12.0	8.0	NA
Sudan	NA	70.7	30.9	38.9
Tanzania	0.713	69.7	25.0	41.0
Uganda	0.715	58.2	23.7	40.0

Southern Africa				
Angola	0.660	44.7	14.3	43.8
Botswana	0.709	141.4	47.0	49.4
Comoros	NA	54.9	8.5	NA
Eswatini	0.703	76.9	47.0	35.9
Lesotho	0.695	106.6	29.0	40.2
Madagascar	0.719	34.1	9.8	32.9
Malawi	0.664	41.7	13.8	25.4
Mauritius	0.665	145.4	58.6	65.5
Mozambique	0.723	40.0	10.0	34.3
Namibia	0.784	104.5	51.0	45.2
South Africa	0.780	162.0	56.2	59.5
Zambia	0.741	78.6	14.3	33.8
Zimbabwe	0.730	85.3	27.1	39.2



High scoring countries

Eight (8) countries scored high across two or more indicators: Botswana, Cabo Verde, Côte d'Ivoire, Gabon, Ghana, Mauritius, Namibia, and South Africa. **Almost all countries in this cluster have a high score for two connectivity indicators: "% of individuals using the internet" (except Cabo Verde and Namibia) and "mobile subscriptions per 100 inhabitants" (except Ghana). Mauritius, South Africa, Ghana and Cabo Verde are amongst the top 5 Sub-Saharan Africa countries in the GSMA Mobile Connectivity Index.**

More particularly, South Africa, Namibia, Cabo Verde and Botswana are advanced on both the connectivity and gender equality fronts. **South Africa is at the forefront regionally: it is the only country ranked 'high' in all indicators.** On another hand, Ghana, Gabon, Côte d'Ivoire and Mauritius are equally advanced in terms of connectivity, but less in terms of gender equality. For example, Mauritius is the only 'advanced' country in the continent according to the GSMA categorization (which means it "performs well on three enablers and usually have high penetration rates") but is ranked 22 (out of 34) on the GGGR for Sub-Saharan Africa. Although women face low restrictions in terms of access to productive and financial resources (OECD 2020 Social Institutions and Gender Index - SIGI[41]), women's economic participation remains low (GGGR rank 116 out of 153 worldwide). Moreover, Côte d'Ivoire is also ranked low in GGGR; with women facing a high level of discrimination and very highly restricted access to productive and financial resources[42].

It is worth noting that these countries all ranked in the top 10 in Sub-Saharan Africa for GDP per capita, with this ranging from $2,202.30 for Botswana to $11,238.70 for Mauritius. Additionally, some better performing countries benefit from fibre optic cables[43]. The map hereafter shows the clustering for these high scoring countries.

Figure 1: High scoring countries (developed by Conseil Santé)

[41] *"The OECD Development Centre's Social Institutions and Gender Index (SIGI) measures discrimination against women in social institutions across 180 countries. By taking into account laws, social norms and practices, the SIGI captures the underlying drivers of gender inequality with the aim to provide the data necessary for transformative policy-change. The SIGI is also one of the official data sources for monitoring SDG 5.1.1 'Whether or not legal frameworks are in place to promote, enforce and monitor gender equality and women's empowerment'."* Link: https://www.genderindex.org/

[42] Ibid.

[43] 'Bringing Africa Up to High Speed', International Finance Cooperation, 2019,

Medium scoring countries across two or more indicators

Nineteen countries scored medium across two or more indicators, including Benin, Cameroon, Congo, Eswatini, Ethiopia, Kenya, Lesotho, Liberia, Mozambique, Nigeria, Rwanda, Senegal, Sierra Leone, Sudan, Tanzania, Togo, Uganda, Zambia and Zimbabwe. Zambia scored low for connectivity and internet but high for gender and medium for mobile access, which is why it has been included in this cluster. **Countries in this cluster present a variety of profiles, ranging from low to high scores in terms of connectivity and gender equality.** That being said, according to the 2019 GSMA Mobile Connectivity clustering[44], the vast majority[45] of countries in this cluster fall under the "emerging" category, which means that they "perform fairly well on one or two enablers but show room for improvement on others". It is worth noting that Rwanda is ranked first in the region in terms of infrastructure, according to GSMA Mobile Connectivity Index.

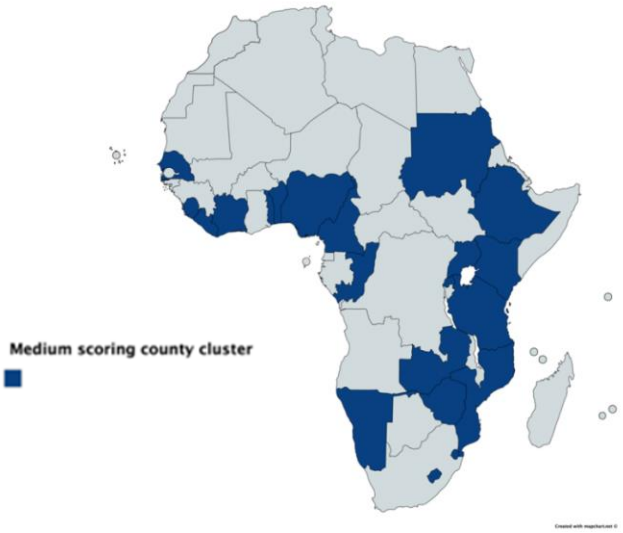


Figure 2: Medium scoring countries (developed by Conseil Santé)

More specifically, Rwanda, Zambia, Benin, Nigeria, Sierra Leone, Zimbabwe, Mozambique, Ethiopia present encouraging gender equality indicators. In particular, they have in common relatively high female economic participation rates. Benin is ranked first worldwide in the GGGR in terms of women's economic participation and opportunity (outranking Iceland). In terms of connectivity, Mozambique, Ethiopia and Sierra Leone all scored low for internet usage despite scoring medium for other indicators. Mozambique and Ethiopia also scored low for mobile subscriptions suggesting there are disparities in these countries between connectivity at the country level (in terms of infrastructure and other related factors) and connectivity at the individual level.

On another hand, Lesotho, Senegal, Kenya, Tanzania, Liberia, Togo, Uganda, Cameroon, Eswatini perform less well in terms of gender equality. For example, Cameroon has 'very high' levels of discrimination according to the 2020 SIGI categorization, and women face challenges in terms of economic participation and opportunity. Tanzania, Liberia, Togo and Uganda present 'high' levels of discrimination and perform poorly in terms of women's educational

[44] 'The State of Mobile Internet Connectivity Report 2019' GSMA, 2019. Link: https://www.mobileconnectivityindex.com/ (consulted on 08 September 2020).
[45] *Except Liberia and Mozambique (both "discoverers") and Sao Tome and Principe (no data available).*

attainments[46]. In terms of connectivity, Kenya for example, whilst it scored high for the GSMA Mobile Connectivity Score, scored low for internet usage and medium for gender and mobile access. This suggests there may be issues relating to access and affordability at the household level rather than infrastructural related barriers. In terms of gender equality, two countries (Congo and Sudan) have significant gender data gaps, and are not ranked in the GGGR or in the SIGI.

Low scoring across two or more indicators

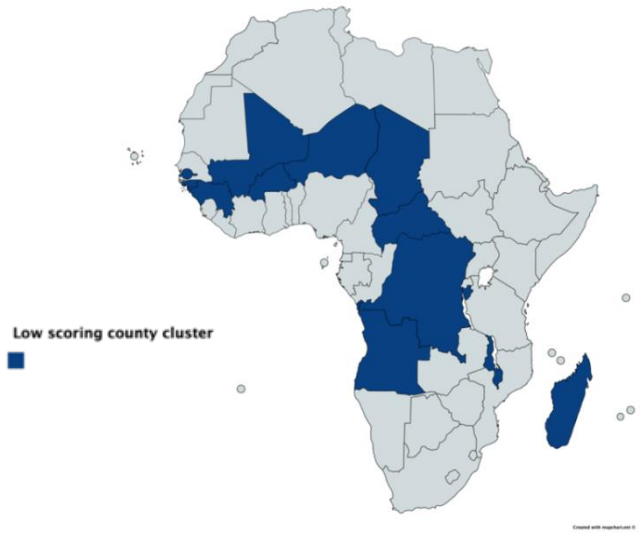


Figure 3: Low scoring countries (developed by Conseil Santé)

Fourteen countries scored low across two or more indicators. Countries in West and Central Africa, such as Chad, Central African Republic (CAR) and Niger all scored low for all available indicators[47]; and Burkina Faso, Democratic Republic of Congo, Guinea, Guinea-Bissau and Mali scored low for two or three indicators. Outside of these regions, Angola, Burundi, Comoros, Malawi, Madagascar, Mauritania, Somalia and South Sudan also scored low for at least three indicators. **All countries in this cluster have in common a systematic low score for the indicator "% of individuals using the internet", indicating that a low percentage of their population "have used the internet in the last three months from any device". All of them also scored low in one of the other two "connectivity" indicators**, either the number of mobile subscriptions per 100 inhabitants or the GSMA Mobile Connectivity Index.

According to the GSMA Mobile Connectivity Index, nearly all countries[48] in this cluster are "discoverers" in 2019, which means that they "show room for improvement across all four enablers and have correspondingly low levels of mobile internet penetration". Among these countries, Burundi, Guinea and Madagascar present encouraging results in terms of women's economic empowerment. They are respectively ranked 6th, 10th and 23rd (out of 153) on the GGGR pillar "Women's economic participation and opportunity", suggesting high levels of female participation in the labour market.

The remaining countries in this cluster (Angola, Burkina Faso, Chad, DRC, The Gambia, Malawi, Mali, Mauritania) still face challenges on most fronts in terms of gender equality. They are ranked medium to high on the 2020 SIGI, suggesting that women face significant

[46] 'Global Gender Gap Report 2020', World Economic Forum. 2019. Link: http://www3.weforum.org/docs/WEF_GGGR_2020.pdf

[47] *Some incomplete data for CAR on the Global Gender Score and on the Global Gender Score and Mobile access for Niger*

[48] *Except Somalia (no data available) and Angola (considered "emerging").*

structural and socio-cultural barriers in different aspects of life. In terms of gender equality, it is worth noting that three countries including CAR, Guinea-Bissau and Niger have gender data gaps and are not ranked in the GGGR neither in the SIGI.

The countries within this cluster typically have significantly lower GDP per capita than other countries in Sub-Saharan Africa, with Burundi being the lowest at $271.80. Angola is an anomaly for the group with GDP at $3,432 per capita (2018) which is comparable to South Africa, the only country that scored high across all four indicators with a GDP per capita of $6,374. Other reasons that could put these countries far behind others are likely to be related with their geographic location and their largely landlocked nature (for Niger, Central African Republic and the Democratic Republic of Congo – with only a small Atlantic coastline). The findings from this cluster suggest that there are correlations between low gender scores and low connectivity, access and internet usage indicators. This could be broadly indicative of the slower rates of development within these countries.

Countries with important data gaps

Eight countries were not included in the Gender Gap Report nor the GSMA Mobile Connectivity Index, indicating important data gaps on both fronts. These are: Equatorial Guinea, Djibouti, Eritrea, Somalia, South Sudan, Comoros, Sao Tome and Principe, and Seychelles. All countries in this cluster except Sao Tome and Principe and Seychelles have a lower Statistical Capacity score[49] than the Sub-Saharan Africa average. Eritrea, Somalia and Equatorial Guinea have the lowest scores in the region.

1.1.1.3 Shortlist of countries for further analysis

To better understand the varying dynamics within and between these country clusters, twelve countries were selected to develop country case studies (see Annex 4). The study of these shortlisted countries aims to dig further into some of the trends identified above looking at the country-level policies, ecosystems, good practices and recommendations. The countries selected also provide a geographical spread across the sub-regions (West, East Central and Southern Africa) and include anglophone, francophone, and lusophone countries. The countries shortlisted are: Cameroon, Côte d'Ivoire, Democratic Republic of Congo, Kenya, Mozambique, Niger, Nigeria, Rwanda, Sudan, Sierra Leone, Uganda, and Zambia.

[49] "*The World Bank's Statistical Capacity Indicator is a composite score assessing the capacity of a country's statistical system. It is based on a diagnostic framework assessing the following areas: methodology; data sources; and periodicity and timeliness. Countries are scored against 25 criteria in these areas, using publicly available information and/or country input. Available at: http://datatopics.worldbank.org/statisticalcapacity*

Figure 4: Shortlisted countries ***(developed by Conseil Santé)***

1.1.2 Policy Frameworks on Digital & Gender and the Digital Ecosystem in Sub-Saharan Africa

1.1.2.1 Policy Frameworks in Sub-Saharan Africa

Both regional and national policy frameworks focusing either on gender or digital exist across the region. **Generally, digital policy frameworks cover a wide range of areas from delivering affordable access to online safety and security.** At the regional level, the Digital Transformation Strategy (DTS) 2020-2030,[50] adopted at the African Union (AU) Summit in February 2020, represents a blueprint and master plan for transforming Africa's economy and society. The DTS acknowledges the gender gap as a significant threat and the need to consider equality in terms of access across gender, demography and geography. It recommends promoting "gender-inclusive education frameworks and policies and boost relevant education opportunities and digital skills development for women and girls in STEM-subjects to narrow the gender digital divide"[51]. Regarding online safety, the African Declaration on Internet Rights and Freedoms, a Pan-African initiative, was adopted in 2013, aiming to uphold and mainstream human and people's rights on the internet and principles of openness in internet policy formulation and implementation across the continent.

Gender policy frameworks broadly cover "women's empowerment", with specific focus on areas such as education or employment, but not necessarily on digital. The African Union has adopted a strategy for Gender Equality & Women's Empowerment (GEWE) for 2018-2028 where it presents a plan for the African Union's Agenda 2063 to achieve "an Africa, whose development is people-driven, relying on the potential of African people, especially its women and youth, and caring for children". The goal of the strategy is to achieve full gender equality throughout all spheres of life and it translates into gender mainstreaming in all sectors including maximising economic outcomes, opportunities and digital dividends, which are the broader development benefits from using technology.[52] Pillar one includes a commitment to endorsing education, literacy, STEM and vocational training as well as digital solutions and platforms that advance gender equality and women's empowerment in the form of advocacy

[50] 'Digital Transformation Strategy', African Union, Addis Ababa, Ethiopia, February 2020. Link: https://au.int/en/documents/20200518/digital-transformation-strategy-africa-2020-2030 (consulted on September 08 2020)
[51] Ibid.
[52] 'AU Strategy for Gender Equality & Women's Empowerment 2018-2028', African Union. Addis Ababa, Ethiopia. Link: https://tinyurl.com/ydfjzb7d (consulted on September 08 2020)

for tech hubs and start-ups.[53] However, digital is not mainstreamed throughout the other three pillars of the four pillar strategy.

At a national level, the shortlisted countries that have more political and/or economic stability tend to have more comprehensive digital strategies and plans with different policies for each sector (infrastructure, entrepreneurship, literacy, etc.). These are to a large extent Rwanda, Kenya, Nigeria and Zambia. Moreover, there is gender mainstreaming in these digital policies that is non-negligible. For example, Rwanda is a country that is leading the way when it comes to the successful implementation of policies by backing their most recent National ICT Strategy and Plan (NICI) with an estimated investment need of around $500 million to create economic transformation, job creation and accountable governance including a pillar on women and youth empowerment in technology. On the other hand, in Nigeria, there are a number of progressive policies and strategies, yet large wealth divides and disparities as well as major infrastructural challenges mean that the most marginalised are unlikely to benefit. The countries with missing, incomplete, outdated or inadequate digital policies tend to have recent or on-going political instability, large rural populations and are less economically developed, for example Sudan, Mozambique and the DR Congo.

Certain countries have developed and deployed specific policy frameworks to address digitalisation as well as gender policies, without necessarily effectively mainstreaming gender in implementation of digitalisation. Most countries have also made commitments to the Convention on the Elimination of Discrimination Against Women (CEDAW), as indicated in the table below.

Table 4: Digital and gender policies of shortlisted countries

Country	Digital Policies	Gender Policies
Cameroon	▪ National ICT Strategic Plan 2020 ▪ Plan for a Digital Cameroon (2016-2020) ▪ Law regulating /governing Telecommunications (1998, amended 2005) ▪ e-Communications Law (2010, amended 2015) ▪ Cyber Security and Cybercrime Law (2010) ▪ e-Commerce Law (2010) ▪ Law on Suppression of Terrorist Acts (2014) ▪ Finance Act (2019)	▪ Governmental commitment to: - CEDAW - the Beijing Platform for Action (1995-2020) - the Declaration of Heads of State and Government of the African Union on Equality Between Women and Men - Adoption of Resolution 1235 of the UN's Security Council on Women, Peace and Security (2018-2020)
Côte d'Ivoire	▪ Plan National de Développement (2016-2020) ▪ Plan National de Développement (2021-2025, in preparation) ▪ The National Master Plan for ICT (Horizon 2035) ▪ Plateforme de Lutte Contre la Cybercriminalité (2012)	▪ Governmental commitment to: - CEDAW - The World Bank's Report on Gender Equality and Development (2012) - the Beijing Platform for Action (1995-2020)
Congo, Dem. Rep.	▪ Freedom of Information and Communication Law no. 8-2001 (2001) ▪ Regulation of Electronic Communications Sector, Law no. 9-	▪ Women's Rights and Parity Law no. 15/013 (approved in 2015) ▪ Plan National Stratégique de Développement (PNSD, 2017-2021)

[53] Ibid.

Country	Digital Policies	Gender Policies
	2009 ▪ Establishment of the Regulatory Agency of Postal and Electronic Communications, Law no. 11-2009 (2009) ▪ Plan National Stratégique de Développement (PNSD, 2017-2021) ▪ Plan National Numérique (Horizon 2025)	▪ Politique Nationale Genre (2015) ▪ Governmental commitment to CEDAW
Kenya	▪ National ICT Policy (2019) ▪ Digital Economy Blueprint (2019) ▪ Kenya Vision 2030	▪ Governmental commitment to CEDAW ▪ Article 27 of the 2010 Constitution ▪ National Policy on Gender and development (2019) ▪ Kenya Vision 2030
Mozambique	▪ Telecommunications Act (2004) ▪ Agenda 2025 ▪ Poverty Reduction Action Plan (2011) ▪ Mozambique Science Technology Innovation Strategy (MOSTIS, 2006-2016)	▪ Governmental commitment to CEDAW, Beijing Declaration and Platform for Action (1995) ▪ Mozambique Gender Policy (2006) ▪ Gender Based Violence Law (2018) ▪ Maternal Death Law (2018) ▪ Land Appropriation Law (2018) ▪ School Absenteeism Law (2018) ▪ Child Marriage Law (2019) ▪ Strategic Plan (2016-2018)
Niger	▪ Politique Sectorielle des Télécommunications (2011-2020) ▪ Programme Rennaissance II (2016) ▪ National strategy for Information and Communication Technologies (2017-2021) ▪ World Bank & Government of Niger) Plan de Développement Economique et Social (2017-2021) ▪ The Niger 2.0 Strategic Plan (2019) ▪ Document Planning the Policies of the Postal Sector (2019-2028) ▪	▪ Governmental commitment to CEDAW and Protocol on Violence Against Women (2004) ▪ Programme Renaissance II (2016) ▪ National Gender Policy (2017) ▪ Niger 2035 Strategy for Sustainable Development and Inclusive Growth ▪ Plan de Développement Economique et Social (2017-2021) ▪ Other strategies include: Gender and Islam Strategy, School of Husbands Strategy, Initiative for Adolescent Girls in Niger
Nigeria	▪ Nigeria ICT Infrastructure Roadmap (2017-2020) ▪ Nigerian National Broadband Plan (2020-2025) ▪ Economic Recovery and Growth Plan (2017-2020)	▪ Gender Equality Opportunities Bill (rejected in the 8th Assembly- proposed in the 9th, 2019) ▪ National Gender Policy (2006) ▪ Governmental commitment to CEDAW
Rwanda	▪ Rwanda Vision 2020 ▪ Rwanda Vision 2050 ▪ National ICT Strategy and Plan (2011-2015) ▪ Smart Rwanda 2020 Master Plan ▪ ICT Sector Strategic Plan (2018-2024) ▪ ICT Hub Strategy (2019-2024) ▪ National Strategy for Transformation	▪ Governmental commitment to CEDAW ▪ Rwanda Vision 202054, Rwanda Vision 2050 ▪ Constitution of the Republic of Rwanda (2003, amended through to 2015) ▪ Girls' Education Policy (2008) ▪ National Gender Policy (2010) ▪ National Policy against Gender Based

[54] 'Vision 2020 Du Rwanda', République du Rwanda. Link: http://www.ambarwanda-paris.fr/pdf/Vision-2020-fr.pdf (consulted on September 08 2020)

Country	Digital Policies	Gender Policies
	(2020)	Violence (2011) ▪ National Decentralization Policy (2012) ▪ The Health Sector Policy (2015) ▪ Strategic Plan for Agriculture Transformation (2018 – 2024) ▪ The National Skills Development and Employment Strategy (2019-2024)
Sierra Leone	▪ Sierra Leone National Telecommunications Act (2006) ▪ ICT Policy (2009) ▪ National Innovation and Digital Strategy (2019-2029) ▪ Medium Term National Development Plan (2019-2023)	▪ Governmental commitment to CEDAW ▪ Domestic Violence Act (2007) ▪ Devolution of Estates Act (2007) ▪ Customary Marriage Act (2009) ▪ Divorce Act (2012) ▪ Sexual Offences Act (2012)
Sudan	▪ Sudan Interim Constitution (2005) ▪ Sudanese Access to Information Act (2015) ▪ Telecommunication and Post Regulation Act (2018) ▪ Cybercrimes Law (2018) ▪ Media law (2018)	▪ Muslim Personal Law (1991) ▪ The Child Act (2010)
Uganda	▪ E-Government Framework Policy (2010) ▪ National ICT Policy (2014) ▪ National Development Plan II (2015-2020) ▪ National Development Plan III (2020-2025) ▪ Digital Vision for Uganda 2040 (2013) ▪ Governmental commitment to: ▪ East Africa Community Vision 2050 ▪ Africa Agenda 2063	▪ Constitution (1995) ▪ Equal Opportunities Commission Act (2007) ▪ National Youth Policy (2001) ▪ Digital Vision for Uganda 2040 (2013) ▪ Gender Equality Strategy (2014-2017) ▪ National Development Plan II (2015-2020) ▪ National Development Plan III (2020-2025) ▪ Governmental commitment to CEDAW, Maputo Declaration on Gender Mainstreaming (2003), African Youth Charter (2006)
Zambia	▪ National ICT Policy (2006-2010) ▪ SMART Zambia e-Government Master Plan (2018-2030) ▪ 7th National Development Plan (2017-2021) ▪ Accelerating Digital Transformation (2020)	▪ Governmental commitment to CEDAW ▪ Anti-Gender Based Violence Act (2011) ▪ Gender Equity and Equality Act (2015) ▪ 7th National Development Plan (2017-2021)

However, consideration should be made as to the relevance and implementation of such policies. For example, Uganda's Computer Misuse Act 2011 was put in place to criminalise cyber harassment, offensive communication, and cyber stalking, yet few cases have been prosecuted under these sections and authorities do not appear to be adequately trained to understand how the operationalisation of these provisions might provide privacy and safety online especially for women and girls. In Cameroon, a cybersecurity and cybercrime law allows communications to be intercepted, mandates the retention and storage of traffic data, and places obligations on network providers to help intercept and store electronic communications - practices which undermine the privacy of all internet users, including women. Still, this law does not provide a sufficient framework for targeted actions towards the specific challenges that women face online.

For many governments it is the foreseen economic opportunity of digital transformation and the quest to become a digital economy that is driving shifts in policies relating to digital. However, governments do not systematically take into account the 'gender digital divide' to inform, promote and implement more inclusive digital policy. **The lack of digital for gender endorsement and implementation within national policy frameworks in Sub-Saharan Africa is a reality that needs to be changed.** Therefore, the development of appropriate policy frameworks is critical to the success of any long-term effort to bridge the gender gap in digital access and use[55]. Illustratively, ICT policymaking is still largely dominated by men. Only eight countries in Sub-Saharan Africa (Benin, Burkina Faso, Cameroon, Chad, Ghana, South Africa, Sudan, and Togo) have high-level female leadership in the field[56]. That being said, this number puts the region above the global average (17% vs. 12%), as only 28 countries worldwide have female representation in leadership for ICT policymaking.[57]

1.1.2.2 EU Policy Framework

In the past two decades, the European Commission (EC) has funded project with digital components, without though playing a pro-active role in the the promotion of digital transformation in partner countries. Since 2017, the EC has embraced the new ambition of supporting the mainstreaming of digital technologies and services in the EU international cooperation and development policy and programmes. Thus, fostering a more accessible and empowering, safe and secure internet for all, with special focus on women and girls and Africa, where the digital divide is the greatest.

With an aim to create a framework for mainstreaming digital technologies in EC development policy, a staff working document (SWD) entitled **"Digital4Development (D4D)**: **mainstreaming digital technologies and service into EU development policy"**[58] was adopted in 2017. Along with the European Consensus on Development[59], the SWD makes the framework of reference for the EC D4D actions promoting the use of digital technologies and services as enablers for sustainable development and growth. The D4D intervention is grounded on a multi-stakeholder and rights-based approach, pursuing the principle of inclusion and "no one left behind" as key values to promoting inclusive, participative and transparent digitalisation for everybody. The SWD D4D has specific mention to the gender digital divide and the aims of improving women's empowerment through digital and vice versa.[60]

Africa is the first and main focus of the D4D policy, a continent where the EU has focused for the establishment of a strong partnership in digital transformation. In 2018, the EC set out its ambitions for a comprehensive and innovative partnership with Africa - **New Africa-Europe Alliance for Sustainable Investments and Jobs** - to boost investment, create jobs and to strengthen the role of the private sector[61]. The following year, together with the African Union (AU), the EU established a **Digital Economy Task Force (DETF)** tasked to fuel the dialogue around concrete steps and policy recommendations to implement the **D4D Agenda in Africa**. This year, the EC has just released a **new Joint Communication 'Towards a Comprehensive Strategy in Africa'**, which includes five key areas, including a dedicated one to digital transformation. Under the second pillar, investments in increasing the digital infrastructure are to ensure the access to safe and affordable digital services for all. The

55 'REACT with Gender Responsive ICT-Policy', Web Foundation, 2017.
56 Araba, S. & Hafkin, N. 'Taking stock: Data and evidence on gender equality in digital access, skills and leadership', United Nations University Institute on Computing and Society/International Telecommunications Union: Macau. 2019.
57 Ibid.
58 'Digital Transformation in Africa', European Union, 2019.
59 "The New European Consensus on Development 'Our World, Our Dignity, Our Future'", Directorate-General for International Cooperation and Development (European Commission), November 19 2018.
60 Digital4Development : mainstreaming digital technologies and services into EU Development Policy
61 Ibid.

actions for digital transformation include e-government services, e-commerce and digital financial services, ensuring strong online security measures and that the process is supported through legislation and quality learning opportunities.

The strategic tool for the implementation of the D4D policy will be the **Digital4Development (D4D) Hub**, a joint initiative of the EC and five EU member states (Germany, Belgium, Estonia, France, Luxembourg), aspiring to enhance coordinated efforts and partnerships for investments in the area of digital transformation[62].

In terms of political commitments and agendas related to gender, the EU founding treaties place gender equality as a fundamental EU value and objective. **Gender equality and Women's Economic Empowerment (WEE) is a priority for the EU**, reaffirmed through the EU legal and policy framework. In line with this, the **European Consensus on Development** endorses gender equality and women's empowerment as a main driver for achieving sustainable development, cross cutting through the entire 2030 Agenda for Sustainable Development[63]. It also underlines the importance of gender mainstreaming in all actions. Furthermore, **the EU Gender Equality Strategy** recognises that women's social and economic empowerment is a key priority in improving gender equality through the EU's external action and aims to integrate a gender perspective in all Commission initiatives.[64] A Task Force for Equality, composed of representative of all Commission services and of the European External Action Service, will ensure the implementation of gender mainstreaming in both operational and technical components[65].

On the more operational side, through the **EU Gender Action Plan II** (GAP II, 2016-2020, Joint Staff Working Document on "Gender Equality and Women's Empowerment: Transforming the Lives of Girls and Women through EU External Relations 2016-2020") the EC has committed to placing gender at the core of all EU external action. This included an increase of the number and funding of actions contributing to gender equality and the empowerment of women based on sound country and sector gender analysis, the promotion of gender-responsive budgeting and appropriate indicators to monitor progress. GAP II and its predecessors have paved the way for EU external action on gender equality and women's empowerment.

The GAP III 2021-2025, which will be adopted towards the end of 2020, will continue to be based on a three-pronged approach of "(1) key actions to achieve gender equality combined with (2) gender mainstreaming, i.e. strengthening the integration of a gender perspective in all EU policies and major initiatives and (3) policy dialogue"[66]. **The GAP II has three thematic priorities: physical and psychological integrity, political and civil rights and economic and social and cultural rights**. Although all three priorities are important in terms of access to digitals for women, priority one - **economic and social rights -** is especially relevant to any digital project aiming to foster employment or any labour opportunity. The EU aims at improving girls' and women's access to education and training, especially in relation to science, technology and entrepreneurship; improving women's access to decent work and social protection; ensuring equal access to financial and business development services, and guaranteeing control over productive resources; enhancing girls' and women's ownership and access to clean water, energy, information and communication technology and transport infrastructure.

[62] 'Shaping Europe's Digital Future', Network D4D Hub. Link: https://toolkit-digitalisierung.de/en/partner/d4d-hub/ (consulted on September 08 2020)

[63] "The New European Consensus on Development 'Our World, Our Dignity, Our Future'", Directorate-General for International Cooperation and Development (European Commission), November 19 2018.

[64] A union of Equality: Gender Equality Strategy 2020-2025. COM(2020) 152 final. March 2020.

[65] Ibid.

[66] 'Questions and Answers: Gender Equality Strategy 2020-2025', European Commission, March 05 2020. Link: https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_357 (consulted on September 08 2020)

Altogether, the policy framework aims to address critical challenges for achieving greater equality and opportunities for women, men, girls and boys. As stated by the Beijing Platform for Action on Gender Equality (adopted in 1995 by governments around the world and considered "the most ambitious road map for the empowerment of women and girls everywhere"), some of key priorities for achieving gender equality worldwide remain women's access to education, women's economic empowerment, addressing violence and women in decision making.[67] To tackle these challenges, the appropriate implementation and complementarity of digital and gender agendas across EU programmes should be ensured. This will require further understanding of national policies and practices in the different countries and a grasp of the current limitations.

1.1.2.3 Digital Ecosystems in Sub-Saharan Africa

According to the GSMA[68] Africa's technology ecosystems have experienced "incredible growth" and they have gone through a rapid expansion in recent years. There are now more than 618 active tech hubs[69] constituting "the backbone of Africa's tech ecosystem"[70]. These hubs play a social role in the tech community, including as safe spaces for youth and women in digital professions.

The "innovation quadrangle" includes Nigeria, South Africa and Kenya[71] as the most vibrant ecosystems in Sub-Saharan Africa. They offer well-established collaborations and investment networks for young female and male entrepreneurs. In Kenya for example, there are major opportunities for digital technology with over 50 tech hubs, investments and operations of large tech firms settling in the country as well as an interest in tackling the gender digital divide, with loan funds specifically for women-led enterprises. Additionally, Nigeria has over 10% of the tech hubs in Africa and the mobile ecosystem generated 5% of GDP in 2017. Mozambique, primarily based in Maputo, is equally making strides in growing their tech sector with youth and women-led hubs and initiatives, despite a noted lack of venture capital investments for women. These growing ecosystems are also diverse covering different sectors from FinTech and Blockchain to e-commerce and AgriTech.

Furthermore, the modern approach utilised to develop tech hubs provides a solid entry point for many female entrepreneurs who see them as a safe space to pursue opportunities in the tech industry. Donors such as the UK Department for International Development (DFID) and the World Bank see these platforms and ecosystems as an opportunity to support start-ups and innovative Small and Medium Sized Enterprises (SMEs), through partnerships with the private sector as well as national governments. Interviewed stakeholders indicated that with the support of international donors, these tech spaces could offer a channel and opportunity to support more young women and girls to enter and sustain their digital activities.

However, growth has been stagnating in other countries such as Sudan due to conflict and sanctions, making external and foreign investments in starts-up and tech hubs challenging. Similarly in DRC, there has been promotion by the government of entrepreneurship yet there has not been significant and sustainable growth or investments for tech start-ups. Nonetheless, small gains are being made with the first tech incubator, Ingenious City, along with the World Bank, who is supporting young entrepreneurs tackling some of the country's

[67] 'Beijing+25 Regional Review Meeting', UNECE Sustainable Development Goals. Link: http://www.unece.org/beijing25.html

[68] '618 active tech hubs: The backbone of Africa's tech ecosystem', GSMA: Mobile for Development, July 10 2020, Link: https://www.gsma.com/mobilefordevelopment/blog/618-active-tech-hubs-the-backbone-of-africas-tech-ecosystem/ (consulted on September 08 2020)

[69] 'Briter', BriterBridges.Link: https://briterbridges.com/ (consulted on September 08 2020)

[70] '618 active tech hubs: The backbone of Africa's tech ecosystem', GSMA: Mobile for Development, July 10 2020, Link: https://www.gsma.com/mobilefordevelopment/blog/618-active-tech-hubs-the-backbone-of-africas-tech-ecosystem/ (consulted on September 08 2020)

[71] *Egypt is the fourth member of the "innovation quadrangle".*

most pressing issues like Ebola[72]. Overall, the growth of tech ecosystems across Sub-Saharan Africa is tangible with emerging tech entrepreneurs, including women, receiving greater attention regionally and globally.

1.2 Challenges and opportunities

1.2.1 Challenges

Whilst the previous section provided a high-level overview of a number of trends in the field of "digital for gender", this section breaks down the challenges and opportunities further and structures them along two axes: first "cross-cutting" and second per D4D priority area. Opportunities are presented as cross-cutting trends identified through the contextual analysis.

1.2.1.1 Cross-Cutting Challenges

Pervasive sociocultural factors that hinder women's access to digital

Women and girls tend to face "a variety of discriminatory practices, both conscious and unconscious" that disadvantage them vis-à-vis men and boys, either directly or indirectly, and in several areas of life[73]. These inequalities operate in complex and interlinked ways, with multiple implications for women and girls in the digital field, e.g. accessing digital technologies. For example, the Web Foundation states that women's access to education is a strong determinant of internet use. Controlling for other variables, poor urban women with at least some secondary education were six times more likely to be online than poor urban women with lower levels of schooling[74]. Once online, inequalities persist: women in poor, urban or rural communities are 30-50% less likely than men to use the internet to increase their income or participate in public life.

Social and cultural norms can also be significant barriers preventing women and girls' ownership and access to mobile phones and the internet. In many Sub-Saharan African societies, they can be deeply entrenched and thus difficult to address. Research from several countries has shown that "patriarchy as a form of social control may have debilitating effects at the micro-level (e.g. within the household) by placing women second in line to benefit from technology, if given the chance at all[75]". For example, some women are prevented from obtaining full access to digital technologies by family members or social restrictions within their communities. It was noted by stakeholders interviewed that in rural areas across Mozambique, women and girls do not have access to mobile phones (or any other digital technologies) or have a limited access, either under supervision or pending authorisation from their male family members. Women across Sub-Saharan Africa may also have restricted access to public spaces where it is possible to use digital services, such as internet cafés. Culturally, for many societies in Sub-Saharan Africa, these traditionally male-only spaces can be uncomfortable, unwelcoming or even prohibited for women and girls[76]. According to a GSMA report, women can also be fearful of the internet because they believe content may be inappropriate, offensive or harmful to them[77].

Overall, lack of know-how and high cost are the two main barriers keeping women offline[78]. In some societies women also experience difficulties in obtaining proof of identification which is

[72] 'Lokole: Congolese Youth are Using Digital Technology to Combat Ebola', World Bank, May 13 2019. Link: https://www.worldbank.org/en/news/feature/2019/05/13/lokole-congolese-youth-are-using-digital-technology-to-combat-ebola (consulted on September 08 2020)
[73] 'Bridging the gender gap: mobile access and usage in low-and middle-income countries', GSMA, 2015.
[74] 'Women's Rights Online: Translating Access into Empowerment', Web Foundation, 2015.
[75] Ibid
[76] Ibid
[77] 'W20 Digital Inclusion Background Paper', GSMA, 2018.
[78] Ibid

required to open accounts or register SIM cards[79] so even when they may choose to gain access they are faced with additional barriers. These inequalities in digital access and use also extend to accessibility of higher education in the ICT sector, job opportunities and financing mechanisms for female digital entrepreneurs and start-ups. The impact of gendered social and cultural norms can be difficult to measure and even harder to quantify, which could lead to them being overlooked in digital policy discussions and decision making.

Cybersecurity and gender-sensitive frameworks

In terms of cyber security, women are exposed to risks online, such as new forms of gender-based violence, abuse and harassment, and in some cases, radicalisation in digital contexts. For example, in South Africa 22% of women reported safety and security-related issues as the main barriers to internet access, compared to only 5% of men[80]. The Web Foundation Women's Rights Online[81] research has shown that applications and services intended to promote women's safety have also been used negatively to track and potentially harm them. A study conducted by the Media Foundation for West Africa revealed that online harassment is indeed one of the major risks that women face online. The study further revealed that this cyber harassment manifested in the forms of non-consensual sharing of intimate images, cyber stalking and hate speech[82].

Women's safety and security online is thus a crucial barrier that prevents them from fully participating in the internet society. Therefore, the challenge is not merely to develop general online security, but to do so using a gender-sensitive approach that tackles the specific issues that women face. In a number of countries across Sub-Saharan Africa, laws to prevent and discourage online abuse exist, but are poorly enforced and may unintentionally have negative impacts on women. According to the World Bank, only 20% of the African states have implemented a legal framework for cyber security, and only 11 countries have enacted substantial laws to fend off cybercrime[83]. Additionally, the study reports that in countries where laws and procedures are already in place, legislative cycles are always playing catch-up with the fast pace of innovation in the digital sphere[84].

Lack of gender and digital data availability

While there is a large volume of literature that addresses the challenges of digitalisation in Sub-Saharan Africa (i.e. digital connectivity and access), there is little data that combines both digital and gender aspects. This lack of sex-disaggregated digital data and statistics hinders not only the visibility and understanding of the specific challenges faced by women and girls in the digital field, but also hampers policy-making that could effectively address the 'gender digital divide'.

Overall, national statistics and administrative data about digitalisation are lacking across the region, and existing data is overwhelmingly not sex disaggregated (which can likely be related to the absence of gender targets and indicators in policy plans and programmes). There is no regional Sub-Saharan Africa index comparable to the EC Digital Economy and Society Index (DESI), a composite index that summarises relevant indicators on Europe's digital performance and tracks the evolution of EU member states in digital competitiveness. This is linked to poor available statistics in countries in Sub-Saharan Africa.

79 'Exploring the gender gap in identification: Policy insights from 10 countries', GSMA, 2019.
80 'Mobile Gender Gap', GSMA, 2020.
81 'Women's Right Online', Web Foundation, 2017.
82 'Baseline Report WRO Issues in Ghana', MFWA, 2018.
83 'Africa's Pulse', World Bank Open Knowledge, 2019.
84 Ibid

Similarly, existing gender data does not necessarily include digital-related indicators. For example, the Gender Data Portal[85] hosted by the World Bank Group, lacks data relating to ICT and digital. The lack of gender data across all areas is a widespread and global issue. According to the World Bank (2016), sex-disaggregated statistics on mortality, labour force participation, and education and training are produced by around 80% of countries globally. However, few countries produce sex-disaggregated statistics on informal employment, entrepreneurship (ownership and management of a firm or business) and unpaid work, or collect data about violence against women[86]. The need for gender data, for enhanced visibility of challenges and for monitoring and informing policy-making has increasingly been gaining attention from international organisations. For example, Data2X, an initiative of the United Nations Foundation, was created in 2012 with the mandate to "improve the quality, availability, and use of gender data in order to make a practical difference in the lives of women and girls worldwide"[87]. The Sustainable Development Goals (SDGs) that require sex-disaggregated data to track progress towards all goals (including but not limited to SDG 5) also help advancing this agenda.

Increasing the availability and collection of gender and digital data at national and regional levels is crucial to tackle the gender digital divide in the region. On-going partnerships with the United Nations and selected national statistical offices that aim to enhance sex-disaggregated data collection on access to and control over physical and financial assets, employment, and financial inclusion[88] are examples of conducive frameworks to do so.

1.2.1.2 Challenges per D4D area

In this section, the broader challenges relating to digital access for women and girls are presented along the four EU Digital for Development (D4D) priority areas, namely connectivity and infrastructure, digital literacy and skills, digital entrepreneurship and job creation, and the use of digital as an enabler for sustainable development.

Connectivity and Infrastructure

Current regional trends show that there are persistent **gender gaps in terms of mobile ownership and mobile internet use**. According to GSMA's 2020 Mobile Gender Gap Report, in Africa, Mozambique and Uganda have the highest gender gap when it comes to mobile ownership at 17% for each country. South Africa's gender gap for mobile ownership is 7% as is Nigeria's and closely followed by Algeria at 6%, Kenya at 5% and Senegal at 4%. These same countries also have high percentage of gender gaps with regards to mobile internet users with Uganda being the highest at 49% followed by Mozambique at 39%, Kenya at 34%, Nigeria at 29%, Algeria and Senegal at 19%, and South Africa at 13%.

For both women and men who live in poor and remote areas across Sub-Saharan Africa, the use of digital technologies and tools is constrained by the limited availability of connectivity and infrastructure. Currently, 42% of countries in Africa lack Internet Exchange Points (IXPs)[89], which elevates the cost of accessing internet as the domestic internet traffic is exchanged through points outside their respective country, usually through satellite or submarine fibre across multiple international hubs to reach their destination. A subsea cable to serve the African continent and the Middle East region is announced[90] and expected to go live

[85] 'Gender Data Portal', The World Bank. Link: http://datatopics.worldbank.org/gender/ (consulted on September 08 2020)
[86] "More and Better Gender Data: A Powerful Tool for Improving Lives", The World Bank. 9 May 2016. Link: https://tinyurl.com/yazo9mqj (consulted on September 08 2020)
[87] Data2x, link: https://data2x.org/
[88] Ibid
[89] 'Digital Development: Africa's Connectivity gap can map tell story', World Bank Group, 2019.
[90] *China Mobile International, Facebook, MTN Global Connect, Orange, STC, Telecom Egypt, Vodafone and WIOCC*

in 2023/4, delivering more than the total combined capacity of all subsea cables serving Africa today[91] and increasing access to rural and remote populations at an affordable cost.

Overall, broadband (dedicated physical links of high-speed internet, connected to homes, offices, etc.) has a limited reach in Sub-Saharan Africa: nearly 300 million Africans live more than 50 km from a fibre or cable broadband connection, and substantial disparities exist between rural areas where nearly 60% of the population lives[92]. In terms of mobile broadband (the use of high-speed internet via mobile or smart device), Africa's penetration rate (around 25%) is the lowest worldwide[93], despite improvements in recent years. The cost remains prohibitive in many countries. Across the region, the average cost for just 1GB data is 9% of the average monthly salary. In some countries, 1GB costs as much as 20% of the average salary[94]. Still, mobile broadband is the main way by which people across Africa access the internet, with around 239 million people, equivalent to 23% of the population in Sub-Saharan Africa, using mobile internet on a regular basis[95].

The affordability of connectivity is important for women, who typically have a lower and less stable income than men. A recent study about the impact of taxation reforms on internet users carried out in Tanzania, Uganda and Zambia by Research ICT Africa[96], showed that in these three countries where connectivity is more expensive than the threshold deemed affordable[97], the percentage of women connected to the internet (respectively 13%, 22%, 25%) is extremely low compared to the global average. In these countries, recent taxation on internet and social media use has increased costs for consumers, especially having an impact on women. The increased costs affect women with low digital skills that rely on social media features, such as voice messaging on WhatsApp[98]. Additionally, increased taxation can be counterproductive to the shift towards e-governance and business development for female users and digital entrepreneurs, who may bear the cost of increased taxation. Gender-responsive digital tax policies are recommended to reduce the burden on taxpayers, especially women[99].

The 2019 Affordability Report suggests that improving public connectivity options can be especially important for women, who may face barriers to accessing devices and data at home[100]. When safe and suitable for women, public access options can provide an alternative way for women to access the internet if their design takes into consideration socio-cultural norms that may otherwise be constraining (for e.g. women-only internet cafes).

Digital Skills and Literacy

Literacy and digital skills remain the greatest collective barrier to mobile internet use for both men and women, and they are acutely important for women in Sub-Saharan Africa[101]. The Web Foundation's research on Women's Rights Online shows that "not knowing how to use the internet" was the barrier most widely mentioned by poor, urban women who do not use the internet[102]. In Nigeria for example, 27% of women are aware of internet's potential however do not use it due to their low digital capability[103]. Lack of knowledge about how to access the

91 'Project Updates', 2AFRICA, 2020. Link: https://www.2africacable.com/project-updates (consulted on September 08 2020)
92 'Bringing Africa Up to Speed', International Finance Cooperation, 2019.
93 Ibid
94 'Africa Regional Snapshot: 2018 Affordability Report', Alliance for Affordable Internet, 2018.
95 'The Mobile Economy in Sub-Saharan Africa', GSMA, 2019.
96 'Who wins? Who loses? Understanding women's experiences of social media taxation in East and Southern Africa', Research ICT Africa, 2019.
97 *'1 for 2' Affordability Target for mobile data in which individuals should be able to access a minimum of 1GB of data for no more than 2% of their average monthly income according to the Alliance for Affordable Internet*
98 Ibid
99 Ibid
100 'Affordability Report', Alliance for Affordable Internet, 2019.
101 Ibid
102 'Women's Rights Online, Translating Access into Empowerment', Web Foundation, 2015.
103 'Mobile Gender Gap', GSMA, 2020.

internet and lack of time to learn how to do so are key barriers for women[104]. As a result, women's ability to take advantage of online resources is undermined[105]: women are less likely than men to use digital services, and more likely than men to use these tools for a limited number of services and applications.

Overall education and literacy gender inequalities have an impact on women's digital skills development and their ability to confidently and effectively engage with digital technologies. Social norms often discourage girls in primary and secondary school from accessing quality education, and especially in the areas of Science, Technology and Information[106]. This is coupled with pervasive negative experiences in school due to risk of sexual harassment from students and teachers, mockery for bodily functions, lack of sanitary facilities, beatings from male students as well as attacks going to and from school[107]. Girls continue to face similar barriers in tertiary education, where attendance is low for girls/women in STEM fields (except for biological, health sciences). According to stakeholders, sexual harassment in school by male students and teachers leads to avoidance of libraries, study spaces; laboratories where girls may access resources to further develop and hone their digitals skills.

Demand for digital skills is expected to grow at a faster rate in the region than in other global markets. Without developing the appropriate and sufficient digital skills, women will be left behind. According to the Oxford Business Group, there will be 230 million "digital jobs" in Sub-Saharan Africa by 2030 that will translate into nearly 650 million training opportunities by 2030, including required re-training[108]. A recent World Bank (2019) study found that the labour market requiring digital skills is already highly developed in Sub-Saharan Africa, with an estimation that about half of jobs require some type of digital skills. As such, digital skills are increasingly critical to maximise women's employment prospects and earning. If women are equipped with improved digital skills and literacy, they will be able to better exploit a broader range of income generating opportunities, including micro-tasking jobs, utilising e-commerce platforms to sell products, and promoting existing products or services online.

Investments in human capital will ensure countries' competitiveness in the future. Government, donors, and the private sector all have an important role to help improve women and girls' digital literacy and skills across the region. For example, to enhance women's digital inclusion, GSMA research shows that service providers can prioritise wide online availability of user-friendly, local-language information, services and products that can facilitate women's access and usability[109]. Equally important is the creation of ecosystems that bring together innovators, start-ups and established businesses, for e.g. to develop and offer digital literacy training curricula. Overall, better digital literacy could also foster a virtuous cycle, in which women for e.g. access online education and learning opportunities to continue their digital skills, or information on critical services such as women's rights, domestic violence or gender-based violence (GBV) support and health services.

104 Ibid
105 Ibid
106 'National Assessments on Gender and STI', *Women in Global Science and Technology (WISAT).* http://wisat.org/national-assessments/
107 Ibid.
108 'Regulatory and Policy trends impacting digital identity and the role of mobile', GSMA, 2016.
109 'State of Mobile Internet Connectivity Report', GSMA, 2019.

Digital Entrepreneurship and Job Creation

The rise of Africa's tech sector[110] creates a conducive environment for boosting and diversifying digital entrepreneurship and job creation. To unlock women's potential for digital entrepreneurship multiple barriers that prevent them from successfully growing their businesses need to be addressed. The main challenges faced by women include structural regulatory and social barriers, limited access to capital and assets, lower levels of education and skills than men, as well as lack of representation in decision-making and leadership positions across public and private sectors. In fact, despite the higher rates of women's economic participation observed in recent years, as much as 92% of women's employment in Sub-Saharan Africa is in the informal sector and women still have more precarious work (at lower levels, underpaid or unpaid) across the region.[111]

Legislation that require a husband's permission for activities, such as obtaining a loan or that limit women's ability to travel in the same ways as men, are major barriers to women's economic empowerment.[112] Furthermore, certain countries in the region do not prohibit discrimination by creditors based on sex or gender in access to credit, such as South Sudan and Uganda[113], or still have legal barriers for women to owning and inheriting property and other collateral, including unequal divorce law[114]. Even where there is legal equality, social norms or customary law hinder effective implementation. To support the adoption and implementation of progressive legislative frameworks, the G7 Gender Equality Council's Biarritz Partnership presents recommendations on identifying and abolishing discriminatory laws, and/or amending clauses that are discriminatory as well as on enacting and implementing progressive legislative frameworks that advance gender equality[115].

Women digital entrepreneurs face gendered social norms which make it challenging for women to start, run and scale a business in the tech industry, such as stereotypes on women being "untechnical" and sectors that are considered suitable for men and women[116]. The tech companies interviewed in Zambia noted that many female-led businesses tend to be lifestyle businesses related to cooking, tailoring or creative industries, which often face difficulties in reaching scale. Thus, those in the tech sector, are encouraging women to enter more diverse and faster growing business areas such as FinTech and AgriTech. Additionally, research shows that women business owners across Sub-Saharan Africa frequently show less confidence than their male counterparts when interacting in gender mixed environment[117], or that they may face sexual harassment or corruption in administrative procedures for launching and running a business. Moreover, women entrepreneurs, especially in the tech industry, demonstrate less confidence and less willingness to compete with their male counterparts.

In many countries in Africa, most businesses led by women tend to be "small businesses with little opportunity for growth"[118]. In part, this is related to women's lower access to financial

[110] '618 active tech hubs: The backbone of Africa's tech ecosystem', GSMA: Mobile for Development, July 10 2020, Link: https://www.gsma.com/mobilefordevelopment/blog/618-active-tech-hubs-the-backbone-of-africas-tech-ecosystem/ (consulted on September 08 2020)

[111] Bonnet, F et al. 'WIEGO - Women and Men in the Informal Economy: A Statistical Brief,' 2019. Link: https://www.wiego.org/sites/default/files/publications/files/Women%20and%20Men%20in%20the%20Informal%20Economy%20-%20A%20Statistical%20Brief%20-%20for%20web.pdf

[112] Sy, A. et al. 'Women's Digital Financial Inclusion in Africa', International Monetary Fund, February 2019.Link: https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2019/02/13/FinTech-in-Sub-Saharan-African-Countries-A-Game-Changer-46376 (consulted on September 08 2020)

[113] Ibid

[114] Ibid

[115] Biarritz Partnership for Gender Equality. Recommendations of the Gender Equality Advisory Council for advancing gender equality and the empowerment of girls and women an Call to Action. Link: https://www.elysee.fr/admin/upload/default/0001/05/cfb1e2ba2b9aa09c1660f1b6df2cabbc815eecc2.pdf (consulted on September 08 2020)

[116] 'Women in STEM: words of inspiration from three of Africa's leading female tech experts', Web Foundation, 2017.

[117] 'Profiting from Parity', The World Bank. Link: https://tinyurl.com/yc8mtsxt (consulted on September 08 2020)

[118] https://www.un.org/africarenewal/magazine/august-november-2018/women-led-tech-startups-rise-africa

services, including limited access to collaterals, assets and credit[119]. The 2017 MasterCard Index of Women Entrepreneurs[120] shows progress worldwide in terms of the marginalisation that women "face commercially as financial customers". Moreover, the African countries included in the analysis (Ethiopia and Uganda) are lagging behind in comparison to countries in other regions of the world. The financing gap for African women entrepreneur (across sectors) is estimated at $42 billion, making access to finance one of the main barriers to female entrepreneurship[121]. Illustratively, for instance in Uganda, it is noted that women may have access to micro savings and finance, but that these resources are often very small and cover family needs but do not suffice to start and operate a long-term thriving business.

Digital as Enabler for Sustainable Development

Digital technologies and services offer new solutions across all sectors of society, ranging from the personal sphere, to the economy, politics and the environment. It allows individuals, as well as businesses and governments, to act more efficiently and save time, to access infinite types of information (i.e. for wellbeing, leisure etc.), to learn and discover new ideas and processes, and to widely connect with others remotely. Digitalisation is thus transforming a range of industries, as innovators and start-ups develop new and attractive ways of reaching users while cross-industry incumbents seek ways of capturing new markets[122]. However, **a significant number of these technologies, platforms and organisations do not specifically target women and are often built upon the false premise of "neutral universality".**

Overall, digital technologies can provide a wide range of benefits for women, even if they are not gender-sensitive by design. As horizontal tools, the internet and digital technologies are an important platform to enhance the visibility of voices traditionally marginalised from the public sphere, such as women activists, advocates against GBV or female mutilation, and generally any woman exercising their rights to freedom of expression[123]. Moreover, women often face tight time constraints, related to the widespread phenomenon of the "double or triple journey", making time-saving e-services (e.g. banking or procurement) all the more relevant for them. As such, "digital enablement" has the potential to become a form of digital gender empowerment, encompassing a variety of fields including e-government, digital health information and services, agricultural information sources and applications, and financial services. To enhance their reach and impact for women specifically, these digital "enablers" need to adopt a gender-sensitive approach, recognising inequalities in terms of access and literacy.

1.2.2 Opportunities

1.2.2.1 Addressing the "mobile phone access gender gap" could help address the "internet access gender gap"

According to ITU (indicator 17.6.2), there is a suggested correlation between the level of development and the level of uptake of mobile subscriptions versus fixed telephone or broadband subscriptions[124]. In less developed countries and particularly in Sub-Saharan

[119] 'Many Governments Take Steps to Improve Women's Economic Inclusion, Although Legal Barriers Remain Widespread', The World Bank, March 29 2018. Link: https://www.worldbank.org/en/news/press-release/2018/03/29/many-governments-take-steps-to-improve-womens-economic-inclusion-although-legal-barriers-remain-widespread (consulted on September 08 2020)

[120] 'Mastercard Index of Women Entrepreneurs 2017', Mastercard, 2017. Link: https://newsroom.mastercard.com/wp-content/uploads/2017/03/Report-Mastercard-Index-of-Women-Entrepreneurs-2017-Mar-3.pdf

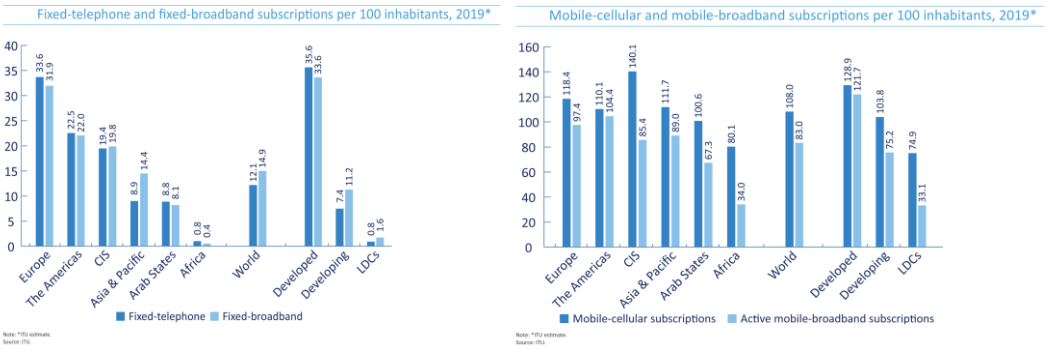
[121] 'Affirmative Finance Action for Women in Africa (AFAWA)', African Development Bank Group. Link: https://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/afawa-affirmative-finance-action-for-women-in-africa/why-afawa

[122] 'Digital both enabler and accelerator of growth strategies', Consultancy UK, 2019.

[123] 'Gender-Based Violence Online', Sida, Gender Tool Box (Brief), September 2019.

[124] 'ICT SDG indicators', ITU, Link: https://www.itu.int/en/ITU-D/Statistics/Pages/SDGs-ITU-ICT-indicators.aspx (consulted on September 08 2020)

Africa, there is a much greater uptake of mobile cellular and mobile-broadband internet, reflecting the affordability and availability of mobile compared with fixed network connections.



Furthermore, ITU suggests that most countries with a large gender gap in mobile phone ownership also have a large gender gap among internet users, in line with the fact that mobile phones are the most frequently used means of accessing the Internet[125]. Therefore, addressing the 'mobile phone" access/ownership gender gap could help to reduce the internet usage gender gap, although this does not address other barriers raised in this report.

1.2.2.2 Addressing the gender gap in digital literacy and skills to bridge the "gender digital divide"

Lack of knowledge about how to access the internet and lack of time to learn are both key barriers hindering the ability of women to benefit from digitalisation across Sub-Saharan Africa. As explored in previous sections, becoming technologically skilled can provide direct and indirect benefits towards women's personal and professional empowerment. Because of its multifaceted effects, improving and expanding women and girls' digital literacy and skills training and education is the cornerstone to reducing the gender digital divide.

One of the strategies to address this is mainstreaming digital throughout the basic educational system. Gender enrolment gaps in primary, secondary and especially tertiary education can present limits to the effectiveness of this strategy for women and girls. A World Bank study found that "existing education policies in most African countries need thorough review and updating to ensure that the policy for digital in education supports and is supported by complementary policies for education as a whole"[126]. This suggests that digital education must be integrated into national education systems rather than viewed as a separate policy initiative. Some governments in Sub-Saharan Africa are taking measures, although there is slow progress due to a lack of formalised policy, financing, infrastructure, and trained teachers. As an alternative to formal education which requires trained teachers, digital hubs can provide support to develop IT and digital skills in or out of schools.

Beyond school curricula, digital literacy training needs to be developed to reach outside of the educational system. Nigeria for example, has taken steps to improve and expand the offer of digital training for women and girls. The country's National Broadband Plan requires the Federal Ministry of Communications Technology to monitor the number of women without access to the internet, and to provide incentives for private educational centres and civil society organisations to train more women to use the internet. As a result, the Ministry has partnered with a number of private groups to develop digital capacity building initiatives for Nigerian women and girls. Rwanda's IT sector is a major driver of growth for the economy, and government-backed initiatives like the Digital Ambassador Programme have supported a

[125] 'Wide gender gap in mobile phone ownership often coupled with a wide gender gap in Internet use', ITU, 2020. Link: https://itu.foleon.com/itu/measuring-digital-development/mobile-phone-ownership/ (consulted on September 08 2020)
[126] Ibid.

massive effort to train five million people in digital use, which is a pillar of the national Digital Talent Policy. This example of supported initiatives which allows to increase digital literacy levels, bridge the gender digital divide, drive digital adoption and bridge the digital skills gap[127].

1.2.2.3 Investing in female entrepreneurs could lead to job creation and social outcomes

Research has shown that promoting women's entrepreneurship can foster a virtuous cycle, as women are more likely to incorporate social objectives within their business models (largely related to traditional gender roles and socialisation), identifying solutions that address the needs of the population[128.] Hence, female entrepreneurs need to be given equal access to the tools needed to succeed as their male counterparts. This includes access to finance, technology, markets, information, skills and services.

Developing more tailored funding opportunities for women entrepreneurs is likely to have positive outcomes in multiple ways from increased incomes for women themselves, to job creation and the incorporation of social objectives within their business model. It is also important to oversee the wider ecosystem around supporting female entrepreneurs, such as mentors, investors, pitch competition judges that should be able to recognise, relate to and see the different challenges and opportunities around investing in female entrepreneurs or solutions designed for women and girls.

As an example of success, in Ethiopia, RIDE is a taxi transportation system (similar to Uber) that allows riders to ride safely. The founder is a self-taught programmer who started her own company at the age of 17 despite having limited prior digital experience. Having struggled to access funding on numerous occasions, for the first three years the services were offered for free to prove the concept. Following exponential success, RIDE has found economic sustainability, and has become the top transport hailing and booking platform in Ethiopia, with a pool of over 6000 vehicles on standby. With targeted investments to women entrepreneurs, other women can have a more facilitated access to business and job opportunities.

[127] 'Rwanda young digital ambassadors celebrated for contributing to greater digital inclusion', Digital Inclusion News 2019.

[128] Zallis, S., "Why getting more women in tech is good for business – and the world", *Digital Empowers.* January 25 2019. Link: https://digitalempowers.com/why-getting-more-women-in-tech-is-good-for-business-and-the-world/ (consulted on September 08 2020)

2 GOOD PRACTICES AND LESSONS LEARNT

This chapter is structured around the four D4D priority areas and draws on the evidence from desk research, country case studies and interviews undertaken with a wide range of stakeholders (i.e. EU Member States, EU institutions, international organisations, civil society and the private sector). It provides an overview of the use and potential of digital technologies for women's empowerment looking at experiences and good practices across Sub-Saharan Africa to draw lessons learnt.

2.1 Connectivity and Infrastructure

Connectivity and infrastructure (both physical and social infrastructures) are a widespread challenge across the region affecting both men and women and hindering the advancement of the digital agenda. Although women have disproportionately less access to connectivity, for multiple factors outlined in the previous sections, connectivity and infrastructure are still overwhelmingly perceived as "universal" challenges. As such, most projects and initiatives in this area do not include a gender lens or sex-disaggregated indicators. Given the magnitude of the challenge, good experiences and practices developed ahead have focused on strategic and innovative approaches to tackle this challenge.

First, an enhanced focus should be placed on areas being left behind, namely rural areas where women face a "triple digital, rural and gender divide"[129]. Research has showed that there is a significant gender gap in productivity in rural areas, related to multiple barriers faced by women, i.e. a greater connectivity gap, than in urban areas. According to the GSMA Mobile Gender Gap 2020 Report, in all countries surveyed in Sub-Saharan Africa, the gender gap in mobile ownership and mobile internet access is greater in rural areas than urban areas[130]. As such, tackling connectivity and infrastructure challenges in rural areas could potentially have a leapfrog effect for women.

Second, a greater focus on developing strategic partnerships to share the financial burden and risk of massive infrastructure building, in which the EC could systematically push for a gender-sensitive approach (for e.g. focusing on rural areas, developing

[129] Majama, K., 'African women face widening technology gap,' April 2019, Link: https://afrisig.org/2019/04/01/african-women-face-widening-technology-gap/ (consulted September 08 2020)
[130] 'The GSMA Mobile Gender Gap Report', GSMA, 2019.

infrastructure that will allow to lower the costs of connectivity for the population); and crucially, **to partner with women and/or women organisations**. **Finally, the promotion of creative solutions such as the development of offline products** that would benefit women given their lower level of connectivity, especially in the short-term.

2.1.1 Focusing on areas being left behind, such as remote and rural areas

Rural and remote areas have been identified through research and interviews as lagging behind in terms of connectivity and infrastructure, as compared to urban centres. According to the GSMA Mobile Gender Gap 2020 Report[131], in Uganda the gender gap in mobile ownership is five times higher in rural areas than urban areas (respectively 4%, and 22%). In Senegal, similar trends can be observed in terms of mobile internet use, as "women in urban areas are 11 per cent less likely than men to use mobile internet, compared to 32 per cent in rural areas"[132]. **Bridging these gaps by developing infrastructure solutions that reduce the cost of connectivity for the local population is especially beneficial for women**. Indeed, expanded infrastructure and lower connectivity costs are necessary conditions to leverage the increasing number of e-solutions for agriculture, which could contribute to bridging the gender productivity gap in the sector[133].

Strategic actors across public and private sectors have taken on joint responsibility to address infrastructure development in these areas. In 2019, the GSMA launched the Connected Society Innovation Fund[134] for Rural Connectivity, which aims to support innovative mobile internet connectivity solutions for rural communities. The project grants funds for mobile network equipment vendors to deploy their rural connectivity solutions for the first time globally, with partner mobile operators in Uganda and Ghana. Rural coverage innovators iSAT Africa and NuRAN Wireless were awarded grants to implement turnkey solutions to suit challenging rural environments with low population density, difficult terrain, and/or limited infrastructure. The solutions are now being developed in rural sites across Ghana and Uganda, with the support of Vodafone Ghana, MTN Uganda and government agencies in each country. From the success of this project can be dawned good practices such as:

- Investment in mobile phone connectivity in rural areas which lack mobile internet but with have sufficient economic potential;
- Adequately identify the "unconnected" zones leveraging new types of data (such as mobile-phone metadata, see GSMA Coverage Maps[135]); and
- Coupling connectivity projects (with a diverse set of stakeholders) with digital training when bringing populations online.

2.1.2 Strategic partnerships to address infrastructure and connectivity

Infrastructure and connectivity solutions can be developed through partnerships by aligning the incentives of multiple actors and sharing the financial burden and risk. SMART Africa, launched in 2013, is a good example of strategic and high-level partnership aimed at promoting affordable access to broadband and enhanced usage of ICTs[136]. It brings together all African countries adhering to the Manifesto[137] represented by the AU, the ITU, World Bank,

131 'The GSMA Mobile Gender Gap Report 2020', GSMA, 2020..
132 Ibid
133 'The Gender Gap In Agricultural Productivity In Sub-Saharan Africa: Causes, Costs And Solutions', UN Women, 2019. Link: www.unwomen.org/-/media/headquarters/attachments/sections/library/publications/2019/un-women-policy-brief-11-the-gender-gap-in-agricultural-productivity-in-sub-saharan-africa-en.pdf?la=en&vs=1943 (consulted on September 08 2020)
134 'Connected Society Programme', Mobile For Development GSMA, 2020. Link: https://www.gsma.com/mobilefordevelopment/connected-society/ (consulted on September 08 2020)
135 GSMA Mobile Coverage Maps, Link: https://www.mobilecoveragemaps.com/
136 'The Smart Africa Manifesto', Endorsed by Heads of State and Government, Kigali, Rwanda. October 29 2013.
137 *Adopted by Rwanda, Kenya, Uganda, South Sudan, Mali, Gabon and Burkina Faso in October 2013, followed by all Heads of State of the African Union on January 31st 2014*

AfDB, ECA, the GSMA, ICANN and the private sector and provides a framework and action plan for implementation, monitoring and evaluation (the SMART Africa Manifesto). It is also the case of the Programme for Infrastructure Development in Africa (PIDA), an initiative from the African Union Commission (AUC) in partnership with the NEPAD Planning and Coordinating Agency (NPCA), the African Development Bank and the United Nations Economic Commission for Africa that aims to accelerate infrastructure development across the continent.

As a result under PIDA, there are currently 114 ICT related projects being implemented, the majority of which are focusing on the installation of new or upgrading of existing fibre optic cables or on upgrading internet exchange points[138]. Moreover, it is crucial that women organisations, or organisations that work directly with women, are identified and included in infrastructure and connectivity projects' design, implementation and monitoring.

2.1.3 Offline solutions to overcome lack of connectivity

As priority is often given to online digital solutions, it can be challenging for women, especially those in remote rural areas that face double barriers (gender and rural gaps), to benefit from the abundance of apps and online services or platforms that are intended to serve poor and rural communities, offering information services, mobile-money solutions and trading platforms amongst others. To address this challenge, a number of organisations have developed offline solutions that seek to provide the same value as online solutions but requiring less reliance on internet or connectivity.

As an example of this form of innovation, WiderNet is a US non-profit organisation, which provides resources, coaching, training, computers and educational materials to schools, clinics, libraries and homes in underserved areas of the world. One of the most significant and successful projects of this organisation is the eGranary solution[139], a plug-and-play server that provides instant access to millions of digital educational documents without the need of a connection to the internet. WiderNet works with local field associates in each country where they operate who are often young ICT students. The field associates promote the sales and uptake of the eGranary Digital Library and also support the installation, set-up and maintenance of the systems and networks. As part of their mission to promote women in ICT and to address the Gender Digital Divide, they seek to identify female students to fulfil these roles, wherever possible. In Nigeria for instance, a WiderNet female field associate has sold and installed 100 systems herself and generates a regular income through the maintenance of the servers and local network set-up. This project can enable women to safely and securely access a huge range of information, support and educational materials. This set-up can also provide a range of support information about issues faced by women, such as domestic and gender-based violence, still largely unreported and unaddressed. This project was highly successful and continues to provide economic opportunities for youth and women across Nigeria.

2.2 Digital Skills and Literacy

Several countries in Sub-Saharan Africa have introduced policies to incorporate digital skills into secondary education. Yet, addressing the gender digital literacy gap through school programmes only is not enough to reach girls, and even less women. Good practices and lessons learnt focus on alternative and creative digital training programmes tailored to existing skill gaps and considering the specific challenges faced by women and girls.

[138] PIDA Project Dashboard, Link: https://www.au-pida.org/pida-projects/
[139] EGranary – Digital Library, link: http://www.widernet.org/eGranary

2.2.1 Mainstreaming of gender and digital in education systems

The Web Foundation's research supported by GSMA and the World Bank on women's rights online recommends**to integrate basic digital literacy in school curricula at all levels — from primary to tertiary — and ensure that teachers are qualified and supported to teach it**[140]. However to date, UNESCO reports that, teachers' skills and development in digital technologies have been neglected in the national education policy agenda in many Sub-Saharan African countries, for multiple reasons, including "the mismatch between training and labour market needs, high training cost, and poor quality of training"[141].

That being said, to address the digital literacy gap through the educational system requires governments to continue addressing the access to school barriers faced by girls and women, in addition to mainstreaming digital through curricula. As mentioned in previous section, in addition to general challenges such a lack of infrastructure and insufficient teaching capacity, women and girls face socio-cultural norms and perceptions preventing them from improving their digital skills and literacy.

ICT Research Africa reported that some governments in the region are taking measures to implement gender friendly policies in the education systems as well as in digital literacy such as South Africa, Kenya and Uganda. However, this is occurring slowly due to a lack of formalised policy, financing, infrastructure, and trained teachers. South Africa has achieved significant progress in the integration of ICT in education for women and girls according to researchers at ICT Research in Africa yet policy initiatives in this area differ greatly across the region. For instance, in Sudan, there has been little progress on enhancing digital education for women and girls, in large part due to social and religious norms and low literacy of women. **Overall, some governments in Sub-Saharan Africa have taken modest policy steps to integrate digital technology in education for women and girls, however the implementation has not been sufficient.**

2.2.2 Gender-sensitive training programmes designed for the tech sector

Tailored tech programmes are a solution to develop the specific digital skillset needed by the tech sector, and as such maximising employment outcomes. There is an inherent mismatch between digital skills acquired through the education system and skills that are in demand, which is even more pronounced for women and girls. Furthermore, there are challenges related to getting women to apply and reach the required level of skills to have equal opportunities accessing employment in the tech sector[142]. The Refactory, a Uganda based organisation that defines itself as the tech "industry's blueprint for hiring developers", is such a programme. It was created in partnership with and for the tech sector to offer employment focused technical and vocational training[143] to help its students find jobs in demand. Despite efforts, the Refactory only has 10% of female graduates. This demonstrates the need for incorporating a gender mainstreaming approach in the programme design and pro-actively targeting women to ensure participation in digital literacy programmes. Complementary work needs to be undertaken to tackle the social norms that disinterest or discourage women from taking part in those training activities.

2.2.3 Community approach to women and girls' training programmes

The African Centre for Women & ICT (ACWICT) based in Kenya, provides a response to these structural barriers with training designed for women across three pillars: life skills, digital

[140] 'Women's Rights Online, Translating Access into Empowerment', Web Foundation, 2015.
[141] 'The Role of teacher training in technical and vocational education and training (TVET) in Africa', UNESCO, 2019.
[142] 'The Role of teacher training in technical and vocational education and training (TVET) in Africa', UNESCO, 2019.
[143] *The programme is a 9-month programme (i.e. course + boot camp) for university graduates to develop the skillset required by the Ugandan tech industry.* Link: https://www.refactory.ug/

literacy (awareness of the digital environment), and digital skills (skills demanded by the market). They target women in rural communities who have never used digital technology previously and work through community mobilisers to identify women who are able and willing to participate. They also engage with boys and men, to address their concerns and insecurities, for example fearing that women generate more income through these training programmes, and in consequence may leave the marital home. This "community approach" is crucial to address the sociocultural barriers that may otherwise prevent women from participating. ACWICT has implemented several successful employment and income generating initiatives.

In line with this challenge, AkiraChix is a Kenyan success story as a not-for-profit organisation which has helped propel the entry of many young women, girls and now children from the slums of Nairobi, into careers in STEM, with 80% job placement rates. They also provide hands-on technical training and mentorship to young women and girls, to increase the number of skilled women in tech and positively impact the community.

In neighbouring Ethiopia, WiderNet implemented the Girls Can Code Project as a means of trying to break down the barriers to entry for girls learning about or working in STEM related areas in Ethiopia – where currently women make up less than one fifth of the university STEM graduates in the country. Girls Can Code was a 30-week course designed to give girls the hands-on skills and confidence they need to pursue computer science at the university level. This project was highly successful with the majority of the 40 girls having since gone on to college and pursued computer science majors. Despite this demonstrated success after of the one-year pilot, the Government was no longer able to provide funding and this model was not sustainable independently. This suggests that despite small scale successful models to target the gender divide in digital education, sustainable funding sources and commitments are often lacking. Other examples of programmes to develop digital skills for girls are presented in the following table.

Table 5: Examples of existing programmes contributing to the empowerment of women and girls in digital skills and literacy across Sub-Saharan Africa

Initiative	Country	Description
SheSecures[144]	Nigeria	She Secures is an organisation based in Nigeria, for women professionals and enthusiasts in cyber security. They build awareness in cyber security and information security for women and girls of all ages.
Fempower Africa[145]	Across SSA	Fempower Africa is a social enterprise that seeks to train, teach and equip women in Africa with technology skills, leadership skills and entrepreneurship skills. Fempower Initiative Africa supports, inspires and empowers female founders both online and offline.
Coding for Employment Platform[146]	Across SSA	The African Development Bank and technology firm Microsoft launched in 2019 the Coding for Employment Platform, an online tool to provide digital skills to African youth, wherever they are across the continent.
The Virtual University of Senegal[147]	Senegal	The Virtual University of Senegal is the first public digital university in Africa, founded in 2013, combining e-learning with presence-based tutorials and networking. The e-learning platform and the laptops with mobile Internet connection provided by the University grant students a maximum of flexibility, which allows (self-) employed students, women with children, students living in rural areas and/or far from the capital to access higher education.
African Girls Can Code Initiative[148]	Across SSA	In collaboration with the African Union Commission, ITU and UN Women launched the African Girls Can Code Initiative (AGCCI) 2018-2022, which consists of a four-year programme to train and empower girls aged 17 to 20 years old with ICT skills.

144 SheSecures, Link: https://shesecures.org/
145 Fempower Africa, Link: https://www.fempowerafrica.com.ng/
146 African Development Bank Coding for Employment platform, Link: https://coding4employment.org/
147 The Virtual University of Senegal, link: https://www.uvs.sn/
148 Girls can code Initiative, link: https://www.itu.int/en/ITU-D/Regional-Presence/Africa/Pages/African-Girls-Can-Code.aspx

2.3 Digital Entrepreneurship and Job Creation

Entrepreneurship is an opportunity to address challenges faced by communities, especially when diverse profiles and backgrounds, including women, are empowered to become entrepreneurs. Moreover, there is the possibility to bridge employment gaps and inequalities, especially relevant for women who are still underrepresented in the labour market.

While many micro, small and medium enterprises (MSMEs) in developing countries have yet to switch to digital technologies, a digital transformation is happening across Africa, led by SMEs and young entrepreneurs. In East Africa, there are more than 300 digital platforms offering services in transportation, e-commerce, asset sharing, and job matching with more than 80% of the digital platforms in these countries are founded and operated by local innovators.[149] Digital platforms help gauge demand over a wide geographical area and provide MSMEs the opportunity to conduct business in new markets, including niche markets. The increased market efficiency, standards, techniques, networking and knowledge exchanges arising from the digital revolution is expected to result in jobs for the rising youth population across Sub-Saharan Africa.[150]

2.3.1 Enhance women's access to financial assets

Enhancing women's access to finance is therefore crucial to unlock their potential also in the digital entrepreneurship field. This is all the more important during crisis times, such as the COVID-19 pandemic, that put women-led MSMEs disproportionately at risk[151]. Initiatives such as the Affirmative Finance Action for Women in Africa (AFAWA), a recent pan-African initiative (supported by the European Union), illustrate the need for coordinated efforts on multiple fronts (i.e. supply of services, training and regulatory changes). AFAWA for instance, aims to increase the flow of credit to women entrepreneurs in Africa by investing in credit lines for women, providing technical assistance to banks and partners to train women, and engaging with central banks and government to foster an enabling regulatory environment.

Increasingly, investing in women-owned and -led businesses with a Gender Lens Investing (GLI)[152] practice is being recognised as a way to ensure appropriate gender considerations in investments as well as a way to create both financial return and women's empowerment. Across Sub-Saharan Africa established funds such as Hivos[153], Global Partnerships[154], Rootcapital[155] and Sharedinterest[156] provide female founders with funding options. New funds have been launched to support the movement such as Alitheia Identity[157], Victus global[158] and Samata Capital. In Côte D'Ivoire, Janngo, a female-led and women oriented venture capital fund has successfully grown and benefitted women entrepreneurs and businesses.

The private sector is central to this conversation, as it can help enhance women's financial inclusion, by tailoring their solutions to women's specific needs and for instance developing targeted financial products such as microcredit. In particular, financial technology and digital financial services provide the opportunity to develop innovative solutions, such as credit lines that do not require traditional collaterals or credit history. Increasingly considered a "major

149 'An Analysis of Issues Shaping Africa's Economic Future', World Bank Africa's Pulse, No. 20, October 2019.
150 Ibid
151 'Policy Brief - Transformative policy solutions to support women-led businesses in Africa in a post covid-19 world', African Development Bank Group, July 15 2020. Link: https://www.afdb.org/en/documents/policy-brief-transformative-policy-solutions-support-women-led-businesses-africa-post-covid-19-world
152 'Gender Lens Investment', Graça Marchel Trust, 2019.
153 Hivos, Link: https://www.hivos.org/
154 Global Partnerships, Link: http://www.globalpartnerships.org/
155 Root Capital, Link: https://rootcapital.org/
156 Shared Interest, Link: https://www.sharedinterest.org/
157 Alitheia Identity, Link: http://www.alitheiaidentity.com/
158 Victus Capital, Link: http://victusglobal.co.uk/

force shaping the structure of the financial industry in Sub-Saharan Africa"[159], FinTech presents the opportunity to foster significant changes in the financial system. In Kenya, one of the most successful countries in terms of mobile money, the Commercial Bank of Africa and Safaricom partnered to launch "M-Shwari, a bank account with both savings and credit facilities accessed entirely through M-PESA, the prominent mobile money platform"[160]. This service allows customers to earn interests on their saving, and to apply for loans without credit history based on mobile money history[161]. Also in Kenya, FarmDrive developed an alternative credit risk assessment model, based on mobile phones, "alternative data" (such as record of expenses, revenues and yield) and machine learning, aiming to "close the critical data gap that prevents financial institutions from lending to creditworthy smallholder farmers"[162]. Such solutions can help overcome some of the barriers to women's financial inclusion, such as deficient credit history and/or lack of assets for collaterals.

In the "data deluge" era, the massive volume of data produced by the increasing use of digital devices (and mobile money in particular), is accompanied by the refinement of machine learning and artificial intelligence (AI) methods to create predictive models, such as credit risk assessments. As such, the advancement of "FinTech" can be considered inevitable and can provide an unprecedented opportunity for financial inclusion. The rise of FinTech instruments has regulatory implications that need to be addressed. Additionally, financial institutions should adopt gender-sensitive communication and outreach practices, to deliver campaigns that are more appealing to women. Interviews with actors in the Fintech sector show that these activities are not about asking financial service providers to start delivering large-scale behaviour change campaigns but helping them to use business as usual approaches to attract more female customers. As an example, PiggyVest in Nigeria is the first online "Savings & Investment" app in West Africa, owned and managed by women. They put women at the centre of all advertising campaigns and publish a number of blogs featuring women investors and success stories, resulting in a 52% female client base.

2.3.2 Provide gender-sensitive entrepreneurship training targeted at women

Many women lack specific digital entrepreneurship training to improve their businesses. On the one hand, entrepreneurship training is required to enhance core skills such as financial literacy, asset management and fundraising, networking and outreach. On the other hand, specific tech and digital training should encourage women to break into what is still considered a field dominated by men[163]. Organisations such as BongoHive, a technology and innovation hub in Zambia that provides training and networking opportunities among other things have invested in promoting women's entrepreneurship. Since 2011, when BongoHive had a cohort of 25 entrepreneurs with only three women, they decided to address the issue by launching the Academy for Women Entrepreneurs (in partnership with Wecreate and the US Embassy) which commits to providing women the knowledge, tools and networks that they need to turn their ideas into a successful business. To be successful, training design and delivery needs to be holistically gender-sensitive and consider limitations such as "competing demands on

[159] Sy, A. et al. 'FinTech in Sub-Saharan African Countries : A Game Changer?, International Monetary Fund, February 2019.Link: https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2019/02/13/FinTech-in-Sub-Saharan-African-Countries-A-Game-Changer-46376 (consulted on September 08 2020)

[160] 'Financial Access Survey, 2019 Trends and Developments', International Monetary Fund Statistics, 2019.

[161] Ibid.

[162] FarmDrive, Link: https://farmdrive.co.ke/about-us

[163] Toesland, F. 'Women-led tech startups on the rise in Africa', Africa Renewal, Aug-Nov 2018. Link: https://www.un.org/africarenewal/magazine/august-november-2018/women-led-tech-startups-rise-africa (consulted on September 08 2020)

women's time related to often unequal distribution of unpaid domestic work, reduced mobility due to time constraints and social norms"[164].

2.3.3 Promote representation of and collaboration between women in the tech sector

In many ways, the fact that there are fewer women in leadership roles across many Sub-Saharan African companies means there is less representation and often less consideration of women and understanding of their needs[165]. In Africa, it is reported that there is an estimated 9% of women in senior management roles in the telecom industry. Stakeholders suggested that having more women in leadership roles would help to reduce discrimination through their influence and decision making. As such, advocating and raising-awareness towards increased representation of women in management position, as well as breaking the glass ceiling, both the private and public sectors, is crucial to enhance the overall environment for digital entrepreneurship and job creation in the digital sector. An example of best practice for inclusion of women leaders is "VilCap Communities Africa", a programme supporting leaders of 15 incubators across the region, developed by the accelerator Village Capital[166]. Its advisory board is comprised by a majority of women who are renowned leaders in the region and beyond. In terms of access to employment, the private sector can work to ensure equal opportunities in recruitment and career advancement opportunities (e.g. blind tests), and foster the adoption of gender-sensitive internal policies (i.e. maternity leave, flexibility etc.).

Complementarily, fostering female networks and collaboration could further enhance women's economic opportunities. According to a World Bank study from 2019, women do not have the same access as men to large and diverse social networks that can support the growth and competitiveness of their business[167] or careers. Illustratively, interviewees from Kenya mentioned that female businesses face challenges attracting investors, which results in smaller organizations, with fewer employees and lower growth prospects. According to interviewees, this is related to power imbalances in conversations between and male counterparts. As such, it is said to be all the more important to foster female only spaces for connecting and sharing ideas and experiences between women, raising funds, and support, business knowledge and community. One strategy to do so is support and build on initiatives and organisations such as She Leads Africa, which aims to connect and support young African women in their careers. Their programme "Motherland Mogul Insider" is described as "a private, digital community for young African female professionals and entrepreneurs who are looking to unlock their potential and accomplish their goals", and provides resources, job and business opportunities as well as coaching and networking[168].

Table 6: Examples of women-owned businesses, focusing on gender as a lever for opportunity and impact in Sub-Saharan Africa

Initiative	Country	Description
LakeHub[169]	Kenya	Located in Kenya's lakeside city, LakeHub supports a community of programmers and entrepreneurs, the majority of whom are girls aged 13 to 19, through training, skills assessments and incubator offerings.
Women in Tech Africa[170]	Across SSA	Women in Tech Africa (WiTA) is a female led organisation that focuses on entrepreneurship expansion and multiplying the numbers of women in technology in Africa. Over the years, WiTA has strategically focused on enabling women to drive Africa's growth story and create impact on

164 'Women's Digital Financial Inclusion in Africa', Gates Foundation, 2019.
165 'Where are the Women, Inclusive Boardrooms in Africa's top listed companies?', African Development Bank, 2015.
166 Village Capital, Link: https://vilcap.com/
167 'Profiting from Parity', The World Bank. Link: https://tinyurl.com/yc8mtsxt (consulted on September 08 2020)
168 SheLeadsAfrica, Link: https://sheleadsafrica.org/
169 LakeHub, Link: https://www.lakehub.co.ke/
170 Women in Tech Africa, Link: http://www.womenintechafrica.com/

		personal life through technology. They host a Tech Digital Festival and other networking events.
She Leads Africa[171]	Across SSA	She Leads Africa community helps young African women achieve their professional dreams. With engaging online content and pan-African events, their vision is to become the number one destination for smart and ambitious young women.
Solutions for Youth Employment (S4YE)[172]	Across SSA	Solutions for Youth Employment (S4YE) is a multi-stakeholder coalition among key players from the public sector, private sector and civil society aiming at closing the Gender Digital Divide. It has two strategic priorities: accelerate innovation (through cutting-edge and evidence-based solutions) and generate knowledge and learning to scale programme impact and influence policy dialogue.

2.4 Digital as Enabler for Sustainable Development

2.4.1 E-services Benefiting Women

As a 'mobile first' continent as described in the previous sections, both African businesses and consumers are quick to embrace and exploit the potential of the mobile internet – especially among women and girls. Mobile connectivity has catalysed the development and uptake of a wide variety of e-services across Africa, including mobile money payments, e-health, EdTech, AgriTech, and insurance companies targeting women users. These businesses have been able to reach and connect with a whole new customer base in rural and urban areas across Sub-Saharan Africa. E-services can be effective because of their ability to take information and basic services to people including women in remote, rural areas where infrastructure and connectivity remain a challenge. The solutions cover a wide array of sectors of the health industry, but so far the most popular sectors have been maternal health and child development and doctor-patient communications apps. Overall, it has helped to empower women, making them more connected and safer, and providing access to information, services and life-enhancing opportunities, such as health information and guidance, financial services and employment, often for the first time.

2.4.2 Use of digital for transparency and accountability

Governments in Sub-Saharan Africa have been proactive in harnessing digitals to enhance their governance systems and service delivery through e-government platforms. The implications of digitalisation of women's inclusion in public service delivery systems and the pathways to women's empowerment that digitised services open up are significant. In particular, using digital technologies to ensure greater information transfer to women in rural areas will help increase their awareness of women's' rights, of new policies that are put in place to protect them and of how to access basic services that they are entitled to.

In order to effectively understand how e-services impact gender equality, there is the need to go beyond the limited mapping of supply-side targeting of women and start to focus on demand-side uptake by women. In Nigeria, the civil society organisation BudgIT[173] aims to explain the national public budget to citizens and track politicians' spending[174]. More specifically targeting women, in Tanzania, Aid:Tech[175] has teamed up with PharmAccess Foundation[176] to use block chain to create a more transparent way for governments, enterprises and NGOs to provide formal identity to pregnant women, provide them with the

[171] She Leads Africa, Link: https://sheleadsafrica.org/
[172] Digital Jobs for Youth: Young Women in the Digital Economy', Solutions for Youth Employment, September 2018.Washington, DC: The World Bank Group. Link: https://www.s4ye.org/sites/default/files/2018-11/S4YE%20Digital%20Jobs%20Report%20-%20FINAL%20%28For%20Printing%29.pdf
[173] BudgIT, Link: https://yourbudgit.com/
[174] Norbrook, N. et al. 'Tech Hubs across Africa: to incubate the next generation', The Africa Report, February 14 2020. Link: https://www.theafricareport.com/23434/tech-hubs-across-africa-to-incubate-the-next-generation/ (consulted on September 08 2020)
[175] Aid:Tech, Link: https://v3.aid.technology/
[176] PharmAccess Foundation, Link: https://www.pharmaccess.org/

care they need, and create a digital identity for their babies by adding them to a distributed ledger[177].

2.4.3 Use of digital for health

In recent years, the number of women in the digital health industry in Sub-Saharan Africa has been on the rise, and can be related with the increase in the number of programmes focused on teaching and nurturing tech skills among women and girls on the continent as well as an increase in the number of tech hubs focused on incubating their start-ups[178]. This can be corroborated by observing their investments patterns in recent years, particularly by companies including Intel, Vodafone, Airtel, Safaricom and others across Sub-Saharan Africa. This sector is especially promising, as through mobile and portable technology tools, e-health holds significant potential to rapidly scale up access to health care services and information for women. By doing so, it can help address the gap in care-related information that contributes to the life-threatening risks that women and girls are facing across many societies in Sub-Saharan Africa.

By improving access to information, e-health technologies can help women manage their own care, their family's and give them a greater role in controlling healthcare costs by taking more responsibility for and planning for their personal well-being. In Cameroon, GiftedMom[179] uses SMS and a smartphone application to provide information and reminders to its users about antenatal appointments, vaccination alerts, advice on health risks and complications, and information on family planning and breastfeeding. For users who are illiterate, SMS messages can be sent via a voice application and translated into the local language[180]. Another prominent example is "MomConnect", a South African National Department of Health initiative which aims to support maternal health through free of charge cell phone-based technologies, offered in 11 languages and integrated into maternal and child health services. The overall objectives of this initiative are to introduce a mechanism for registering electronically all pregnancies in the public health system as early as possible, to send targeted messages containing information to improve pregnant women's and their infants' health, and to provide pregnant women with an interactive, voluntary mechanism to feedback on the services they have received[181].

Beyond information, e-health services can provide innovative solutions to the challenges in the health sector, for example to healthcare financing. In Tanzania, "Jamii" was founded in 2016 by two women to allow low-income populations and workers in the informal sector to access affordable healthcare financing schemes. As of July 2018, over 6,400 people have been covered by micro health insurance services offered through Jamii and 2,900 people have made health insurance claims through the platform, which includes up to 750 hospitals. Furthermore, digital platforms can enhance access to health and care products. It is the case of "Kasha"[182], an e-commerce platform in Rwanda that sells health and personal care products, such as contraceptives and tampons for women and girls. Customers can access Kasha via Unstructured Supplementary Service Data (USSD) or a mobile or web app making it more accessible for women who may not have smart or feature phones.

[177] 'The Mobile Economy: Sub-Saharan Africa', GSMA, 2019.
[178] '10 successful women digital health entrepreneurs in Africa', Science Services, 2018.
[179] Gifted mom, Link: http://www.giftedmom.org/
[180] 'The Mobile Economy: Sub-Saharan Africa', GSMA, 2019.
[181] MomConnect: http://www.health.gov.za/index.php/mom-connect
[182] Kasha, Link: https://kasha.co/

2.4.4 Use of digital for agriculture

The African start-up portal Disrupt Africa[183] explains how the agri-tech has grown by 110% since 2016, as a variety of services have sprung up at every corner of the African continent in less than a decade. Across Sub-Saharan Africa, the migration of men to work in cities or abroad has left a larger number of women working in agriculture and overseeing food production[184]. As such, women make up just under half of the total population of agricultural workers in Sub-Saharan Africa and play an active role in the processes and production of agriculture in emerging markets. Still, significant disparities remain in terms of women's access to Agriculture Value Added Services (VAS)[185] and despite their core role, women underperform in terms of productivity, largely because they lack access to resources such as finance, skills training, and information services. Mobile-enabled agricultural services (mAgri services) can help bridge this gap, by contributing to increasing productivity and incomes of rural women and their households, empower rural women in their households and communities and ultimately improve livelihoods for underserved communities[186]. Overall, mAgri services have proven to help overcome information challenges that restrict market access for small-scale farmers, facilitate payment through mobile money, improve knowledge through innovative ways of providing extension services, and enhance the management of the agricultural supply chain[187].

Mobile money accounts are helping the transition from cash payments for crop income to mobile payments, which enable women to utilise intermediaries, brokers or local transporters, thus expanding options to sell their production. It has the added benefit of reducing the time burden for women who previously had to go to local market centres to receive payment. Mobile money also opens the possibility for small-scale farmers in rural-based economies to meet their savings, credit, and insurance. Setting up an interoperable electronic infrastructure that supports or facilitates the uptake of mobile money is crucial to catalyse rural women's access to finance, credit, etc. As an example, in 2018 MTN Ghana's mAgric MoMo[188] launched a pilot of its mAgric service to support farmer registration through mobile phones and mobile money payments from agribusinesses to farmers (majority women). It also provides data analytics and monitoring for agribusinesses[189]. By digitising value chain payments via mobile money, the tool serves as an entry point for financial inclusion for unbanked farmers. mAgric currently targets farmers in the cocoa value chain, of which 25% are women.

In addition to mobile money, there is a variety of mAgri services targeted at small farmers (with both women and men as users) being developed, such as Nigeria's Farmcrowdy[190] (a company providing structured financing and credit to farmers, aggregation of fresh food produce and commodities, data-based decision-making support etc.) Somalia's Ari Farm[191] (Stockholm-based start-up that allows anyone to invest in Somali livestock), and South Africa's Livestock Wealth[192] (similarly, allows anyone to buy livestock to support farmers grow their assets). These platforms tap into the lack of financial capital for smallholding farmers and in some cases provide digitally enhanced and data-based technical support, i.e. the use of

183 Disrupt Africa, http://disrupt-africa.com (consulted on September 08 2020)
184 'The market opportunity in applying a gender lens to agri-vas', GSMA Mobile for Development, January 2017.
185 Ibid
186 'Women in Agriculture: A Toolkit for Mobile Services Practitioners', GSMA mWomen and mAgri Programmes, May 2014. Link: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2014/06/Women_in_Agriculture-a_Toolkit_for_Mobile_Services_Practitioners.pdf (consulted on September 08 2020)
187 Ibid
188 mAgric MoMo, Link: https://mtn.com.gh/momo/
189 GSMA 2019, GSMA AgriTech: Digital disruption of the agricultural sector in Sub-Saharan Africa
190 Farmcrowdy, Link: https://www.farmcrowdy.com/
191 'Ari-farm agricultural app brings Somali livestock farmers into the digital economy', Food and Agriculture Organization of the United Nations, May 11 2017. Link: http://www.fao.org/e-agriculture/news/arifarm-agricultural-app-brings-somali-livestock-farmers-digital-economy (consulted on September 08 2020)
192 Livestock Wealth, Link: https://www.livestockwealth.com/

drones for precision agriculture. South African Aerobotics[193] and Ivorian WeFlyAgri[194] are two examples of companies using drone imagery and machine learning, respectively for pest and disease detection and for enhanced crop management. Others offer solar-powered cold storages, for example SolarFreeze[195] and supply chain start-ups such as Kenyan Twiga Foods[196] and Annona[197] and Ghana's Agrocenta. Across the continent, One Acre Fund is one of the key actors who have been working to facilitate the creation of supply chain and help farmers through financial and technical assistance.

It is important to note that none of these platforms specifically target women as their customer base. This is often because they adopt a broader commercial approach, instead of tailoring or targeting mAgri services to women specifically. **Given women's role in agriculture in developing countries, they represent a major market opportunity for mobile-enabled agricultural services that should be leveraged by e-services companies.** Mobile-phone operators would also benefit from expanding their services beyond urban areas, which are already reaching saturation. International organisations and donors can play a role by advocating, building partnerships and/or providing incentives for the private sector to adopt a gender-sensitive approach to mAgri services. Additionally, they should also channel funding to support women in their uptake and utilisation of mAgri services, i.e. through outreach and training. Beyond agricultural productivity, the uptake of user-friendly mAgri services could also enhance skills and literacy that are built into agricultural programmes, contributing to increasing overall access to information and services beyond agriculture.

2.4.5 Use of digital financial services

The strong progress made in terms of financial inclusion in Africa[198] can be associated with the adoption of enabling regulatory policies, as well as growth in mobile money[199]. IMF data shows that in 2017, **Sub-Saharan Africa was the region with the highest number of registered mobile money accounts, with nearly 600 accounts per 1,000 adults**[200]. East African countries are considered the "pioneers of the mobile money revolution" and remain at the forefront of its uptake, regionally and even globally. Although, countries such as Kenya, Tanzania and Uganda still have the highest number of registered mobile money accounts in the region, also others have seen a rapid increase in recent years, including Ghana, Côte d'Ivoire or Senegal.

Across countries, the uptake of mobile money is associated with an improvement of women's financial inclusion. In mature mobile money markets such as Kenya, Senegal, Uganda and Zimbabwe, the gender gap in financial account ownership has notably narrowed between 2014 and 2017, largely driven by mobile money. In these economies, more than 20% of adults exclusively have mobile money accounts and women are either as likely or more likely than men to own only a mobile money account. In Senegal, as many as 59% of women who are considered "financially included", meaning not excluded from services, own only a mobile money account[201].

Digital banking and innovation in financial technology (referred to as "Fintech" in previous sections) has been valuable for allowing women in Africa to engage in transparent and accountable financial transactions. With access to digital financial services, women have the

193 Aerobotics, Link: https://www.aerobotics.io/
194 WeFlyAgri, Link: http://www.weflyagri.com/fr/
195 SolarFreeze, Link: http://www.solarfreeze.co.ke/
196 Twiga Foods, Link: https://twiga.ke/
197 Agrocenta, Link: https://agrocenta.com/
198 *The share of adults with financial accounts in the region grew from 23% to 43% from 2011 to 2017; according to the Gates' Foundation report "Women's Digital Financial Inclusion in Africa".*
199 'Women's Digital Financial Inclusion in Africa', The Bill and Melinda Gates Foundation and the G7 French Presidency, 2019.
200 'Mobile Money Note', International Monetary Fund Statistics, 2019.
201 'The promise of mobile money for further advancing women's financial inclusion', GSMA 2019.

ability to earn money and to choose how to save, spend and invest it in priorities like health and education that supercharge development.[202] For example in Mozambique, Business Women Connect[203] has partnered with various Mozambican financial service providers (such as Letshego bank and M-Pesa) and has been working with their women agents to provide services in their communities. The tech platform has helped Mozambican women improve their businesses and increase access to savings. Through these digital financial services, women have access to sophisticated financial instruments through their mobile (and even not-generally-smart-phones)[204] to make transactions.

Achieving widespread women's economic empowerment in Africa will require working on multiple fronts (legislation, infrastructure, interoperable services, literacy etc.) and requires the involvement of "governments, financial and telecoms regulators, businesses, civil society, and a range of donor-funded initiatives"[205]. Multiple barriers still need to be addressed, ranging from digital literacy, to the costs of owning mobile phones, to infrastructure and regulation. In particular, the digital payment infrastructure must be developed so that it can provide services between platforms and services providers based on the available broadband and networks. Furthermore, digital identification systems will help facilitate access by providing a proof of identity for users[206], as well as sound evidence-based research.

[202] Ibid
[203] 'Business Connect, Link: https://www.businesswomenconnect.org/mozambique
[204] Ibid
[205] 'Women's Digital Financial Inclusion in Africa', The Bill and Melinda Gates Foundation and the G7 French Presidency, 2019.
[206] Ibid

3 OVERVIEW OF CURRENT EC INITIATIVES

3.1 Geographic and Thematic Distribution

From the projects reviewed[207], there are currently 55 projects (either active or that have been implemented in the past 10 years) that have integrated components on gender equality. They have covered a wide range of sectors including; agriculture, employment, education, governance, health & nutrition, infrastructure, private sector development, rural development, culture and recreation and energy. The total value of these projects is just under €1.4 billion.

The vast majority of projects have a DAC Gender Equality Marker of "1", indicating that they are cases of "gender mainstreaming" (as opposed to stand-along gender projects). Less than 8% of projects (4 out of 55) are marked with a DAC Gender Equality Marker of "2" and have gender equality as their main objective[208]. Out of those four projects, two focus on Health and Nutrition, one on Employment and one on Governance.

3.1.1 Geographic Distribution

The sample of 55 digital projects reviewed for the purposes of this study have been implemented in the following countries: Angola, Benin, Cameroon, Democratic Republic of Congo, Eswatini, Gambia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Niger, Nigeria, Republic of Congo, Rwanda, Senegal, Sierra Leone, South Africa, Togo, Zambia and Zimbabwe. The map below shows the number of projects implemented by countries.

There is a higher number of projects in the Southern Africa region with eight projects in Zimbabwe and six projects in both Angola and Mozambique in addition to four regional SSA programmes. Most other countries have or have had only one or two projects in this area. Further assessment of DEVCO's digitalisation approach and analysis of the estimated digital component of projects in millions of euros is presented in the "Study for the assessment of DEVCO work in digitalisation in Sub-Saharan Africa"[209].

[207] *Based on a repository of DEVCO's Digital and Gender actions disaggregated by geography and sectors. For more information, see the Study for the assessment of DEVCO work in digitalisation in Sub-Saharan Africa Final Report, June 2020.*
[208] 'DAC Gender Equality Policy Marker', OECD. Link : http://www.oecd.org/dac/gender-development/dac-gender-equality-marker.htm
[209] 'Study for the assessment of DEVCO work in digitalisation in Sub-Saharan Africa Final Report', European Commission, June 2020.

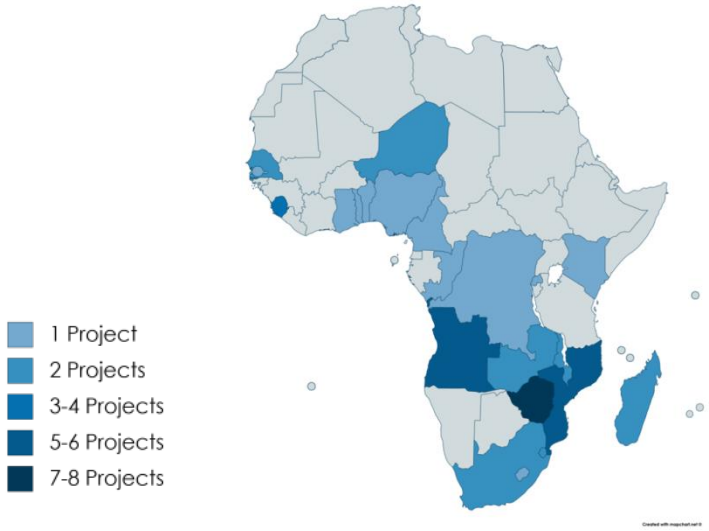


Figure 5: Distribution of projects per country (developed by Conseil Santé)

In terms of the gender component, countries in South and East Africa also presented projects with a greater focus on gender. Countries including Angola, Eswatini, Gambia, Kenya, Madagascar, Mozambique, Nigeria, South Africa, Rwanda, Zambia and Zimbabwe, all had projects with a specific and explicit focus on gender. Certain projects had specific objectives and/or results aimed at women, and others included multiple gender-disaggregated indicators. This sub-region also concentrates four (out of four) projects marked "2" (by the DAC Gender Equality Marker), namely in Angola, Mozambique, Zambia and Zimbabwe.

Proportionally, DEVCO is more present in Cluster of 'medium-scoring' countries and less present in Cluster of 'high-scoring countries' (see cluster analysis in section 1.1.1.3). Regional projects aside, the vast majority of projects undertaken in low and medium scoring countries fall under the 'digital technologies as an enabler for sustainable development' pillar. **The absence of 'connectivity and infrastructure' projects in 'low-scoring' countries, for which connectivity remains a structural challenge, is notable.** The 'DTS' project is the only connectivity project undertaken in low-scoring countries (Chad and Niger). It is worth noting, that despite representing the lowest number of countries, the 'high-scoring' clusters (namely South Africa and Ghana) presents the most diverse project portfolio, covering three out of four D4D pillars. Finally, DEVCO is not present in any countries with significant data gaps in both digital and gender.

3.1.2 Thematic distribution

In this section, the distribution of the 44 projects (out of 55) at the intersections of the four D4D Priorities Areas and the three GAP II pillars is presented. Based on the project documentation, the team revised the "D4D Priority Areas" attributed to each project (proceeding to certain adjustments) and categorised the project under the relevant GAP II pillar(s). Certain projects were classified under two GAP II pillars (see Annex 1); for e.g. Social and economic empowerment (SEEMP) and Fighting violence of any kind against women and girls (VAWG).

Table 7: Matrix of projects per D4D Priority and GAP II Pillar(s)

*D4D Priorities / GAP II pillars**	Fighting violence of any kind against women and girls (VAWG)	Social and economic empowerment (SEEMP)	Strenghtening voice and participation (VP)
Access to open, affordable & secure broadband connectivity & digital infrastructure including the necessary regulatory framework	1	2	1
Digital literacy and digital skills	0	0	0
Digital for growth, entrepreneurship and job creation	0	6	0
Digital technologies as an enabler for sustainable development	4	29	12
Total number of projects per GAP II pillars	5	37	13

** Certain projects fall under two GAP II pillars.*

For the large majority of projects (84%), the digital component is an "enabler" for achieving the projects' core objectives. In terms of the gender component, the majority of projects (67%) fall under the socio-economic empowerment pillar[210]. As such, the intersection that concentrates the higher number of projects (29) is that of "Social and economic empowerment" (GAP II Pillar) and "Digital technologies as an enabler for sustainable development" (D4D Priority). This includes two projects that have a DAC Gender Equality Marker of "2": APROSOC (Programa de Apoio Social, Angola) and MDGi (Accelerating Progress towards Maternal, Neonatal and Child Morbidity and Mortality Reduction, Zambia). Thus, for the majority of those 29 projects, both the digital and gender components are not the core policy objectives, but rather are being mainstreamed in the project/programme.

3.2 Overview of 'Gender' and 'Digital' Project Components

The analysis of project documents revealed a varying degree of focus for both digital and gender components across the initiatives reviewed. Certain project documents included explicit references to digital/ICT and/or gender/women, with these being core components of the project design. In others, there was little or, in some cases, no specific reference to digital/ICT and/or gender/women. In this section, general considerations are outlined for both components separately, and then an assessment on their relationship within projects is proposed.

3.2.1 Overview of "Gender Mainstreaming" in projects

If most projects marked "1" indeed mainstreamed a gender approach, the modality and extent to which gender equality and/or women's empowerment was included in the projects' activities varied[211]. Certain projects included gender-disaggregated indicators, specific activities, results and/or objectives targeting women (and/or girls). For e.g., "Procultura" in Mozambique, has multiple indicators disaggregated by gender to ensure women are targeted across the project. Other projects made efforts to include a gender approach in their general framework and rationale, but do not include specific gender activities or indicators. For e.g., Organised Crime:

[210] *Please note that the certain projects fall under two "GAP II" pillars, which is why the total sums 55 projects (even if the attribution of "GAP II" pillars was only possible for 44 projects).*

[211] *As mentioned in the methodology section above, the varying scope and quality of project documents provided present limits to these findings.*

West African response on cyber security and fight against cybercrime, in Sub-Saharan Africa (OCWAR-C) specifies that women are disproportionately targeted by cyber-attacks (such as cyber bullying, personal attacks and sexting) is taken into consideration, but does not include specific actions or indicators towards addressing this issue. **In certain cases, references to gender and/or women appear to be too generic, even if they showcase efforts to address 'gender disparities' or 'gender inclusion'.** For example, the narrative can indicate that women are part of the target beneficiary group, but even though activities are wide-reaching, they are not designed or tailored to women and/or girls' specific needs. **The challenge with this approach is that a pro-active effort requiring gender-sensitive design is necessary to ensure that women participate and/or benefit from an activity.** Moreover, certain projects marked "1" did not include any mention related to gender equality or women-specific actions, nor gender-disaggregated indicators (for e.g.; the project "Support to Local Development Programme (LDP) through Social Action Fund" in Angola or "Security Sector Reform Support Programme Defence Component (SSRSP)" in Eswatini).

3.2.2 Overview of 'Digital' project components

For the majority of projects, technology or the digital aspect is a means to deliver an output or result, but not a core stand-alone objective. For multiple projects, the "main activity" or "specific objective" related to digital is the development of a digital platform (e.g. World Vision – Land Governance, Angola) or information management system, or the creation and systematisation of data for improved management and decision-making (i.e. increasing the efficiency or performance for key stakeholders such as Ministries, NGOs or other authorities).

Very few projects sought to increase access or uptake of digital technologies or digital literacy for the wider society. Among the 55 projects identified as having both digital and gender components, nearly 80% (43 projects) promote the digital as an enabler for sustainable development. There are seven projects that focus on digital entrepreneurship and job creation, three focusing on connectivity and infrastructure, and zero on digital skills and literacy. Indeed, most initiatives did not fall under the priority areas "digital literacy" neither "digital for growth, entrepreneurship and job creation". **Ultimately, the focus of the digital projects insofar is support to high-level stakeholders and decision making, and not to enhance access and literacy of civil society and citizens directly.**

3.2.3 To what extent are 'digital' and 'gender' project components related?

As illustrated by the "Matrix of projects per D4D Priority and GAP II Pillar(s)" (Table 7), an important number of projects are mainstreaming both 'gender' and 'digital', and do not include either as their main policy objective. Therefore, it is key to understand to which extent those components are related to each other in a project, in order **to assess how EC initiatives are effectively promoting "women empowerment through digital" in Africa**. Based on the project documentation available and using a deductive approach, the relationship between the "digital" and "gender" components for the sub-selection of 44 projects (for which documentation and enough information was available for analysis) were categorised as "direct", "indirect" or "not related"[212].

[212] ***Direct*** *is digital components designed to and directly enhancing women's empowerment;* ***Indirect*** *is any project in which digital and gender are weakly related, i.e. through improving the overall results that ultimately impacts women;* ***Not related*** *is both components are completely independent.*

Table 8: Relationship between 'digital' and 'gender' components within projects

Are 'digital' and 'gender' project components related?	
Directly related	10
Indirectly related	28
Not related	6
Total	44

The two components are considered "directly" related when they overlap within an objective, activity or indicators. For example, the "Spotlight Initiative" in Mozambique has a specific objective that "Women and girls' survivors of VAWG, including SGBV/HP, and their families are informed of and can access quality essential services" which translated to the following outcome "Women and girls who experience VAWG, including SGBV/HP, use available, accessible, acceptable, and quality essential services including for long term recovery from violence" and a main activity to "Promote legal literacy of young girls and women on available services on SGBV, HP and HIV through social media," which demonstrates a clear link between digital and gender. The two components are considered "indirectly" related, when the 'digital' component globally enhances the potential impact or benefits of the project, including of the gender-related activities. For example, the project "TA for Development of a Social Protection system in Swaziland" aims to improve information systems, which ultimately will promote greater capacity to deliver social protection, including to women. Finally, they are considered "not related" when there is not a clear direct nor indirect relationship between the components.

It is noticeable that the majority of the projects analysed fall under the "indirectly related" category, which is consistent with the general findings presented in the previous sections.

3.3 Overview of projects per D4D Priority Area

3.3.1 Connectivity and Infrastructure

According to digital project mapping provided, the EU has only recently begun the implementation of projects related to connectivity and digital infrastructure in 2018 with 3 out of 55 projects that fall under this pillar and has been involved in heavy infrastructure projects, such as undersea cables[213].**There seems to be recognition of the need to improve connectivity and access, and thus increase funding allocation towards physical infrastructural development**. The largest project, with a total budget of €29.5 million, is the Trans-Saharan Fibre Optic Backbone (TSB) Project to support the extension of the 503 km national fibre optic backbones in Chad and Niger. **The project includes certain gender-sensitive good practices, but overall could benefit from more in-depth gender mainstreaming and refinement of activities that would especially benefit women.** In particular, it expects to decrease the cost of connectivity, potentially having a greater impact on women than men, and to distribute production equipment to women's associations along the planned axes of optical fibre. The project also expects to "strengthen the integration of interior populations to the digital economy" by connecting remote areas, which could also expressly benefit women, especially if complemented with activities (or side-project) to

[213] 'Study for the assessment of DEVCO work in digitalisation in Sub-Saharan Africa Final Report', European Commission, June 2020.

improve their access to resources and literacy (as explained in previous sections). It is not clear to what extent the project focuses on urban vs. remote/rural areas, an aspect that should also be further enhanced.

The other two projects under this pillar focus primarily on policy frameworks. One, is an assessment of national cyber security frameworks and an audit of existing cybercrime infrastructure entities, and provides capacity building and equipment for specialised entities (in a selection of pilot countries) in the ECOWAS region. The other project facilitated a Conference in Cape Town in November 2018, bringing together South African and European 4IR experts and stakeholders from the public sector to produce a high-level policy framework that maps the scope of potential policy responses to the 4IR. **Such projects present an opportunity to mainstreaming gender into the policy discussions either through gender-sensitive assessment/audit analysis or by pushing gender-mainstreaming into digital policy plans.** Any such opportunities should be leveraged to advocate and give visibility to the digital issues faced by women (mentioned in previous sections).

Given the severity of the constraints related to the digital infrastructure, and specifically to connectivity and access, it is important to consider what else could be done when developing projects under this pillar. Certain activities should be considered when designing such projects, including leveraging any opportunity to partner with women and/or women's organisations for the design of infrastructure and connectivity projects, and consider offline solutions when infrastructure and connectivity is knowingly weak. **Also, measuring the impact of improved access and connectivity for the local populations, disaggregated by gender, age (women and girls) and location (rural/urban), could create a virtuous feedback cycle and continuously improve mainstreaming for projects under this pillar.**

3.3.2 Digital Skills and Literacy

In the sample of projects, there have been no projects with a specific focus on digital skills and literacy within the portfolio. Whilst multiple projects may have a small component related to digital skills and literacy, this is usually included as a minor activity, and the core focus is the technology, system or database development (rather than enhancing the skills and capacity-building to make use of the technology). Similarly, **there are no projects to date aiming to develop and deliver data literacy training specifically for women and/or girls**.

Whilst the Africa Connect 2 and 3 projects, implemented in 2014 and 2018 respectively and across multiple countries in Sub-Saharan Africa, certainly seek to increase digital skills and literacy, there is limited mention of digital skills or literacy training in the projects' documents. In most cases, requirements for digital capacity building were implicit rather than explicit. That being said, Work Package 4 (Advocacy for the digital transformation for education and research) is a commendable effort towards improving mainstreaming of digital literacy in educational programmes and research, one of the good practices highlighted in Chapter 2. Still, it is not clear whether these advocacy efforts are mindful of the gender implications (and limitations) of mainstreaming digital in educational programmes. **In particular, they should highlight the need to deconstruct social norms and stereotypes that discourage women and girls to invest in their digital skills and/or choose STEM careers, promote anti-sexual harassment campaigns in schools, boost women's confidence to engage with digital technologies, etc.**

The identified lack of digital skills and literacy projects aligns with the results of the recent Digitalisation Study[214], which considers this area to be underrepresented and underfunded. As mentioned in previous sections, this is a major area of opportunity to bridge

[214] Ibid.

the gender digital divide, as lack of knowledge about how to access the internet and lack of time to learn are both key barriers hindering the ability of women to benefit from digitalisation across Sub-Saharan Africa. Findings from interviews with key stakeholders confirm that the lack of digital skills and literacy is a major barrier to ensure uptake and/or use of digital technologies in Sub-Saharan Africa, particularly amongst women and girls. As such, **the "digital literacy and skills" pillar has a potential multiplier effect and should be an area of increasing priority for DEVCO going forward.**

To ensure that women and girls benefit from these initiatives requires adopting a thorough gender-sensitive approach to take into account in their design and delivery the core challenges faced by women and girls. Therefore, this entails ensuring that any tech programme aiming to develop the specific digital skillset pro-actively targets women (through gender-sensitive communication, schedules, etc.), as well as channelling support and/or developing training programmes that are inherently designed for women and girls, in particular those in rural and remote communities. Any projects under this pillar should also consider working with the community (especially men, so they do not feel threatened or left behind) and the need for awareness-raising components to deconstruct prohibitive social norms.

3.3.3 Digital Entrepreneurship and Job Creation

Seven projects from the sample, with an indicative cumulative total value of €280.9 million, fall under the "digital entrepreneurship and job creation" pillar. These projects were delivered in Mozambique (2), South Africa, Zimbabwe, Angola, Gambia and Ghana, and targeted agriculture or cross-cutting sectors related to entrepreneurship and job creation.

Although all projects carried an DAC Gender Equality Marker of 1 ('Significant objective'), none included a specific reference to women or girls in their main activities, nor do they have specific objectives relating to women, they are included as part of the overall objectives. Rather, they were broader entrepreneurship or job creation programmes that included women and girls. Overall, the absence of thorough gender mainstreaming hinders projects ability to effectively deliver the benefits of entrepreneurship programmes for women, as they largely face specific challenges ranging from limited access to collaterals to social norms and stereotypes, both limiting their options and opportunities (as developed in Chapter 1). As such, **to provide equal opportunities to men and women in this field, DEVCO should do more in terms of thoroughly mainstreaming gender in existing entrepreneurship programmes to address women's needs** (for e.g. tailoring training content, adapting schedules to be compatible with women's care responsibilities, using a gender-sensitive communication, etc.), and/or **developing entrepreneurship training programmes specifically targeted at women.**

Among the sampled projects, one initiated in Mozambique in 2019, is a good example in terms adopting a gender-sensitive approach. Building on the 'Promove agribiz' project, with a focus on enabling the Environment for Agri-Food Value Chain Development, it aims to **improve the availability of financial and support services and increase access by MSMEs and smallholder farmers, especially women farmers.** This is highly important as women tend to have lower access to assets, collaterals and financial resources (as mentioned in Chapter 2). At early implementation stage, this project shows a positive shift towards directly targeting businesses and farmers to support productivity and growth, with a focus on women. In turn, this may also create new employment and entrepreneurship opportunities, and could become a positive example of how future projects targeting digital entrepreneurship or job creation might be designed. However, it is worth noting that the digital component of the project is limited and consists of using e-voucher systems in the context of farming practices. It could benefit from additional digital components, such as online market trading platforms or enhancing access to information on good agricultural practices and market information.

The Digital2Equal Peer Learning Initiative is a good example in terms of a direct relationship between the digital and the gender components, and its example could be leveraged to further advance the 'digital for gender' agenda in DEVCO projects. Many of the good practices for both gender and digital mentioned in previous sections are integrated into the design of this initiative. Overall, the initiative aims to increase the level and quality of women's engagement in the digital economy through online platforms. The initiative consists of three pillars: policy research and engagement, peer learning initiative for companies in the digital economy (design, data, workforce, users) and advisory services for companies to better integrate women.

It is important to note that most of the projects from this sample focus on developing management information systems or voucher systems that support organisations to support others. In other words, they contribute to creating an enabling environment for digital entrepreneurship and job creation, but do not work directly with populations and/or existing businesses or start-ups. For example, the 'Ghana Employment and Social Protection' project in 2015 developed a Labour Market Information System, which in turn may have assisted ministries in supporting employment initiatives but have not directly created new job opportunities. This type of project also presents opportunities for DEVCO to advance the digital for gender agenda, by promoting social and regulatory frameworks conducive to women's economic empowerment, in particular when working with the public and private sectors. To further leverage these opportunities DEVCO should for example continuously advocate for addressing regulatory challenges that underpin women's access to certain assets or resources when working for/with governments.

For projects implemented for/with the private sector, DEVCO should seek to ensure that their products and/or solutions are delivered equally to women and men, which may require adopting inclusive language for campaign or even tailoring certain solutions to meet women's needs. For e.g., the initiative 'Women's Financial Inclusion Facility', which focuses on improving access to digital financial services for women (hence fulfilling the criteria that gender and digital components are 'directly related') would benefit from high-level advocacy about gender-sensitive financial inclusion regulations. Additionally, the project should adopt a more comprehensive gender approach, and partner to address challenges such as access to mobile phones for transactions and service use, (lack thereof) digital literacy for utilising mobile-enabled platforms, as well as (potentially prohibitive) costs related to use. By taking into account some of these challenges, this initiative could indeed deliver the promising benefits of digital for gender.

3.3.4 Digital as an Enabler for Sustainable Development

Within the projects analysed, there are 46 (out of 55) projects that fall under the pillar on digital technologies as an enabler for sustainable development. These projects have an indicative cumulative total of €1,035 million and are undertaken in the following 19 countries (see map below): Angola, Benin, Cameroon, Eswatini, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Niger, Nigeria, Rwanda, Democratic Republic of Congo, Senegal, Sierra Leone, South Africa, Togo, Zambia and Zimbabwe. The main sectors that are targeted by these projects include: agriculture, health and nutrition, environment, energy, governance, private sector development and education with agriculture being the most predominant sector. The projects date back to 2011 and many of the projects under this pillar have now been closed.

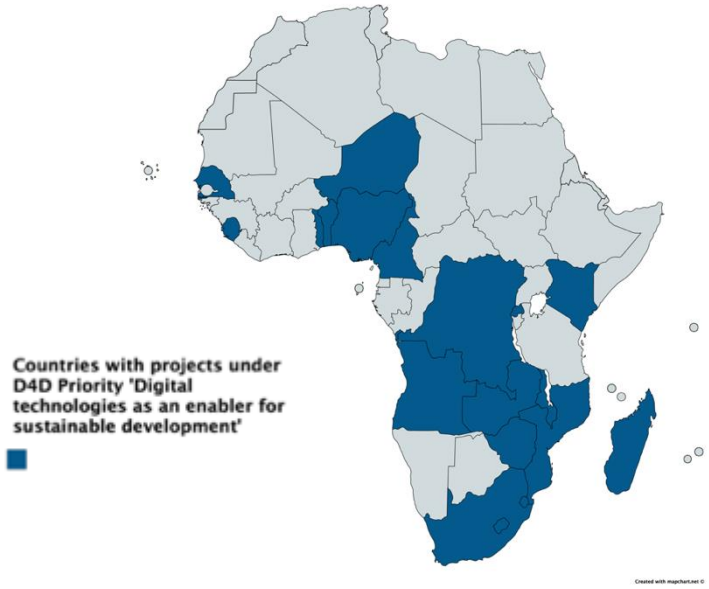


Figure 6: Geographical distribution of projects under the "Digital technologies as an enabler for sustainable development" pillar

Similar to projects under the other D4D priority pillars, there is little reference made to women or girls within the Main Activity descriptions, and/or Specific or Overall Objectives. In fact, just six projects have any reference or explicit inclusion of women in their descriptions. Amongst those, the traditional "plus gender" approach[215], was adopted more often than promoting gender-sensitive activities or gender-disaggregated indicators. **The challenge with this approach is that unless gender is considered at the design phase, it is unlikely that the level of outreach and engagement needed to allow for better effective targeting and inclusion of women to meet the required results** (40%) will be met. As mentioned, a significant number of technologies, platforms or e-services are still generally built upon the false premise of "neutral universality". In consequence, the service or technology may not be relevant for women's specific needs and it risks disregarding factors that may constrain women's ability to access such services or technologies, such as sociocultural norms (e.g. women not being able to attend workshops or training sessions due to the burden of unpaid care work or not permitted to go by the male members of their households).

Digital components within projects were often used as specific tools rather than transversal enablers, therefore not well integrated into the design of projects, a finding that was also raised in the recent "Digitalisation Study"[216]. There is also opportunity to leverage good practices mentioned previously within such projects, e.g. by investing in sectors that have proven relevant for women (for instance time-saving services, health - i.e. maternal health and child development or FinTech), or by promoting parity in human resources hired for the project.

3.4 Overview of projects per sector

The following sections review these projects by sector. The overall distribution of projects per sectors can be found in the table below.

Table 9: Number of projects per sector

[215] *Whereby gender (women) are included within the programme logframe or indicators through the inclusion of terms such as; "at least 40% should be women" but where there is no other explicit reference to how projects should work with women.*

[216] 'Study for the assessment of DEVCO work in digitalisation in Sub-Saharan Africa Final Report', European Commission, June 2020.

Number of projects per sector	
Number of Agriculture projects	17
Number of Culture and recreation projects	1
Number of Education projects	3
Number of Employment projects	4
Number of Energy projects	1
Number of Environmental projects	3
Number of Governance projects	15
Number of Health / Nutrition projects	7
Number of Infrastructure projects	2
Number of Private sector projects	1
Number of Rural development projects	1
Total	55

3.4.1 Agriculture

There were 17 projects that focused on agriculture of which six were based in Zimbabwe (see map in Annex 3 for the full regional geographic distribution). Across all agricultural projects, the majority focused on the digitalisation of agriculture through the development of information systems that support farmers with market information. Other areas of focus for the projects were on land registration and food security. Whilst the majority of these projects did include references to gender within the project documents, none of them had an explicit gender focus or focused on specific gender constraints. Of the 17 projects, all have a DAC Gender Marker of 1, under the SEEMP pillar, and in most cases the gender-digital components were identified as indirect or not related. **The absence of thorough gender mainstreaming in agriculture projects is problematic as gender and digital inequalities in rural areas are especially pervasive (as mentioned in previous sections).** Although women's share of labour input into crop production is estimated at 40%[217], there is a significant gender gap in agricultural productivity across the region, varying between 10% (Ethiopia) to 28% (Malawi)[218].

3.4.2 Education

There were three projects with a focus on education, two of which were regional projects and one which was in Angola. These regional projects cut across several areas including infrastructure, connectivity and digital skills and literacy however their core objective was to contribute to the reduction of poverty and the digital divide by harnessing the potential of ICT for sustainable development and enhancing human capital in Africa. **With a DAC Gender marker 1, as with the other two education sector projects, this project is the only one with a direct relation between the gender and digital components in which women in STEM are promoted and there is online awareness created for women in the African Community. This covers two GAP II pillars, SEEMP and VP. As mentioned, a greater gender-sensitive focus in this area is particularly important.**

3.4.3 Employment

There were four projects with a focus on employment or social protection. These projects were in Angola, Eswatini, Ghana and South Africa. In Eswatini, the project supported the expansion of the management information system to improve systems relating to social protection

[217] 'Women, Agriculture and work in Africa', The World Bank, Link: https://www.worldbank.org/en/programs/africa-myths-and-facts/publication/women-agriculture-and-work-in-africa (consulted on September 08 2020)

[218] 'The Gender Gap In Agricultural Productivity In Sub-Saharan Africa: Causes, Costs And Solutions', UN Women, 2019. Link: www.unwomen.org/-/media/headquarters/attachments/sections/library/publications/2019/un-women-policy-brief-11-the-gender-gap-in-agricultural-productivity-in-sub-saharan-africa-en.pdf?la=en&vs=1943 (consulted on September 08 2020)

programmes and applied both the VAWG and SEEMP GAP II pillars. However, the link to digital is seen as indirect through the project. The SEEMP GAP II pillar is identified as having an indirect relation to the digital components of the project, which again is related to creating Management Information System. The 'Capacity building programme for employment promotion' in South Africa is also considered to have an indirect link between gender in digital where there is promotion of digital skills. Yet this is not directly related to the result that mentions supporting labour policies for the unemployed especially women and youth. The programme in Ghana on employment and social protection (GESP) was not determined to have a digital for gender relation, as the digitalisation and gender components are not directly related.

3.4.4 Energy and Environment

There were four projects focusing on energy (1) and environment (3). These projects took place in Benin, Lesotho, Mozambique and Togo. The energy project in Benin focused on modernising information systems and constructing a 25 MWp solar power plant. In Lesotho the project focused on improving datasets for the ICM information centre and building capacity of staff to analyse satellite imagery to determine trends in land degradation. In Togo, the project focused on capacity building of main actors in the fight against climate change and ensuring its integration into national strategies and public policies. In Mozambique the PRO-ACT focused on drought monitoring & forecasting and gave specific attention to vulnerable groups including women and sought to actively foster participation of women, therefore warranting a direct relation between the D4D component and gender. **None of the other projects had a gender or digital focus beyond some limited gender experience of the technical experts of the Lesotho project and that women would have been considered as part of the core programme target groups for the development of a Management Information System.**

3.4.5 Governance

There were 15 projects under this pillar that focused on governance as illustrated in the map in Annex 3. The majority of projects focused on developing e-governance systems such as administrative tools or management information systems for government agencies. Areas of focus for these systems were voting and voter registration, human resource and financial management, automated tax payment systems, computerisation of criminal records, establishing national ID systems or death record management. Two of these projects; "Support to consolidation of the democratic process in Zimbabwe" and "Improved Child Rights Governance in Rwanda" had a specific gender focus. Despite this focus, for both projects, gender and digital are only "indirectly" related. The "digital" component enhances the potential impact or benefits of the project, including the gender-related activities, but it does not explicitly target women and girls. Therefore, the digital component is not considered to have specific gender focus. The Chilungamo project in Malawi also addressed gender as a cross-cutting issue and indicated the need for gender disaggregated data under the results indicator. With regards to the Sierra Leone Support for the Governance Sector, a gender and inclusion advisor was required and the Technical Assistance in the area of civil registration focused civil registration virtual system which would especially benefit children and women, therefore drawing a direct link between gender and digital. **More generally, governance projects provide the opportunity to undertake advocacy and/or awareness-raising with government counterparts regarding the specific 'women and digital' challenges.**

3.4.6 Health and Nutrition

There were seven projects that focused on health and nutrition including in the following countries: Eswatini, Malawi, Mozambique, Niger, Angola, Madagascar and Zambia (see map

Annex 3). Of these projects, three focused on the development of management information systems, including the creation of a central database to register social cash transfers for orphans and vulnerable children (Eswatini); the creation of data and software platforms to strengthen the Ministry of Social Affairs' capacity at a central level in strategic and operational planning (Angola); and management of resources for health and optimisation of data quality and data use to meet end-users needs (Zambia). Other three projects focused on nutrition, including strengthening multi-sectoral governance of nutrition through improving national and district planning using a food and nutrition security information system (Malawi); strengthening national and regional information systems on food and nutrition security (Nigeria); and improving the quality of information to support decision-making and contributing to strengthening the production, dissemination and promotion of local fortified foods through sending targeted SMS messages to (young) pregnant women and women with children about nutrition and feeding of children (in Madagascar). The Spotlight Initiative EDF-ACO project in Mozambique was aimed at supporting women and girls' survivors of VAWG, including SGBV/HP, and their families to ensure they are informed of and can access quality essential services, including longer term recovery services and opportunities. Whilst these projects have a much clearer focus on gender, specifically those targeting pregnant women or women with children, the use of digital is indirect or unrelated in almost all projects with the exception of the Spotlight Initiative in Mozambique, which also falls under the DAC Gender Marker 2 (unlike the other projects). **As mentioned in previous sections, health is an important area for gender-sensitive e-services, with an increasing number of initiatives that can help tackle lack of access to information and improve doctor-patient communication.**

4 POLICY RECOMMENDATIONS

The policy recommendations are based on findings from the data and literature review (including the country clustering exercise), the overview of EC initiatives and data collected through stakeholder interviews (full list of interviews is available in Annex 2). They provide a series of concrete and practical actions to support the empowerment of women in Sub-Saharan Africa through digital technology. **The policy recommendations structured around the four D4D priority areas are relevant for all Sub-Saharan African countries.** Additionally, a set of cross-cutting recommendations is presented in a second section.

These recommendations should guide future strategy development and the allocation of resources and investments within both existing and future projects. Most importantly, they will help ensure that the specific needs and challenges faced by women and girls are taken into account throughout the pre-design, design, implementation and evaluation phases of the project lifecycle. **As such, the recommendations aim to ensure that an explicit focus on gender equality is integrated effectively in all digital strategies, policies, plans and budgets (within and outside the EU), and that these policies and strategies effectively meet women's needs, circumstances, capabilities and preferences.** Overall, they provide the framework so that digital tools and technologies are leveraged appropriately and adequately to support the advancement of gender equality and the empowerment of women and girls.

4.1 Infrastructure, Connectivity and Policy Frameworks

4.1.1 Advance "digital for women" policy and regulatory frameworks

This study suggests that there is a need to advance the conceptualisation, focus and visibility of the "digital for women" field, both internally (addressed further ahead under cross-cutting recommendations) and externally. **At regional and national levels, an absence of "digital and gender" policy and regulatory frameworks has been identified throughout the region**, both of which are cornerstones to successfully deliver this agenda. Given its strategic experience, promoting gender equality and women's empowerment on the one hand, and rights-based approaches to the digital transformation (i.e. the protection of privacy, personal data and online security) on the other, the EU is well-placed to help advance the "digital for women" agenda. **In this context, DEVCO has an important role to play, i.e. advocacy and diplomatic efforts to enhance the visibility of the field and technical support to and capacity building governments for designing policy strategies and/or mainstreaming gender in digital strategies (and vice-versa).**

In addition to advancing specific digital for women frameworks, it is equally important to promote the adoption of gender-sensitive approaches to a variety of policy and regulatory frameworks, e.g. in terms of financial inclusion and cyber security. In that context, it is crucial to adopt a gender approach that takes into consideration women's lower level of digital skills (and thus potentially higher level of vulnerability). In terms of cyber security, women are disproportionally targeted by online threats and harassment. This type of gender discrimination can be difficult to identify, and in many cultures it is not recognised as violence or as criminal activity. **Promoting online security but also advocating for the relevant policy and regulatory frameworks to ensure accountability and appropriate punishment for those who violate online security is critical.** This is demonstrated in Kenya with the Computer Misuse and Cybercrimes Act, which "prohibits the intentional publication of false information that amounts to an advocacy of hatred on the basis of, among other grounds, gender as well as the publication of false information that results in panic or violence or discredits the reputation of a person."[219] However, even when polices are in place it is important that they are being implemented and updated on a regular basis.

It is also essential to recognise that the risks of online security are not just a government concern, but that civil society and the private sector can also play a role in educating, informing, and preventing online security breaches in some cases. These actors should work together to develop appropriate strategies to address online security concerns that range from educational and awareness raising activities to policy design and enforcement.

Women's participation in decision-making should also be supported. Multiple stakeholders consulted pointed out the importance of including women in the policy making process, particularly in countries where it is primarily men who are making policy decisions that directly impact women. This is key not only in the traditionally more "gender-friendly" sectors, such as education, health and human rights, but also in emerging sectors such as Big Data and AI. **As the development of the digital economy and the adoption of e-services continue to rise across the region, it will become increasingly urgent for policy-makers and regulators to develop strategies and regulation to tackle the risks associated with AI**, including in terms of data protection, privacy and the risks of gender (and racial) bias in AI algorithms that can lead to discriminatory outcomes. Building on the EC's White Paper "On Artificial Intelligence – A European approach to excellence and trust"[220], DEVCO is well placed to provide technical support to help regulators understand and consider these challenges.

Specific Recommendations on policy and regulatory frameworks
Conduct and support diplomatic efforts to advance the "digital for gender" agenda and accelerate the adoption of specific "digital for gender" policy frameworks (strategies, action plans, multi-stakeholder initiatives etc.), at the national and regional levels.
Advocate for and provide technical support to advance gender-sensitive regulatory reforms and policies about cyber security and artificial intelligence. Ensure that specific security challenges faced by women online, and the risks of gender (and racial) bias in AI algorithms are taken into account.
Advocate for mainstreaming gender equality in all government, private sector and civil society strategies, policies, action plans and budgets related to the digital sector. Provide the necessary technical support and capacity-building to do so and promote cross-sector collaboration.

[219] Nwaodike, C. and Naidoo, N. Fighting Violence Against Women Online: A Comparative Analysis of Legal Frameworks in Ethiopia, Kenya, Senegal, South Africa, and Uganda. August 2020. https://ogbv.pollicy.org/legal_analysis.pdf (consulted on September 08 2020)

[220] "On Artificial Intelligence – A European approach to excellence and trust," European Commission, Brussels, 19.2.2020 COM(2020) 65 final.

Specific Recommendations on policy and regulatory frameworks
Advocate for the inclusion of women in the policymaking process by collaborating with government and its partners to demonstrate the importance of inclusive and participatory approaches, for instance by using examples from countries with similar contexts.
Support initiatives, both governmental and CSOs, which help to strengthen legal protection of the online rights and privacy of women and men, including through stronger data protection laws and digital literacy. Ensure that local rules and regulations about data privacy and security are understood and taken into account in all digital interventions, i.e. existing legal and regulatory framework regarding online harassment and violence (consider for e.g., if women and girls are able to take legal action against perpetrators of online violence).
Conduct system analysis to understand the multidirectional impacts that gender inequalities have, and how they impact different aspects of digitalisation.

4.1.2 Pursue efforts to improve infrastructure and connectivity throughout the region

This study shows that despite a regional increase in digital infrastructure and connectivity, in particular mobile and internet access, significant gaps persist across the region. Addressing the general lack of connectivity and infrastructure requires investments is explored in the "Study in Digitalisation in Sub-Saharan Africa," which further develops DEVCO's role in addressing infrastructure in the region.

As highlighted in Chapter 2, **it is a strategic to focus on areas being left behind, such as remote and rural areas, where there is a greater gender connectivity gap than in urban areas.** Moreover, building strategic partnerships can help share the financial burden of building such infrastructures and also be an opportunity to partner with women organisations to better understand and address constraints and barriers faced by women and girls. For example, considering social norms and literacy gaps that hinder women's connectivity can be addressed in partnership with community organisations in broader infrastructure projects, i.e. by developing programming activities and/or raising-awareness and deconstructing gender roles to enhance women's willingness and capability connect.

Specific Recommendations on infrastructure and connectivity
Address the lack of infrastructure across the region by expanding fiber optic cables, through multi-stakeholder partnerships. Prioritize rural and remote areas.
Address the gender gap in mobile-phone ownership as a strategy to enhance women's access to connectivity. Establish partnerships with the private sector as needed.
Develop and/or support gender-sensitive "digital safe spaces" or ICT hubs for accessing digital technologies and/or e-services. In addition to women-only spaces, support mixed spaces through a community-based approach and ensure both women and men are engaged.
Overcome gender gaps in device ownership through creative approaches, such as promoting and supporting the use of communal devices.
In all digital projects, undertake activities / modules (amongst women, girls, men and boys) that deconstruct traditional gender roles in order to lift sociocultural barriers hindering women's access to digital technologies.

4.2 Digital Literacy and Digital Skills

Low digital literacy and lack of digital skills are key barriers to women's digital use and safety. Addressing the digital literacy gap between men and women, as well as expanding the offer and uptake of digital literacy training could be a force multiplier. **Governments' efforts to include digital literacy in educational programmes are important, but not enough to address the existing digital literacy gaps faced by women and girls, as access to education remains unequal.** Alternative training programmes (by civil society, the private sector etc.) are equally important, and provide the opportunity to specifically target women and girls and address the specific barriers and constraints (i.e. time/schedule constraints and socio-cultural constructs) to ensure their participation and learning.

Several stakeholders have pointed out that given complex and interrelated barriers, a collaborative approach is needed to improve women's digital literacy and skills and that insufficient focus and resources are given to these areas in existing programmes. The analysis of EC projects and initiatives done in the previous section confirms that few projects within the portfolio focus on promoting digital literacy and skills. In collaboration with the relevant stakeholders, **DEVCO should increase the number of digital literacy activities and/or projects to ensure that women and girls gain the skills needed to navigate the 4th Industrial Revolution safely and effectively.** Ultimately, this can contribute to women and girls' autonomy and empowerment, especially as technology is increasingly mainstreamed throughout projects. Lessons learnt from private sector and civil-society models should be considered to enhance relevance of training and women's participation, such as identifying specific skills needed by the tech industry in each country, including hands-on technical training to enhance employment opportunities, and tackle social norms that may otherwise discourage or impede women to participate. In Mozambique, the UNESCO YouthMobile project aimed to empower youth with the skills to become creative actors and leaders in digital societies by learning to design, develop and implement digital solutions addressing local challenges.

Specific Recommendations on Digital Literacy and Digital Skills
Promote the topic of digital literacy and skills as a core aspect of DEVCO's 'digital for women' approach, highlighting its multiplier effect for women and girls, with the goal to increase the EC's focus and funding towards digital literacy and skills activities, projects and programmes.
Support governments and other partners within the education sector in developing digital literacy modules for school curriculum across different levels. The goal is to promote a better understanding of the multiple technologies available, their implications and applications, as well as basic knowledge about privacy and protection of personal data and information.
Directly or indirectly develop and/or fund digital literacy projects and/or programmes, appropriated to the literacy levels and digital use of the population subgroups (defined by gender, age, socioeconomic background, rural/urban etc.). Participants should learn basic skills to navigate the 4th Industrial Revolution era, targeted to their needs.
Where applicable, fund and/or support the work of CSOs, community groups or local channels that are already promoting women and girls' digital and/or data literacy.
Combine both public education on digital with private sector education initiatives such as tech hubs and incubators to provide alternative training on digital basics and tools.

4.3 Digital for Growth, Entrepreneurship and Job Creation

As shown in previous sections, women's participation in the labour market and entrepreneurship scene is hindered by a variety of factors, ranging from socio-cultural and time constraints (i.e. care responsibilities, gender stereotypes etc.), to lower levels of human capital, assets and access to financial services. Unlocking the potential growth related to women participation in digital labour and/or entrepreneurship markets, requires a comprehensive set of actions, i.e. promoting a conducive regulatory framework, promoting inclusion through adapted services (i.e. financial) addressing their needs and bridging knowledge gaps (i.e. digital literacy and skills, as explored in the previous section).

Furthermore, there is a need for solutions to be market-driven and for projects to have greater focus on the sustainability of the supply-chain beyond the life of the project through an improved market systems approach. This reiterates the importance of working through and partnering with existing market actors and helping to build their knowledge, in addition to working with civil society. Multiple stakeholders, and specifically female tech entrepreneurs or management-level tech hubs stakeholders, have indicated that **donors should "back champions" (especially women) and invest directly in existing, early-stage but promising start-ups, rather than create new projects and ideas from scratch** (that are costly and require significant time and resources to be established).

Promoting existing innovators and entrepreneurs can go beyond financial investment and include wider capacity-building and ecosystem engagement activities that are gender sensitive and inclusive. For many female entrepreneurs, their inability to attend global conferences and events hinders the promotion of their ideas internationally and prevents them to learn from others in the global ecosystem. Providing opportunities would ultimately strengthen capacity and knowledge within many countries in Sub-Saharan Africa, but also serve as a tool to inspire others and generate female role-models for others to follow.

Specific Recommendations on Digital for Growth, Entrepreneurship and Job Creation
Advance and support regulatory reforms and policies relating to financial inclusion. Promote the design and implementation of conducive regulatory frameworks to unleash women's digital entrepreneurship potential, for e.g. supporting regulatory and policy reforms to tackle discriminatory laws that require a husband's permission for activities such as obtaining a loan or limit women's ability to travel internationally, as well as tackling customary laws that hinder women's access to assets/collaterals.
Pursue efforts to expand the offer and adoption of mobile-based digital financial services (FinTech) to increase the financial inclusion of women entrepreneurs in Africa (i.e. facilitating access to financing, technical assistance and regulatory support). It is vital to collaborate with service providers and user centered designers to ensure that technology works for those who are most excluded.
Develop specific projects to support women entrepreneurs (such as capacity building programmes, investment funds, and mentoring schemes) tailored to their specific needs, time and resource availability, i.e. gender-sensitive entrepreneurship training, supporting tech hubs in providing mentoring programmes etc.
Address the underrepresentation of women as leaders and entrepreneurs, across the innovation and digital ecosystem, i.e. by promoting and supporting female only networking avenues; identifying, supporting and rewarding existing female innovators and champions (in particular those embedding gender, inclusion and innovation in their products and services) etc.
Partner with the private sector to enhance the offer of services and solutions targeting women's needs, i.e. through inclusive marketing and/or awareness raising campaigns, tailored services, such as targeted financial services and products etc.

4.4 Digital Technologies as an Enabler for Sustainable Development and E-Services

The majority of EC initiatives analysed in this report fall under fourth D4D pillar, which constitutes the most direct opportunities to benefit the population, including women and girls. Although e-services can be of varying quality and accessibility, they cover a wide range of activities, and have generally improved access and affordability – the two main challenges faced by women and girls.

As shown in previous sections, Sub-Saharan Africa has seen the multiplication of mobile-based e-services, which have been embraced by African businesses, governments, consumers and citizens. Although they offer multiple benefits, it is crucial that foundational inequalities mentioned throughout this report (i.e. gender gaps in mobile-phones and internet access, and women's lower level of digital skills and literacy) are addressed to ensure that women benefit equally from these innovative services. Otherwise, the proliferation of e-services could instead be harmful for women and further exclude them from services and opportunities.

To do so, existing initiatives should be supported and leveraged to identify and address critical gender barriers throughout product, services or programmes lifecycles, through a holistic approach and collaboration. **There is a need to think creatively about innovation to overcome connectivity constraints and to limit over-dependence on technologies and internet.** In light of the current COVID-19 global pandemic, economies where there is a heavy reliance on mobile money are currently experiencing significant challenges as social distancing measures limit the possibility to access cash distributors in urban centres[221]. Additionally, the closures of public spaces (place of work, schools, libraries and cafes) where internet is often accessed will push even more women offline[222]. **This demonstrates how technology, whilst often considered the most promising solution, could lead to unintended or negative outcomes when disrupted.**

By better defining innovation, beyond technology itself, donors may have more meaningful and effective guidance for project design or innovation fund windows. A stronger engagement with the private sector actors can help understand how they are identifying societal issues and developing solutions to address them and increase market base. This could help inform (and reform) traditional donor approach, with projects that often tackle individual issues, relying heavily on grants or subsidies and potentially duplicating efforts.

[221] 'The covid-19 crisis is boosting mobile money', The Economist, May 28 2020. Link: https://www.economist.com/middle-east-and-africa/2020/05/28/the-covid-19-crisis-is-boosting-mobile-money (consulted on September 08 2020)

[222] Jorge, S. et al. 'Covid-19 Policy Brief: Internet Access & Affordability'. Washington, DC: Alliance for Affordable Internet and Web Foundation. 2020.

Specific Recommendations Digital as an Enabler
Identify mobile-based e-services 'niche' sectors that can benefit women and develop 'digital for women' projects by design, leveraging the EC's sectoral expertise (e.g.: e-health, financial digital services etc.).
Identify, partner and/or channel support towards existing systems, platforms and/or stakeholders advancing the digital for gender agenda. This is all the more important, as often communities and stakeholders are overwhelmed with development pilots and projects and may not be eager to participate in new initiatives.
Leverage the local ecosystem (i.e. online and offline networks, citizens, etc.) and their knowledge production (i.e. technological landscape, politics etc.) to inform needs and situational analysis, including understanding about the existing e-services, whether there is internet access or reliable power, government policies in place that support the use of technology etc.
Consider multiple forms of innovation and avoid assumptions that innovation requires the most advanced technologies. Consider low-tech and offline gender-sensitive solutions when appropriate (for e.g. developing offline solutions in remote and rural areas that lack the relevant infrastructure such as electricity or the internet).

4.5 Cross-Cutting Recommendations

4.5.1 Transform institutional culture and knowledge to systematically promote and support 'digital for gender'

As mentioned in previous chapters, although a significant share of projects includes 'digital' and 'gender' components, it does not necessarily mean that women's empowerment and gender equality are being directly enhanced through digital, but rather that these are mainstreamed components that co-exist in a project. There is a need to better understand how those components relate to each other within projects and draw areas of opportunity for enhancement. Moreover, greater collaboration and coordination between departments, projects and/or stakeholders to overcome the issue of "siloed projects" and ensure that digital and gender opportunities and challenges are addressed concurrently is needed.

To do so, significant institutional changes within the EC should be promoted. One of the transversal objectives of GAP II is to transform EU's institutional culture "to deliver on gender equality and women's empowerment in external relations". This includes developing processes and internal mechanisms to systematically support, track and measure gender equality. This existing framework should serve as basis and/or be expanded to include a "digital for gender" perspective, through systematically supporting, tracking and measuring the development and use of digital for women's empowerment.

The importance of building internal expertise and capacities at the intersection of gender and digital was identified by several stakeholders as a condition to enhance mainstreaming throughout project and programme design and delivery. Digital Gender Focal Points could be leveraged and encouraged to promote greater engagement at the Delegation and/or regional levels. They could also be tasked with promoting feedback loops between Delegation, regional and HQ levels, and the broader digital ecosystem (as described further ahead).

Specific Recommendations on institutional culture and knowledge
Design a holistic “digital for gender” complementary strategy or action plan that identifies priority areas at the intersection of D4D and GAP II and sets specific objectives and indicators applicable to all sectors. Consider that ‘women and girls’ are diverse groups, and as such, an intersectional approach taking into consideration not only gender, but also age, socioeconomic status, race, etc. is necessary. Ensure that these considerations are made before design stages so targeted approaches are fully embedded within all aspects of project design and delivery and that appropriate stakeholders are engaged and consulted
Ensure the on-going capacity building of core EC staff, not only about ‘gender’ and ‘digital’ separately, but about “digital for gender”, focusing on how it can be implemented throughout the project management lifecycle. To enhance specific “digital for gender” expertise considers providing gender-training to digital focal points and vice-versa
Create space for Gender Focal Points to engage with the D4D Hub, to encourage sharing of knowledge, experiences and lessons learned that could inform programme design in different countries, avoid duplication of efforts and promote regional collaboration.
Consider the creation of a “digital for gender” notation for projects, which allows assessment of the relationship between ‘digital’ and ‘gender’ components within the project.
Design gender-sensitive innovation processes to be iterative, inclusive and adaptable, rather than promote a one-size-fits-all solution that often limits sustainable impact and scale, especially for women entrepreneurs and by women users.
Set up technical support or create a Digital Gender helpdesk available to the Delegations that can provide capacity building through technical assistance.

4.5.2 Effectively mainstream ‘digital for gender’ throughout the project cycle

Whilst there has been considerable progress in the past decade with donors shifting from having a ‘plus gender’ or ‘plus digital’ approach to ensuring that gender and digital are mainstreamed within core approaches of programme and project design, ‘digital for gender’ is still a relatively new area in the field of development and not always widely understood. Often the terms ‘gender’ or ‘digital’ have multiple definitions and end up being considered superficially and separately, for e.g. being included merely in the project introduction, rather than by targeted design. **Ensuring that gender and digital are fully mainstreamed in programme design, first and foremost requires the team behind the design to understand these terms and how they might translate into programme delivery, outcomes and results.** The same can be said for the four D4D priority areas and the three GAP II pillars. Ensuring that all DEVCO and EU Delegation staff is fully versed in understanding these terms and approaches would increase the likelihood that programmes are aligned on using critical tools such as the DAC Gender Equality Policy Markers. It is essential to also build partner stakeholder capacity in this field to further enhance the internal efforts.

Effectively mainstreaming ‘digital for gender’ is essential to ensure the adoption and appropriation of a project, activity or even product, by its targeted audience. There are multiple examples across Sub-Saharan Africa and globally where this does not happen, and solutions turn out to be inappropriate, not useful or not relevant for the user. Mainstreaming ‘digital for gender’ in a project’s early stages can help address potential bottlenecks. For e.g. multiple mobile applications are developed exclusively for smartphone devices, excluding the

vast majority of women in rural areas of many Sub-Saharan African countries who often only own USSD phones. The usability of such products also needs to take into consideration digital literacy and skills, as well as connectivity and access.

Adopting participatory approaches to project design and monitoring, can also help ensure that women and girls are not only the beneficiaries of programmes, but active voices in the design and delivery of the project, and as such agents of change. To be up to date and engaged with beneficiaries, requires an in-depth knowledge of the target beneficiary or customer and the ability to adapt quickly and respond to their changing needs, as design and implementation of digital technologies can be an iterative process.

Specific recommendations on mainstreaming 'digital for gender' throughout the project cycle
Develop a toolkit to outline the steps and components to be considered in the design, delivery and monitoring of specific 'gender for digital' components within projects.
Promote the systematic integration of gender-disaggregated indicators for any digital component to ensure the visibility of women and/or girls within projects.
Promote gender-responsive participatory project design and monitoring, by engaging women, girls and multiple user types in each project phase. This should inform needs and allow for dynamically adapting project design and delivery based on the knowledge and experience of key stakeholders such as women and girls, from different socio-economic backgrounds, age, CSOs working on gender issues, or private sector companies specifically targeting women. Including a larger group than the initial target beneficiaries allows obtaining more comprehensive insights, such as women subgroups that might also be affected by the initiative, either directly or indirectly. Consider promoting learning opportunities for the beneficiaries, so they can provide enhanced feedback, through meetings, focus groups, text messaging, internet influencers, local celebrities etc. in a transparent way.
Engage with actors within the ecosystem (e.g. women in tech networks, women rights CSOs, mobile operators, e-government initiatives, digital infrastructure institutions etc.) over a prolonged period of time, and not solely at the design or implementation stages of projects. This can help to build greater understanding and collaboration amongst actors as well as build a solid knowledge base. It will also allow a deeper understanding of underlying barriers and constraints, both relating to gender but also relating to broader issues such as infrastructure that might not be possible to detect in a traditional needs-assessment.

4.5.3 Channel funding to support implementation of 'digital for gender' programmes and data collection

Beyond policy design and development, the actual implementation of gender-sensitive and/or 'digital for women' programmes and policies needs to be carefully considered. Countries in Sub-Saharan Africa are often affected by a lack of funds to implement policies, and populations living outside urban centres, particularly women and girls, often are not aware of policies changes and how these affect their rights. **The potential of Universal Access Funds (USAFs)[223] as a promising model to develop and implement gender responsive policies and programmes needed to close the digital divide and, specifically, to tackle barriers to internet access and use for women was mentioned both in the literature and by stakeholders.** These funds are more often financed through mandatory contributions from telecommunications service providers and are designed specifically to address access and usage gaps in communications services. However, lack of support, limited regulatory capacity to implement the programmes, and political impediments mean that universal access projects/funds are delayed and caught up in a bureaucratic process of political interests and

[223] USAFs are a public funding mechanism to incentivise the expansion of internet services in remote and underserved locations.

lack of implementation capacity. Supporting the formal implementation of USAFs could greatly support women's access to and understanding of policies.

Moreover, to further support and inform funding towards effective implementation of such programmes, it is crucial to address the gender and digital data gap. Overall, national statistics and administrative data about digitalisation are lacking across the region, and existing data is overwhelmingly not sex disaggregated. Similarly, existing gender data does not necessarily include digital-related indicators. This lack of sex-disaggregated digital data and statistics hinders not only the visibility and understanding of the specific challenges faced by women and girls in the digital field, but also hampers policy-making that could effectively address the 'gender digital divide'. This is all the more important as the increasing number of machine learning and AI models overwhelmingly represents men. If the data gap is not addressed, the number of biased models will increase and potentially lead to harmful and/or discriminatory outcomes.

Specific recommendations on channelling funding to support implementation & data collection
Ensure that appropriate and sufficient resources are available for the effective implementation of digital for gender programs, beyond policy or program design.
Address the 'gender and digital' data gaps across the region (by providing technical support for governments to gather and produce sex-disaggregated digital statistics and administrative data as much as possible.
Promote and support projects leveraging innovative data sources (e.g. Facebook ad data[224]) to contribute to bridging the digital-gender gap and inform programming efforts.
Support research and knowledge development about challenges faced by women and girls in terms of access to digital technology and tools, connectivity, digital literacy gaps, and online gender-based violence, including system analysis to understand the multidirectional impacts that gender inequalities have, and how they impact different multiple aspects of digitalisation, the data and information gaps, etc. This type of initiatives should be long-term and culturally appropriate and include men and boys.

[224] Digital Gender Gaps, Link: https://www.digitalgendergaps.org/indicators/

ANNEXES

ANNEX 1: METHODOLOGY

ANNEX 2: LIST OF STAKEHOLDERS INTERVIEWED

ANNEX 3: EC INITIATIVES ANALYSIS IN MAPS

ANNEX 4: LIST OF DIGITAL FOR DEVELOPMENT AND GAPII PROJECTS AND ANALYSIS

ANNEX 5: COUNTRY CASE STUDIES

5 ANNEX 1: METHODOLOGY

This study aims to identify the key factors and trends regarding gender and digital and its dynamics and specifically barriers that are holding back women from accessing the opportunities of digitalisation in Africa. This report encompasses the following main components:

- An introduction to digital and gender in Sub-Saharan Africa;
- An overview of trends, policies frameworks and ecosystems; and challenges and opportunities concerning digital and women's empowerment in Sub-Saharan
- Good practices and lessons learnt.
- An overview of current EC initiatives;
- A clear set of policy and programming recommendations.

This report uses three approaches to carry-out the analysis at a regional and national level, which are described in further detail in the sections that follow:

1. Selection of relevant and available Gender and Digital Indicators from International Organisations
2. Shortlisting of countries for further in-depth analysis through stakeholder interviews
3. Analysis of EC initiatives in Sub-Saharan Africa on the basis of mapping and project documents

5.1 Selection of Indicators

The four indicators selected were the **2020 World Economic Forum Gender Scores**[225], **Mobile Subscription Access per 100 inhabitants**[226], the **% individuals using the internet**[227]**,** and the **GSMA Connectivity Score.** A brief description of each of these indicators is provided below:

- **WEF Global Gender Gap Report 2020 (GGGR 2020):** The index benchmarks national gender gaps on economic, education, health and political criteria, and

[225] Mobile Gender Gap Report 2019, GSMA, 2019.
[226] 'Measuring the Information Society report', ITU Publications, 2017.
[227] The World Bank Data, Link: https://data.worldbank.org/indicator/it.net.user.zs

provides country scores that allow for effective comparisons across regions and income groups[228];

- **Mobile Subscription Access per 100 inhabitants:** The term "mobile-cellular telephone subscriptions" refers to the number of subscriptions to a public mobile-telephone service providing access to the public switched telephone network using cellular technology. It includes both the number of postpaid subscriptions and the number of active prepaid accounts (i.e. accounts that have been active during the previous three months). It includes all mobile-cellular subscriptions that offer voice communications. It excludes subscriptions via data cards or USB modems, subscriptions to public mobile data services, private trunked mobile radio, telepoint, radio paging, machine-to-machine (M2M) and telemetry services[229]. This indicator provides insight on mobiles, which is the most commonly used device used globally to access the internet, especially in Sub-Saharan Africa. Therefore, greater mobile subscription access could imply greater access to internet where other barriers do not exist (e.g. affordability or network coverage);
- **% individuals using the internet:** Internet users are individuals who have used the internet (from any location) in the last three months. The internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV, etc.[230];
- **GSMA Connectivity Score:** The Mobile Connectivity Index measures the performance of 165 countries against the key enablers of mobile internet adoption. Its objective is to support the efforts of the mobile industry, governments, and the wider international community to deliver on the ambition of universal access to the internet. This indicator addresses overall connectivity and provides an accurate dataset with data available for almost all countries in Sub-Saharan Africa. Countries are scored within a range of 0 to 100 across a number of indicators, with a higher score representing stronger performance in delivering mobile internet connectivity[231]. The GSMA Connectivity Score is built up through 35 indicators that feed into 12 dimensions that are aggregated to give a score for each of the four enablers. Scores fall within a range of 0-100. The four enablers are[232]:

  - **Infrastructure**: This indicator has four sub indicators; network coverage, network performance, other enabling infrastructure and spectrum,
  - **Affordability**: This indicator has four sub indicators; mobile tariffs, handset price, taxation, inequality,
  - **Consumer Readiness:** This indicator has three sub indicators; mobile ownership, basic skills and gender equality,
  - **Content and services:** This indicator have three sub indicators; local relevance, availability and online security.

5.2 Shortlisted Country Analysis

For each of the shortlisted countries, a number of qualitative interviews have conducted, with 42 interviews carried out in total. The interviews covered a broad range of stakeholders including but not limited to donors and existing EU initiatives,

[228] 'Global Gender Gap Report 2020', *World Economic Forum.* 2019. Link: http://www3.weforum.org/docs/WEF_GGGR_2020.pdf
[229] 'Measuring the Information Society Report 2017', ITU, Volume 1, Link: https://tinyurl.com/y7n77tsz (Consulted on September 08 2020)
[230] The World Bank Data, Link: https://data.worldbank.org/indicator/it.net.user.zs
[231] The GSMA Mobile Connectivity Index. *GSMA.* 2020, Link: http://www.mobileconnectivityindex.com/
[232] Ibid

government representatives, mobile network operators, women entrepreneurs, technology innovation hubs, existing private sector technology service providers. The semi-structured interviews discussed a range of topics and questions which were tailored to the specific stakeholders. The questions are illustrative, and the interviews remained flexible with open questions and the opportunity for respondents to lead discussion where appropriate. Interviews were carried out via phone or Skype and lasted between one to two hours.

The responses to these interviews were analysed at a country-level initially and case studies were developed for each country, which can be found in Annex 4. This analysis also formed the basis of the final report. Due to time constraints, interviews were carried out with as many experts/stakeholders as possible, however a full range of interviews was not possible across all countries.

The table below shows the topic areas and sample questions for stakeholder interviews.

Table 10: List of interview questions

Digital technologies	What are current trends in digital technologies in Country (rural / urban)? What are the most popular types of digital technology? Who is using them and how? Is there much gender focused or targeted content (male / female)? Which is there more of? Why do you think this is? Does it relate to who is generating the content or who is demanding it? How are they contributing to or changing / improving people's lives? What are the main challenges with digital technologies in Country X? (Prompt: cost, regulatory, skills etc.) What are others doing (donors, private sector etc.) & where are the gaps? What investment opportunities are there? What are the major barriers to investments / start-ups?
Gender	Do men & women have equal access to digital technologies in Country? Why is it harder for women (assumed) to access digital technologies? In what ways can digital technologies create opportunities or improve life for men? And women? Are there any differences? Do you think it is important to look at digital from a gender perspective? Does Country have supportive policies in place to promote gender equality? And specifically relating to digital technologies? Have you noticed any emerging issues and/or trends relating to gender & digital? Are there any trends in relation to women's empowerment online? Like websites and mags for instance, or blogging, or twitter visibility.
Affordability	What is the cost of mobile access? Data access? Is this affordable relative to cost of living in Country X? How many network providers are there? Cost of handset / tablet / laptop?
Online Security	How important is online security and data protection in Country X? Is it taken seriously? Are policies enforced on businesses (large and small)? Are consumers / users aware of data security issues? Have there been any major data / online security issues?
Policy and regulation for digital and gender	Overview of key policies and regulations in place or pending What are the major gaps in existing policy and regulation and its implementation? What are the key risks in not having these? What are the key strategic issues that international organisations or donors are best placed to lead on globally (e.g. access, standards, regulatory infrastructure)? Who will be best placed to implement the recommendations? What partnerships are needed?
Existing EU and other donor funded programmes in Gender and	General introduction to project: Are there other projects related to gender and digital that you admire or would recommend? Are donors in a position to focus [on topic X or sector Y], or are we still at an experimental phase? Where do you think the gaps are and/or need for better collaboration,

Digital	where could we best focus our efforts? How can we improve knowledge and information sharing across sectors, donors, partners and countries? In your opinion what should the ECs approach to digital be?
Best practices of digital for women initiatives	Examples of digital, gender or combined projects / applications. What are the key approaches used that they know of when look at digital for women initiatives? Is it usually mainstreamed in a larger programme or are programmes tailored and targeted to women only?
Tech Ecosystem	Who is working in the incubator / innovation space in Country X? Is it a popular and growing area? Who are the most successful tech companies in Country X? What are the biggest tech start-ups you know? Is it easy to enter this space? What are the challenges? Who is funding these initiatives? What are the main skills gaps? What are the roles of women? How many are female owned? (any specific barriers)

5.3 EC current initiatives analysis

The primary sources of information used to conduct this assessment are the "Digital Projects" database and the project documentation provided by the EC. As applied by DEVCO, the DAC Gender Equality Policy Marker was used to identify projects that "target gender equality as a policy objective"[233]. As such, a total of 55 projects, that have a DAC Gender Equality Marker of 1 (significant objective[234]) or 2 (principal objective[235]), were selected for review (see Table 13 below). It is important to note that the DAC Gender Equality Policy Marker indicates a commitment and intention towards activities relating to gender equality but does not provide indications for implementation or results.

A thorough document review of 64 internal EC project documents, including Terms of References, Project Action Plans, Project Reports, Proposals, Programme Agreements, Grant Agreements, etc. was conducted. In order to assess the relevance of available documents, a matrix indicating the corresponding project, scope of each document, number of pages and words counts for a selection of four keywords (gender, women, digital, ICT) was built. Moreover, the "D4D Priority Area" originally attributed by EC was revised by the team and updated according to the project documentation (when applicable). Out of 55 projects, documentation was missing (unavailable, damaged/corrupted file or other) for 5 projects. Out of the 50 projects for which documentation was available, the type and/or quality of information were diverse. The information provided by documents provided basic description/ understanding of the 'gender' component (general framework, objectives, activities and/or indicators) only for 44 projects.

For the 44 projects for which the available documentation provided enough information about gender components, basic descriptive statistics (frequencies) and cross-tabulation were produced to assess the number of projects at the intersection of the D4D Priorities and GAP II pillars. Using a deductive approach to qualitative data

[233] OECD, DAC Gender Equality Policy Marker, Link: http://www.oecd.org/dac/gender-development/dac-gender-equality-marker.htm

[234] ***Significant objective:*** *the contribution partly aims at advancing gender equality; however it would have been implemented even without the gender equality policy objective.*

[235] ***Principal objective:*** *the contribution directly aims at advancing gender equality; it would not have been implemented without the gender equality policy objective.*

analysis, the relationship between the 'digital' and 'gender' components were categorised as 'direct', 'indirect' or 'not related'.

Table 11: General descriptive statistics

General descriptive statistics	
Number of projects with 1 or 2 CAD Gender Equality Marker	55
Number of projects for which documentation was available	50
Number of projects for which the available documentation provided enough information about gender components for analysis	44

5.4 Development of the Recommendations and Limitations

Recommendations were formulated on the basis of the contextual analysis and trends on a regional and national level and then compared to the EC initiatives based on the digital initiatives database provided by DEVCO. This is not comprehensive of all projects, however provides a sufficient understanding of the scope of EC initiatives to provide concrete recommendations based on the four priority areas of D4D.

Due to the methodology and type of information available, results are not generalisable to all projects that include a gender and digital component. Moreover, the scope and quality of the project documents available vary greatly, which means that the type of information available about each project is not always comparable and there are potential biases in the analysis. For e.g., the "logical framework" or indicators of projects are not systematically available; and certain project documents were missing (5 projects had missing documents).

6 ANNEX 2: LIST OF STAKEHOLDERS INTERVIEWED

Organisation	Category	Name	Position
Regional			
Omidyar Network	Philanthropic Investment Firm	Thea Anderson	Director
FinEquity	Financial Inclusion Network	Nisha Singh GFCGP	Consultant
WiderNet	Digital Skills Women	Cliff Missen	Director
Web Foundation	INGO	Ingrid Brudvig	Gender Manager
Research ICT Africa	Reserach Institute Tech and Women	Enrico Calandro	Reserach Director
UNESCO Central Africa	Donor Agency	Salah Khaled	Director
Refactory and ICDLAfrica	Digital Skills	Mickael Niyitegka	Director
Cameroon			
New Generation Technologies (NGT)	Tech hub	Mpara Faith	Co-Founder and Operations Manager
Digital Renter	Start-up Tech	Fongoh Martin	Founder
Independent consultant	Start-up Tech	Amanda Shafack	Software Engineer
Côte d'Ivoire			
EU	EU Initiatives	Valerie Miranda	EUD Digital Focal point
EU	EU Initiatives	DIOP Mouhamnadou Mody	EUD Gender Focal Point
Technopolis Group	Consultancy	Tata Dinyuy Bolivian	Analyst / consultant
Democratic Republic Of Congo			
RUDI	NGO	Arsene Tungali	Managing Director
Ethiopia			
EU	EU Initiatives	Celine Tougeron	EUD Digital Focal Point
EU	EU Initiatives	Nader Tanja	EUD Gender Focal Point
RIDE	Tech	Samrawit Fikru	CEO
Social Enterprise Ethiopia	Tech hub	Barkeal Bayene	Chief Executive
Ethiopian Institute for Higher Educatior	Education	Margareth Gfrerer	Managing Director
Kenya			
AkiraChix	Digital Skills Women	Judith Owigar	Founder
Moko Home	Start-up Tech	Fiorenzo Conte	Director
M-Kopa	Start-up Tech	Rebecca Glas	Project Manager
Mozambique			
UX	Start-up Tech	Erika Rodrigez	Cheif operating Officer UX
Biscate	Start-up Tech	Frederico Silva	Founder
Niger			
EU	Donor Agency	Tim Dolan	Economist
Nigeria			
CITAD	Tech hub	YZ Y'au	Executive Director
Seam Fix	Digital solutions company	Michael Nwogu	Business Development Manager
PiggyVest	Start-up Tech	Odunayo Eweniyi	Co-founder
She Forum Africa	NGO	Inimfon etuk	Founder
TechHer	Tech hub	Chioma Agwuegbo	Founder - Strategist
Rwanda			
250 Startups	A private -Incubation Hub	Charles Shyaka	Manager
250 Startups	A private -Incubation Hub	Emmauella Ndwano	Community Manager
Inkomoko	Accelerator	Olive Ashimwe	Deputy Country Manager
Rwanda Development Board	Government Body	Camilla Kuckartz	Strategic Advisor
Rwanda Development Board	Government Body	Elodie Rusera	Chief Skills Officer
Exuus Ltd	a FinTech Company specialised	Steve Shema	Founder and CEO
EU	EU	Mugeni Kayitenkore	EUD Digital Focal Point - Rwanda
EU	EU	Inyange Karemera	EUD Gender Focal Point - Rwanda
PSF	Donor Agency	Peninnah	Head of Digitization
Sierra Leone			
iDT Labs / Code 4 Salone	Tech hub	Sylvester / Frances	Founder
Innovation Sierra Leone	Tech hub	Francis George	Founder
Sudan			
EU	Donor Agency	Delphine Marie	Gender Specialist
UNESCO	Donor Agency	Ellen Lekka	Programme Specialist
Zambia			
GIZ	Dev agency	Johanna Strohecher	Head of Component "Political Participation" GIZ Zambia
Asikana Network	Female Digital Skills	Chisenga Muyoya	Co-Founder
PhD student	Donor Agency	Hannah McCarrick	Former Tech4D officer at Sida in Zambia

7 ANNEX 3: EC INITIATIVES ANALYSIS IN MAPS

Figure 7: Geographical distribution of agriculture projects

Figure 8: Geographical distribution of governance projects

Figure 9: Geographical distribution of health and nutrition projects

8 ANNEX 4: LIST OF DIGITAL FOR DEVELOPMENT AND GAPII PROJECTS AND ANALYSIS

	Country	Title of Project	OECD Gender Marker	GAP II - applicable Pillar 1	GAP II - pillar 2 (if any)	D4D area (by experts)	Gender-Digital relation	Document available
1	**Angola**	Support to Local Development Programme (LDP) through Social Action Fund	1	N/A	N/A	Enabler	N/A	352903
2	**Angola**	FRESAN – Strengthening Resilience, Food Security and Nutrition in the Southern Provinces	1	SEEMP	VP	Enabler	Indirect	389710
3	**Angola**	APROSOC – Programa de Apoio Social	2	SEEMP	N/A	Enabler	Indirect	345526
4	**Angola**	Programme of Support to the Health Sector in Angola	1	SEEMP	N/A	Enabler	Indirect	316288
5	**Angola**	Higher Education Support Programme	1	Out	Out	Enabler	Out	Not available
6	**Angola**	World Vision – Land Governance	1	SEEMP	N/A	Enabler	Indirect	339679
7	**Benin**	DEFISSOL Project	1	Out	Out	Enabler	Out	Not available

	Country	Title of Project	OECD Gender Marker	GAP II - applicable Pillar 1	GAP II - pillar 2 (if any)	D4D area (by experts)	Gender-Digital relation	Document available
8	Cameroun	Cameroon Competitiveness Support Facility	1	SEEMP	N/A	Enabler	Indirect	410782
9	Central Africa	Support to the Governance of the Regional and National Infrastructure in Central Africa (SGRNI)	1	SEEMP	VP	Enabler	Indirect	400468
10	DRC	Security Sector Reform Support Programme - Defence Component (SSRSP)	1	N/A	N/A	Enabler	N/A	360635
11	Eswatini	Health, HIV and TB project Swaziland	1	N/A	N/A	Enabler	N/A	270935
12	Eswatini	TA for Development of a Social Protection system in Swaziland	1	VAWG	SEEMP	Enabler	Indirect	367906
13	Gambia	''Agriculture for Economic Growth'' with FAO	1	SEEMP	N/A	Job	Direct	383810
14	Ghana	Ghana Employment and Social protection Programme (GESP)	1	SEEMP	N/A	Job	None	383276
15	Kenya	Support to the agriculture sector transformation process and to decentralised land governance	1	SEEMP	N/A	Enabler	None	381418
16	Lesotho	Bridging Phase for Establishing ICM	1	N/A	N/A	Enabler	N/A	395918
17	Madagascar	AFAFI SOUTH	1	Out	Out	Enabler	Out	Not available
18	Madagascar	Food Fortification Programme (PFOA) for vulnerable populations in Madagascar	1	SEEMP	N/A	Enabler	None	3800032
19	Malawi	Afikepo	1	SEEMP	VP	Enabler	None	386012 385204
20	Malawi	Chilungamo	1	SEEMP	VP	Enabler	Direct	380805 383662 388112

	Country	Title of Project	OECD Gender Marker	GAP II - applicable Pillar 1	GAP II - pillar 2 (if any)	D4D area (by experts)	Gender-Digital relation	Document available
21	Mozambique	PROCULTURA	1	SEEMP	N/A	Job	Indirect	405279
22	Mozambique	PROMOVE agribiz	1	SEEMP	N/A	Job	Indirect	406349 407062
23	Mozambique	Accelerate progress towards Millennium Development Goal (MDG) 1c in Mozambique"	1	SEEMP	N/A	Enabler	Indirect	315626 316043
24	Mozambique	Spotlight Initiative EDF-ACP	2	VAWG	N/A	Enabler	Direct	404041
25	Mozambique	PFM and DRM support programme II Mozambique	1	N/A	N/A	Enabler	N/A	400965
26	Mozambique	PRO-ACT - Mozambique	1	SEEMP	N/A	Enabler	Direct	407855
27	Niger	Support to the operationalisation of the "Integrated Regional Agricultural Information System" - ECOAGRIS (Ecowas Agriculture Regional Information System) of the food security storage support programme in West Africa	1	SEEMP	N/A	Enabler	Indirect	346010
28	Niger	Support programme to the Civil Status reform in Niger (2017-2020)	1	VP	SEEMP	Enabler	Indirect	387504
29	Nigeria	EU Support to Response, Recovery and Resilience in Borno State (3RBS)	1	VAWG	N/A	Enabler	Indirect	402729
30	Republic of Congo	Project to Support Small Bean Producers in the Bouenza Region	1	SEEMP	N/A	Enabler	Direct	377479
31	Rwanda	Improved Child Rights Governance in Rwanda	1	VP	N/A	Enabler	Indirect	392651

	Country	Title of Project	OECD Gender Marker	GAP II - applicable Pillar 1	GAP II - pillar 2 (if any)	D4D area (by experts)	Gender-Digital relation	Document available
32	Senegal	Support for the modernization of civil status	1	VP	SEEMP	Enabler	Indirect	365460 325268
33	Senegal	Mapping of performance indicators in the field of sustainable agricultural development and food and nutrition security in Senegal.	1	SEEMP	N/A	Enabler	Indirect	376455
34	Sierra Leone	Support to the governance sector in Sierra Leone	1	VP	N/A	Enabler	Direct	390345 396380 406707 410585
35	Sierra Leone	Technical assistance in Sierra Leone in the areas of Civil Service Reform, Parliament and the electoral cycle	1	VP	SEEMP	Enabler	Direct	396380
36	Sierra Leone	Technical assistance in support of the governance sector in Sierra Leone in the area of civil registration	1	VP	SEEMP	Enabler	Direct	398504
37	South Africa	SA-EU policy dialogue on the Fourth Industrial Revolution (4IR)	1	SEEMP	VP	Connectivity	Indirect	377013
38	South Africa	Capacity building programme for employment promotion	1	SEEMP	N/A	Job	Indirect	381349
39	South Africa	Strengthening governance and capacity in local Government	1	SEEMP	N/A	Enabler	Indirect	374420
40	SSA	Trans-Saharan Fiber Optic Backbone (TSB) Project	1	SEEMP	N/A	Connectivity	Indirect	397340

	Country	Title of Project	OECD Gender Marker	GAP II - applicable Pillar 1	GAP II - pillar 2 (if any)	D4D area (by experts)	Gender-Digital relation	Document available
41	SSA	Organised Crime: West African Response On Cybersecurity And Fight Against Cybercrime (OCWAR – C)	1	VAWG	N/A	Connectivity	Indirect	402726
42	SSA	Africa Connect 3	1	SEEMP	VP	Enabler	Direct	411583 411584 411585 411586
43	SSA	Africa Connect 2	1	Out	Out	Enabler	Out	Not available
44	Togo	Programme d'Appui au Secteur de la Justice (PASJ) / Justice Sector Support Programme	1	VAWG	N/A	Enabler	Indirect	371437
45	Togo	Support Programme for the fight against climate change in Togo	1	SEEMP	N/A	Enabler	None	385911
46	Zambia	MDGi: Accelerating Progress Towards Maternal, Neonatal and Child Morbidity and Mortality Reduction in Zambia	2	SEEMP	N/A	Enabler	Indirect	319189
47	Zambia	Conservation Agriculture Scaling UP Project (CASU)	1	SEEMP	N/A	Enabler	Indirect	319514
48	Zimbabwe	Creating a Multisectoral Partnership for Supportive Regulatory and Policy Environment for Informal Traders and Adjacent Rural Districts	1	SEEMP	N/A	Job	Indirect	393731
49	Zimbabwe	Support to consolidation of the democratic process in Zimbabwe	2	VP	N/A	Enabler	Indirect	388651 380895 389371

	Country	Title of Project	OECD Gender Marker	GAP II - applicable Pillar 1	GAP II - pillar 2 (if any)	D4D area (by experts)	Gender-Digital relation	Document available
50	Zimbabwe	Resilience Building and Food and Nutrition Security Programme / Project: accelerated community actions for reducing stunting in Zimbabwe	1	SEEMP	N/A	Enabler	None	382451
51	Zimbabwe	TA ZAGP - Technical Assistance to the Zimbabwe Agricultural Growth Programme	1	out	out	Enabler	Out	Not available
52	Zimbabwe	ZAGP BEST - Beef Enterprise Strengthening and Transformation	1	SEEMP	N/A	Enabler	Indirect	403187
53	Zimbabwe	ZAGP IPVC - Inclusive Poultry Value Chain	1	SEEMP	N/A	Enabler	Direct	403186
54	Zimbabwe	ZAGP TranzVC - Transforming Zimbabwe's Dairy Value Chain for the future	1	SEEMP	N/A	Enabler	Indirect	403017
55	Zimbabwe	ZAGP SAFE - Transforming Zimbabwe's Animal Health and Food Safety Systems	1	N/A	N/A	Enabler	N/A	404913

9 ANNEX 5: COUNTRY CASE STUDIES

1. CAMEROON – CASE STUDY

Country Snapshot

Pop.(2020)[1]	Total land area (Km2)	Pop. Density (pp/Km2) (2019)	Urban/Rural Pop. (2019)		Life Expect. (2020) / years			Adult Literacy Rate (2018)			Total fertility rate (live births/ women) (2020)	GDP/ capita (USD) (2018)
			Urban	Rural	Ave.	Men	Women	Ave.	Men	Women		
26,446,383	475,442	55	56% 14,941,523	44% 11,604,340	60.3 years	59.0 years	61.7 years	77.07	82.63	71.59	4.6	1,533.7

Digital:

Mobile connectivity and penetration has been growing in recent years. This is marked by the wide extension of public infrastructure through the SAIL submarine cable laid in 2018, providing a direct link to Brazil and with onward connectivity to other countries in the Americas. The cable has substantially improved international bandwidth and led to further reductions in access prices for consumers. Within the country, 313 km of urban optical loops were installed across major cities in Cameroon, in an effort to raise urban ICT standards. The National Backbone of fibre optics currently stands at 12 thousand km, a distance that the government wishes to expand to 20 thousand to reach all areas (remote, rural etc.) of Cameroon and foster better quality ICT services[1]. Whilst access is improving, connectivity remains much higher in urban centres where 4G is widely accessed whereas rural areas are often limited to 2G or 3G.

Presently, around 95% of all electronic transactions in Cameroon are carried through the mobile money (m-money) services operated by MTN and Orange. In support for digitalization and technology development, the government launched its 'Cameroon Digital 2020' programme, aimed at improving connectivity nationally. Many small Information Communication Technology (ICT) projects form part of the overall programme. Further development is quickening in mobile banking and commerce, with Nextell having launched its own m-money service in late 2018[2].

1 "Cameroon Population (Live)", Worldometer, Demographics, Cameroon. Link : https://www.worldometers.info/demographics/cameroon-demographics/#urb (consulted on September 08 2020)
"Education and Literacy", Cameroon, UNESCO, Link: http://uis.unesco.org/en/country/cm (consulted on September 08 2020)
GDP per capita (current US$) - Cameroon , World Bank Data. Link
https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=CM (consulted on September 08 2020)

2. **Internet users in Cameroon[3]:**

- 7.87 million internet users in Cameroon (January 2020)
- The number of internet users in Cameroon increased by 570,000 (+7.8%) between 2019 and 2020.
- Internet penetration in Cameroon stood at 30% (January 2020).

Mobile connections in Cameroon[4]:

- There were 23.62 million mobile connections in Cameroon in January 2020.
- The number of mobile connections in Cameroon increased by 3.7 million (+19%) between January 2019 and January 2020.
- The number of mobile connections in Cameroon in January 2020 was equivalent to 90% of the total population.

Gender: according to the 2015 Web Foundation report, the key factors restraining women's access to internet and technologies included low literacy levels, high costs in relation to income, device access, perception of importance and usefulness, lack of time and insufficient infrastructure. The National ICT Strategic Plan 2020, in addressing the digital gender gap, establishes among its objectives the need to "support the development of female skills in the field of digital engineering", and to "support technological and scientific vocations for women"[5]. The country's ICT laws remain largely silent on diversity and inclusion within the ICT sector. This can be interpreted from the lack of provisions for gender, cultural and linguistic diversity within policy plans. Since it was passed seven years ago, the Framework Law on Consumer Protection, which includes articles dedicated to consumer rights and service quality standards within the technology sector, remains largely unenforced due to the absence of implementation guidelines[6].

Affordability (and taxation): there are five mobile network operators in Cameroon: Camtel, MTN, Orange, Nexttel, and Yoomee. The presence of multiple Mobile Network Operators (MNOs) has driven down the cost of accessing data and as a result, most people in Cameroon use smartphones to access data with very few households having wired connection to homes through Local Area Network (LAN) as a result of the high costs. Despite the registered growth and reduced costs of mobile operators, rural and poor communities' access to services remains a challenges, specifically because of the limited affordability. The average cost of 1GB of data currently stands at 2,000 CFA (USD 3.4) per month, a cost expected to rise with the proposed act of 200 CFA (USD 0.34) on foreign software and application downloads. The estimated per capita income in 2018 was USD 1,500, resulting in prevailing rates above the A4AI (Alliance for Affordable Internet)'s recommended 1GB of data equalling maximum 2% of the average monthly income[7].

Online security: there are no data protecting or privacy guaranteeing acts in Cameroon. Nevertheless, the national Constitution amended by the Law n° 96-06 of 18 January 1996, protects communications' privacy in its preamble. It specifically states that "the privacy of all correspondence is inviolate. No interference may be allowed except by virtue of decisions emanating from the Judicial Power". Similarly, the 2010 Cybersecurity and Cybercrime legislative pieces provide for the privacy of communications under Article 41 and under Article 44 determine as illegal the interception of systems of information exchange. Articles 42 and 26 established the obligation for service providers to secure and assure users' privacy and information confidentiality. Following Article 26(1): "Information system operators shall take all technical and administrative measures to ensure the security of the services offered. To this end, they

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2 "Grands Chantiers ", Minipostel, Republic of Cameroon (Ministry of Posts and Telecommunications). 24 November 2017. Link: https://tinyurl.com/yybzj53n (consulted on September 08 2020)

2 Lancaster, Henry, "Cameroon – Telecoms, Mobile and Broadband – Statistics and Analyses", *BuddeComm.* 20 April 2020 Link: https://tinyurl.com/y34my6ue (consulted on September 08 2020)

3 Kemp, Simon, "Digital 2020: Cameroon" Datareportal. 17 February 2020 Link : https://datareportal.com/reports/digital-2020-cameroon?rq=cameroon (consulted on September 08 2020)

4 Ibid

5 Toussi, Simon, "Overview of Cameroon's Digital Landscape", CIPESA. 12 September 2019 Link: https://cipesa.org/2019/09/overview-of-cameroons-digital-landscape/ (consulted on September 08 2020)

6 Ibid

7 Ibid

should be equipped with standardised systems that enable them to identify, evaluate, process and continuously manage the risks related to the security of information systems in the context of services offered directly or indirectly". Yet, there is no guiding principle specification regarding users' right to access and update such data, or the collection and conversion of personal data[8].

Section 1: Policy and Regulation for Digital and Gender

Digital: the ICT sector in Cameroon has experienced rapid and considerable evolution since 2010. Nevertheless, there is a steadfastness of the digital divide and affronts to freedom of expression online that has not matched the technical progress. There was a boost in the country's digital landscape in May 2016 with the introduction of the National ICT Strategic Plan 2020. This policy plan recognised the digital economy as a driver for development and set the legislative foundations for the increased investments in telecommunication and ICT infrastructure. This included the extension of the national optical fibre backbone to about 12,000 km, connecting 209 of the country's 360 sub-divisions along with neighbours: Chad, Gabon, Equatorial Guinea, the Central African Republic and Nigeria.

The national agencies governing the sector are the Telecommunication Regulatory Agency (ART), and the National Telecommunications Agency (ANTIC) – both function under the Ministry of Posts and Telecommunications (MINPOSTEL). The Ministry of Communication and the National Council of Communication are part of some of the other entities holding regulatory and advisory roles with regards to media. These agencies are guided by key laws that govern ICT including:

- The 1998 law on governing telecommunications and its amendment of 2005;
- The 2010 law on e-Communications, and its amendment of 2015;
- The 2010 law on Cyber Security and Cybercrime;
- The 2010 law on governing e-Commerce;
- The 2014 Law on the Suppression of Terrorist Acts. This enabled the support in the fight against terrorism and growing threats from the jihadist group Boko Haram. Unfortunately, the Acts also allowed for the censorship of journalism and critical opinions of the national authorities under the justification of preventing the spread of fake news and threats to national security. This was backed by the January 2018 directive to magistrates to, with clear identification by security services, "commit […] and legally prosecute any person residing in Cameroon who uses social media to spread fake news".[9]

The question of how to protect online freedom (especially of women who face a greater prejudice) while combating the admittedly real spread of fake news, radical Islamism and violent images is raised. Accredited professionals have all the more manoeuvring power if they act in the context of a recognised institution, as is the case of REPTIC or AIPAC (see Section 4: Cameroon's Tech Ecosystem for more information).

[8] Ibid
[9] Ibid

- The 2019 Finance Act, a new law which under Section 8, enacts taxation on application and software downloads produced outside of Cameroon. The act introduced the flat rate of 200 Central African Francs (CFA), equivalent to USD 0.34, per said download. As of now, there are no implementation guidelines for the taxes, however once in effect; they will generate additional revenue from digital platform users.

In addition to these laws, the plan for a Digital Cameroon by 2020[10] (established in 2016) focuses on defining strategic areas, actions with great impact on the digital development of the territory, enhancing the use of ICT services, alleviating poverty via job-creating ventures in the digital sector and increasing the national economic growth rate. According to the strategic document, implementation "requires a certain number of cross-sector actions such as improving on governance, enhancing human capital and digital confidence, taking into consideration environmental aspects and providing appropriate financial resources".

In September 2019, the Intergovernmental Committee of Senior Officials and Experts (ICE) for Central Africa met in Malabo, capital of Equatorial Guinea, to discuss the combination of efforts to accompany the digitalization process as a sub-region. Key recommendations included the creation and strengthening of sub-regional bodies, supporting the establishment of sub-regional technology, intelligences and information systems databases and setting up digital economy as a fundamental pillar for economic diversification. However, there tends to be a lack of implementing and enforcing abilities and cooperation between national infrastructures and costly region-wide installation systems.

Challenges: one of the major challenges in Cameroon is that whilst some relevant laws and strategies exist and are in place, there is little supporting guidance around the successful implementation of such strategies or laws. As such, many end up being unenforced. Furthermore, a number of the laws remain quite out of date and very few incorporate a gender lens. Although the gender digital gap's existence and need to be addressed is recognised, it is not included in the ICT Strategic Plan 2020's major projects. Within the plan's priority action areas there are three dimensions covered which indeed do not entail gender inclusive digitalization:

- The broadband infrastructure network development, progress of ICT and electronic sectors;
- The digital economy's activities development, qualified of "new economy". They can only exist with the realisation of the first dimension;
- The need to transform sectorial enterprises to integrate ICTs further, including in administration, government, poste, tourism, commerce; etc.[11]

Gender: Cameroon has made key strides toward gender equality and women's empowerment through major international commitments, including the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), the Beijing Declaration and Platform for Action, the Declaration of Heads of State and Government of the African Union on Equality between Women and Men, and the Sustainable Development Goals. However, although these international and

[10] "Strategic Plan for a Digital Cameroon by 2020", Republic of Cameroon (Ministry of Post and Telecommunications). May 2016 Link: https://tinyurl.com/y6tbx26q (consulted on September 08 2020)

[11] "Grands Chantiers", Minipostel, Republic of Cameroon (Ministry of Posts and Telecommunications). 24 November 2017. Link: https://tinyurl.com/yybzj53n (consulted on September 08 2020)

regional commitments take precedence over Cameroon's national laws, customs, and traditions, the preference for customary laws remains, and means that discrimination against women continues in Cameroon, especially in rural areas. Further, the Preamble of the Constitution of Cameroon includes several provisions that enshrine gender equality. But many questions about ending inequalities faced by women continue to linger, such as the recognition of sexual violence between husband and wife, protection for unemployed women, pension for widows, the continuation of child marriage, breast ironing, and other issues[12].

The Republic of Cameroun adopted as a 2018-2020 National Action Plan, the UN's Resolution 1235 of the UN's Security Council on Women, Peace and Security, and other related Council Resolutions. With the armed conflicts and insurgencies threatening stability in the country, women are amongst the first vulnerable populations and endure suffering disproportionately. The main challenges faced by women in Cameroon today are GBV, overrepresentation in poverty rates, low access to information, land, finances, technology, entrepreneurship and leisure time. Access to information, finances, technology and entrepreneurship are all connected to increased digitalization. Similarly to the mention of gender in the ICT Strategic Plan, ICTs are only mentioned in Resolution 1235 and are not entrenched in the activities and plans striving for gender equality[13]. Indeed, the 4 "Horizon 2020" commitments are including women in:

- The participation and in leading the processes of peace building and armed conflicts prevention,
- The conscientious respect of human and women's rights against GBV,
- A better integration of "gender" components in the emergency aid and reconstruction efforts,
- The reinforcement of institutional mechanisms and quantitative and qualitative data collection.[14]

Challenges: the representation of women in politics is low in Cameroon. Apart from the National Assembly where there has been some notable advance with 31 women representatives, (equalling 11% total), a delay persists in other institutions: 16% in Government (11 women out of 68 ministers), 26% in the Senate (with the last senatorial elections of 25 March 2018 seeing an increase from 20 to 26 women out of 100 senators), 8% in municipal councils. No women were selected as candidates for the presidential election in October 2018. However, of 3,108,453 registered voters for the presidential election, roughly 45% were women. In the legislative elections of February 2020, women's representation was of 34.73% of seats[15]. This is in part the result of a lack of high quotas or enforced gender representation laws. Where these exist, women enter the political scene but have very little room to enforce their agendas because they were appointed rather than elected. In social and economic matters, wages remain unequal between men and women, especially in the private sector. The majority of women either work in food-

[12] "Ending Inequality Against Women in Cameroon", United Nations Foundations. 7 December 2017, Link: https://unfoundation.org/blog/post/ending-inequality-women-cameroon/ (consulted on September 08 2020)

[13] "Plan d'action national de la resolution 1325 […]", ONU FEMMES. August 2017. Link: https://tinyurl.com/y3zk6wkd (consulted on September 08 2020)

[14] Ibid

[15] Abdelmessih, Sandy, "Cameroon: Parliamentary elections 2020", Make Every Woman Count. 10 May 2020. Link: https://tinyurl.com/y4kvwlv5 (consulted on September 08 2020)

production, agriculture and informal sectors or face underemployment. This hinders the exercise of other rights, including participation in political life[16].

In accessing digital technology, women face the barriers that exist for all poor and rural Cameroonians: affordability of mobile data, of devices, time constraints, low (digital) literacy rates, poor infrastructure etc. Traditional gender roles in Cameroon are still largely maintained, at the expense of women, who constitute 71.6% of the informal agricultural sector[17]. In terms of gender-based violence, the violence in the North has aggravated the already alarming rates of domestic, emotional and sexual violence. 51% of Cameroonian women report having suffered forms of violence by a lifetime and/or sexual intimate partner[18].

Section 2: Existing EU Programmes in Gender and Digital

Cameroon is one of the focal countries of the **EU-funded Africa-Europe Innovation Partnership** and furthermore, Cameroon based Technopolis is the lead implementing partner for the Partnership. This project aims to build on the energy and awareness of Africa's new generation of entrepreneurs and innovators – the real game-changers in Africa's future economy. This is being done by connecting innovation and technology hubs in Africa with those in EU Member States. The project's aim is to share ideas and methodologies to access new sources of funds; it started in January 2019 and will go on for another two years. The role of the Technopolis Group project is that of a facilitator, a network builder – to bring people together. One of the project's first tasks was to identify a shortlist of hubs, on both continents, that are both willing and able to cooperate with their counterpart on the other continent. The initial launch event in Kenya, organised by Technopolis Group, brought together 21 carefully selected hubs: 10 from Europe and 11 from Africa.

There are a number of other EU supported initiatives in Cameroon that include a digital component or focus. These include:

- **The Support Programme for Improving Economic Competitiveness in Cameroon (PACOM)**, which aimed to develop administration centres for business start-ups and developed an e-registration site called mybusiness.com, to support more effective and productive business development and growth. This programme came to an end in 2018 and has been followed by other initiatives that build up on the lessons learned;
- **The Support System for Cameroon's Competitiveness (DACC)**, with a second component focusing on improving the business climate and extending online registration of businesses to new regions of the country. The project will assure gender equality in all the activities, including in the recruitment of consultants, gender sensible communication tool use and in the development of training curricula. The project will most notably target SMES led and owned by

[16] "Women's Economic, Social and Cultural Rights in Cameroon", Women's International League for Peace & Freedom Cameroon, 65th Session. 25 January 2019 https://www.wilpf.org/wp-content/uploads/2019/11/Cameroon-CESCR_EN.pdf (consulted on September 08 2020)

[17] "Data on gender equality in Cameroon", OCHA, Relief Web, 23 October 2019. Link: https://reliefweb.int/report/cameroon/data-gender-equality-cameroon (consulted on September 08 2020)

[18] "Gender Database on violence against women, Cameroon", UN WOMEN, 2020. Link: https://evaw-global-database.unwomen.org/fr/countries/africa/cameroon (consulted on September 08 2020)

women. Here the relationship between the gender and digital component is indirect; women will reap the advantages of extended online registration of businesses but are not directly targeted.

DACC beneficiaries in Cameroon
Source: Union Européenne au Cameroun, Facebook Page, 8 June 2020. https://tinyurl.com/y59z6zae

- **The Sectorial Reform Contract on Rural Development** is being implemented to provide a comprehensive database on rural communities and on-going development works;
- **The Programme for Improving Governance in the Forestry Sector (PAMFOR)** includes a digital component to create an IT system for verifying the legality of forestry exports.

The last two projects will ultimately be beneficial for women as they are, as Cameroonian citizens, part of the pool of beneficiaries. However, they are neither targeted specifically, nor included in the project activities.

Section 3: Best Practices of Digital for Women Initiatives

Whilst barriers to accessing digital technology, such as affordability, are universal to men and women in Cameroon, women face further barriers to digital access as a result of socio-cultural norms. It is not uncommon for girls to first experience digital technology until after leaving their home. Most households would chose to educate boys over girls resulting in much lower literacy levels for girls. As such, creating opportunities to develop digital literacy at a young age is particularly important for women and girls as well as creating embedded strategies to overcome barriers to accessing digital technologies and services across different sectors.

A number of initiatives have been implemented in Cameroon to overcome these barriers including sensitisation of women and girls about ICT and digital technology through mentor programmes, talks and identifying role models. Other female led tech enterprises have focused on digital as an enabler such as in the health sector. Some examples of such programmes and their areas of accomplishment, which can provide insight into best practices for gender equal digital technologies and services, are described below.

Networks: ICT4KIDS

Faith Mpara has been shaking the tech ecosystem in Cameroon through her ICT programmes for kids. She is the Co-founder and Manager of New Generation Technologies (NGT), a software development start-up in Buea. Founded in 2014, Faith has managed the NGT for over two years. The start-up began with the aim of providing tech-based solutions to educational institutions to help schools save time and money in the management of records through the “Scholar” software project. Faith and her team developed Scholar to manage records in Primary, Secondary, and High schools through a web-based application assisting schools to store and track records of pupils, staff, and results. This helps to transfer the performance of repetitive tasks like results compilation, periodic reporting, and data backups to electronic devices.

Following the success of Scholar and coupled with her passion to provide quality education to children and youths, she launched the first edition of ICT4KIDS in 2018. This training programme is aimed at educating and empowering children in Cameroon through a six-week programme where they train youth aged 5 to 18 years. They receive training in computer programming, game development, and graphics design. The programme also includes talks, personal mentoring and business & technology training. Faith was frustrated with the patriarchal society that meant that young girls were told not to focus on education but rather focus on getting married and so set about changing this perception and helping girls to identify new opportunities.

Achievements: since 2018, ICT4KIDS has been working with 320 young girls to develop their digital skills. There are 54 mentors registered with the organisation who use a training of trainers model to roll out the training. Faith Mpara has received recognition and appreciation across the globe for her success. She was selected among other Cameroonians to take part in the prestigious Obama African Leader programme for 2019 and in 2017, Advance Media and COSDEF Group named her one of the 50 Most Influential Young Cameroonians in the “Science and Technology” category. The same year, she received the prestigious Tec women Award for 2017. She has won the Bertelsmann Data Science Scholarship Challenge and the Tony Lemuel Entrepreneurship Award. Faith was also among the first female African developers to participate in the Google Summer of Code (Go).

Networks: Women tech makers (Google development groups)

Amanda Shack has been leading Women Tech Makers group for over 3 years. The groups are supported by Google as part of their wider Google Development Groups. Under the Women Tech Makers, they organise technology related events to help women gain skills to code and use the internet.

Achievements: the group holds monthly workshops and has over 225 female members of which around 90 are actively participating in the workshops.

Education: Educlick

Angele Messa is the cofounder of EduClick, an EdTech company in Cameroon which seeks to change the African youth unemployment narrative by presenting a platform for young people to tap into the power of technology to reduce academic failure, access decent jobs or create jobs through entrepreneurship. EduClick is a tech company which specialises in developing alternative learning methods for

those who cannot access formal education due to poverty, armed conflicts or who live in rural areas with limited or no access to quality education. It offers e-learning services - a market place where professional from diverse fields can sell their skills and where learners can learn new things at very affordable rates. It also offers online revision for high school students, aged 12 to 18 years, to revise their lessons and improve their grades with a bank of over 40 thousand multiple choice questions. There is also a maker space where they offer coding classes; immerse kids into modern technology like 3D printing, virtual reality and gaming. The aim is for young people to get involved in tech when the time comes to choose a career. EduClick leverages all aspects of technology to reach their target beneficiaries. It mostly uses offline technologies like USSD, downloadable offline apps and e-networks given that 80% of the target beneficiary are offline.

Angela Messa presenting Educlick, a platform all the more relevant since the established curfew and closing of schools in efforts to combat COVID19 spread[19]

Achievements: EduClick has reached over 3,000 youth in Cameroon and has received several national and international awards like the 2018 African Union Education Innovation Prize; and featured amongst 50 Most Influential Cameroonian Young Entrepreneurs by Avance Media[20].

EHealth: Infiuss

Infiuss, founded by Melissa Bime, is a blood bank management system that connects hospitals with blood banks to hospitals without blood banks. Infiuss operates as a “blood bank” collecting and categorising blood supplies, but also as a database of all the blood types available at various hospitals. In an emergency, a hospital will call or send a text message to Infiuss, which will efficiently check where the required blood is available via the digitalised platform, organise the collection of blood supplies and coordinate delivery by motorcycle.

Achievements: ss of 2018, Infiuss has transported over 230 litres of blood via six hospitals. This number was expected to rise substantially as the partnership expanded to 908 hospitals across Cameroon in the last year.

EHealth: GiftedMom

GiftedMom helps pregnant and nursing mothers access quality health information and healthcare in Cameroon. Initially launched as an SMS service, GiftedMom has increased its value proposition to users by launching a smartphone app with richer

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19 Messa, Angele, "Cameroun : l’innovation qui permet aux jeunes d’étudier malgré la crise", Partenariat Mondial pour l’éducation. Link : https://tinyurl.com/y46aensr (consulted on September 08 2020)

20 Neba, George C., “Meet Angèle MESSA, AFREIN’s spotlight for February 2019”, Afro-Real Initiative. February 2019. Link: https://afrorealinitiative.org/meet-angele-messa-afreins-spotlight-for-february-2019/ (consulted on September 08 2020)

information and better features aimed at increasing their service quality. GiftedMom's dual approach of using both high-tech apps and low-tech SMS and USSD leaves no mother behind which is particularly important in Cameroon where smartphone penetration is low[21]. The application reminds future moms of doctor appointments for vaccines and consultations during pregnancies, eases booking for medical, laboratory or insurance appointments, allows parents to find babysitters, hospitals near them, and compares prices for all child-related services.

Achievements: as of June 2019, GiftedMom had supported over 170,000 pregnant women and nursing mothers and other users through SMS and mobile app platforms. GiftedMom is now seeking to expand its footprint across SSA. The start-up has been continuously praised and awarded prizes, from the "best e-health app" of the Commonwealth, to the Director, Alain Nteff, a 24 year old IT engineer, winning the Total Group's "best start-up creator". GiftedMom has also received grants from incubators as prestigious as African Leadership Network (ALN Ventures) based in Johannesburg[22].

Agriculture: Agro-Hub

Agro-Hub strives to break the cycle of poverty entrapping more than 70% of farmers living in the rural agricultural communities of Cameroon. The start-up works to provide these farmers with a much-needed community, along with markets to sell their products through an innovative use of both web and mobile technology. Agro-Hub creates an inventory of agricultural products (such as maize, potatoes, garlic, okra, egusi, yam, tomato and cassava among others) from farmers and sells them directly to the general public through AGRO-MART or "farmers' supermarket". This supplies hotels, restaurants, boarding schools, other retailers and exporters.

Achievements: AGRO-HUB won the Nestle Creating Shared Value Prize for 2016 and has connected roughly 10,000 farmers directly and indirectly across the country[23].

Section 4: Cameroon's Tech Ecosystem

Despite some amazing examples of digital entrepreneurship, much of which is spearheaded by women, Cameroon still lags behind other countries in Sub-Saharan Africa when it comes to use of digital systems. This is as a result of the lack of basic infrastructural resources: lack of affordable internet, devices and regular electricity supply. As a result, opportunities for youth especially young women, to access and acquire digital skills are limited.

One woman that Cameroon can recognise as having transformed the digital technology space is Rebecca Enonchong, founder of AppsTech. R. Enonchong had co-founded and chaired the Africa Technology Forum, a US-based non-profit initiative to encourage and educate Africans, women in particular, on the use of technology. Her vision included a physical gathering space for the community, called the African Centre for Technology, Innovation and Ventures (ACTIV).

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21 Ndichu, Peter, "Exploring the incredible growth of the Cameroonian entrepreneurship ecosystem", Mobile for Development, GSMA. 16 August 2019 Link: https://tinyurl.com/yyjph8uc (consulted on September 08 2020)

22 Mbadi, Omer, "Start-up africaine de la semaine: GiftedMom au secours des futures mamans", Jeuneafrique, 6 October 2016. Link : https://tinyurl.com/y2uteemy (consulted on September 08 2020)

23 Historical Review, About, Agro-Hub , Link http://www.agro-hub.com/about/ (consulted on September 08 2020)

Rebecca and her team later folded the Africa Technology forum, in 2005, due to unsustainable costs and a lack of external funding.

In April of 2010, three young technology graduates collaborated on R. Enonchong's vision and launched a grassroots initiative called "South West Technical Innovation Centre" (SO.WE.TIC), later renamed ActivSpaces short for "African Centre for Technology, Innovation and Ventures Spaces". Based in Buea, Cameroon, where there is a thriving university community with increasingly affordable internet connectivity, there was an abundance of ambitious young technology entrepreneurs. Local tech entrepreneurs were invited to use the ACTIV space, free of charge, with one condition: that they are actively working on a technology-based start-up. Being new to the scene, the initial response was understandably guarded - this was, after all, a radical approach for collaboration among start-up founders in Cameroon.

As the Buea chapter of ActivSpaces gathered steam, AppsTech Douala also provided some office space and staff to a growing number of tech events. May of 2011 marked a pivotal moment when the first Google Android Developer Challenge event in Cameroon was hosted at AppsTech. More than 50 developers from around the region participated, vastly exceeding expectations. This watershed event underscored the need for yet another physical gathering space to serve the local technology community in Douala. Thereafter, Rebecca allocated a permanent space within AppsTech's offices dedicated to technology entrepreneurs. ActivSpaces Douala was officially launched shortly thereafter around June 2012.

However, the start-up mentality is often working in silos and there existed a gap between formal education, vocational training and practical real world technology entrepreneurship skills. The few technology-centred events that did occur were often far afield in Douala or Yaounde. Opportunities for women tech entrepreneurs were lacking. Elements of a local start-up community were in place, although largely fragmented[24]. It was at this time that Buea became known as "The Silicon Mountain."

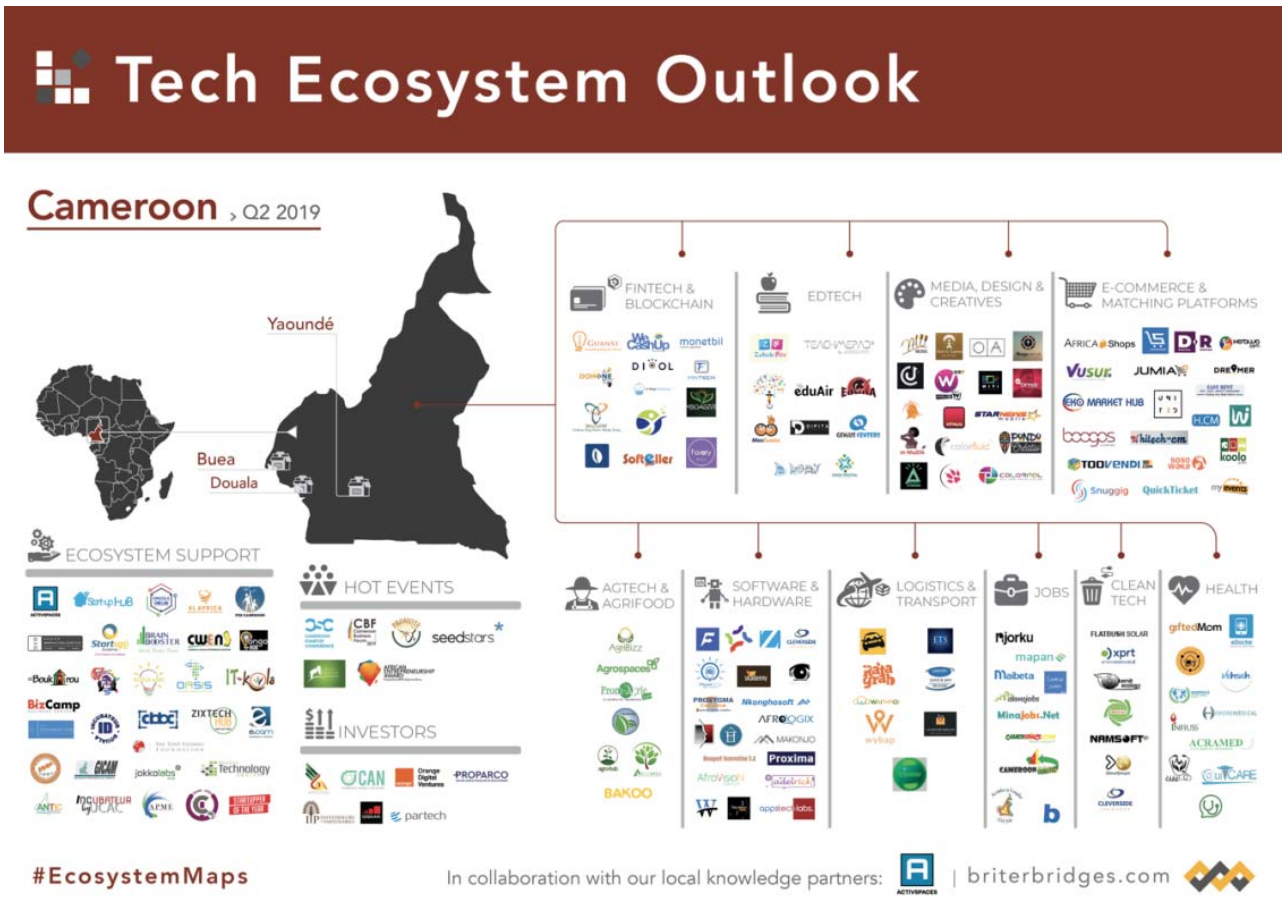
ActivSpaces now run nine different programmes offering support to technology start-ups with the Community Programme and the Start-up Incubator Programme having been maintained since inception as the lead and flagship programmes respectively. The rest were created in response to the growing needs of the start-up communities we serve. Whilst ActivSpaces is just one example of a technology incubator in Cameroon, its story is powerful and it has certainly led the way for many others as can be seen below, in the Tech Ecosystem Outlook.

Cameroonian technology and digital companies are regrouped under two main organisations: REPTIC (Network of Professionals of the Telecommunications, ICT and Digital Sector in Cameroon), and AIPAC (Association of Assimilated Professional Information Graphic Designers of Cameroon). REPTIC's objective is to have integrated and unified efforts in promoting ICTs, participating in the regulation of the sectors, transforming Cameroon into a strategic hub and transitioning the economy towards a more sustainable and politically advantageous nature. The idea is to create a space where reflection, debate and collaboration can exist between members[25]. AIPAC's mission is to gather professionals of the

[24] "Our Founding Story" *ActivSpaces*. Link https://www.activspaces.com/about/founding-story/ (consulted on September 08 2020)

[25] REPTIC.cm, 2019. Link: http://www.reptic.cm/fr/accueil/ (consulted on September 08 2020)

same domain to set quality standards and have a cooperative and consolidated voice in ICT development[26]. These initiatives foster fair competition and are a source of potential partnerships for the companies.



Section 5: Opportunities

As the tech industry in Cameroon continues to grow, significant changes are necessary for the growth to be sustainable. Following a three-month government-imposed internet shutdown in English-speaking regions that ended in early 2018, tech professionals have been left wary of the government as it announces plans to support the industry in the coming years. This suspicion of the government has also left Cameroonian business people hesitant to invest in this industry and as such many start-ups have sought investment from investors outside of the country. For Cameroon to fully enjoy the benefits of this growing industry, domestic investors must understand and support the rapidly evolving direction in which the world market is trending[27].

Based on the research as well as interviews with various stakeholders, the opportunities to create more impact when it comes to digital and gender in Cameroun are proposed as follows:

[26] AIPAC Facebook Page. Link: https://tinyurl.com/yxwyrr7z (consulted on September 08 2020)

[27] Lee, Rob, "Tech Industry in Cameroon" The Borgen Project. 18 December 2018, Link: https://borgenproject.org/tech-industry-in-cameroon/ (consulted on September 08 2020)

- **Build the capacity of government around gender sensitive policies** that uphold women's online rights, inclusiveness, and protect citizens from bulk surveillance, Internet shutdowns and censorship;
- **Lobby for government policies and greater support to policy implementation** that will make digital more accessible for all by lowering internet and mobile service costs and prioritising public access programmes;
- **Increase the investments in the ICT to improve the quality of internet services and its accessibility from a gender sensitive approach.** Linked to this, the last episode of corona virus has shown the very poor quality internet service when many people were forced to use digital solutions for example for distance meetings, but at the same time it has highlighted also the existing digital gaps and inequalities;
- **Develop targeted and structured programmes** to encourage female entrepreneurship and support women to secure finance, receive mentoring and access other resources needed for success and sustainability. The digital ecosystem in Cameroon should have more female driven entrepreneurship enabled by structures that encourage and provide space for women to access opportunities and promote growth;
- **Engage with communities and especially men and boys** to shift negative perceptions of women and girls accessing education and training, particularly relating to digital technologies. As women perform income generation activities in the informal and agriculture sectors, often in rural areas, digital solutions and services should target enabling the formalising of economic exchanges through marketplace platforms and offer offline solutions;
- **Provide funding or similar incentives** via innovative financing mechanisms such as innovation funds, public private development partnerships or direct support to tech hubs / innovation hubs and female and young innovators;
- **Developing youth digital skills and literacy:** multiple platforms have been developed to support youth and especially girls in gaining digital literacy and familiarising themselves with the tech sector before the end of high school. Having initial knowledge in digital can also allow for accessing platforms that support academic success and open up opportunities for advanced learning and job options;
- **Organize ICT innovation contests through call for proposals** to helps young talented women and girls to disclose their talent and build solutions that can later prove sustainable business ideas.

2. COTE D'IVOIRE – CASE STUDY

Country Snapshot

Pop.(2020)	Total land area (Km2)	Pop.Density (pp/Km2) (2019)	Urban/Rural Pop. (2019)		Life Expect. (2020) / years			Adult Literacy Rate (2018)			Total fertility rate (live births/ women) (2020)	GDP/ capita (USD) (2018)
			Urban	Rural	Ave.	Men	Women	Ave.	Men	Women		
26,280,018	318,000	81	50.9 % 13,081,753	49.1% 12,634,791	58.8 years	57.5 years	60.1 years	47.17	53.66	40.5	4.7	1,715.5

***Digital*:** The digital sector in Côte D'Ivoire is booming and has supported laying the foundations for a digital economy; a critical source of inclusive growth. As an established actor of the implementation of the 9th Sustainable Development Goal, Côte d'Ivoire seeks out the "building of a resilient infrastructure and promotion of a sustainable industrialization which benefits everyone and encourages innovation". The development of the ICT instruments, included in the 9th SDG, will provide support for inclusive growth. These tools are a true opportunity to integrate within the global economy, they are included in the ICT National Development Plan (2016-2020) Volume 1, the cross cutting policy for national progress, explained further below[28]. The sector has been boosted by the influx in local landscapes of smartphones imported from Asia - which are cheaper and hence more accessible- the arrival of 3G in 2012 and the establishment of fibre optics in 2013. The latter has a current deployment length of 1,400 km in the southwest and 549 km in the northeast. In 2017, the total deployment across the country was over 7,000 km, connecting all the administrative and economic centres of the country and enabling the subsequent arrival of 4G. This boom in mobile telephony has led to new consumer trends, particularly in e-commerce where more than 100,000 people subscribe to online sales platforms[29].

The digital economy regroups the sectors where commodities and services are fostered on technologic and digital spaces. According to ARTCI's (The Telecommunication/ICT regulating authority of Côte D'Ivoire) 2018 report, there are three digital channels that trigger digital economic growth in Côte d'Ivoire: inclusion (in the case of Côte d'Ivoire this is especially translated in mobile money (m-banking)), efficacy (online registration for education services, paying bills, transport tickets and other friction reducing services), and innovation. Based on indicators in these three channels, the sales revenues of digital economy in 2016 represented 11% of the real GDP, hence 1 833 billion F

[28] 'Contribution de l'économie numérique au PIB de la Côte d'Ivoire ', Autorité de régulation des Télécomunications/TIC de Côte d'Ivoire (ARTCI). May 2018, Link: https://www.artci.ci/images/stories/pdf/rapport_activite/resume_executif_pib_mai_2018.pdf (consulted on September 08 2020)

[29] Ibid

CFAs. The contribution of the digital sector to the nominal GDP is 9%. The telecommunications sector is the driver of digital economy, in 2014 5.3% of the GDP added value was attributed to revenues generated in the sector, while digital economy as a whole represented 5.7% of it.[30]

Particularly in the major cities of Abidjan and Yamassoukro, the Ivorian population has gained new digital habits with the growth of the sector; which has encouraged the adoption of new services and the development of new activities, creating values such as: e-commerce, mobile payment, outsourcing, production of mobile applications, audiovisual production, creation of video games, IT security, etc[31]. This growth has favoured the development of several local and international digital agencies and more classic communication institutions. Nevertheless there is still a need to look at ways in which digital can be developed further, especially for women and rural populations in the digital economy[32].

Internet users in Côte d'Ivoire[33]:

- There were 12.20 million internet users in Côte d'Ivoire in January 2020.
- The number of internet users in Côte d'Ivoire increased by 1.1 million (+9.6%) between 2019 and 2020.
- Internet penetration in Côte d'Ivoire stood at 47% in January 2020. Mobile connections in Côte d'Ivoire[34]:
- There were 34.12 million mobile connections in Côte d'Ivoire in January 2020.
- The number of mobile connections in Côte d'Ivoire increased by 1.6 million (+5.0%) between January 2019 and January 2020.
- The number of mobile connections in Côte d'Ivoire in January 2020 was equivalent to 131% of the total population.

Other digital indicators in Côte d'Ivoire[35]:

- Côte d'Ivoire is ranked 131th in the world and 9th in Sub-Saharan Africa in terms of ICT development (UIT 2017), exhibiting a progression compared to 2016
- The average increase in household expenses dedicated to ICT since 2016 is 0.2%, a higher rate than what is spent on health and education (0.1% each)
- Over 17 000 people were employed in the digital economy sector in 2016, with an increase rate in terms of employment volume at 9.6% per year.
- 444 billion FCFA were invested in the ICT sector in 2016, this was highly influenced by the deployment of the 3G and 4G infrastructure.

***Gender*:** In Côte d'Ivoire, the gender gap in digital, especially mobile money, is widest before the registration stage. It does not enlarge again until the high-power user stage, defined by a higher volume and higher value transactions every month, according to a 2017 GMSA report[36]. There is a gender gap before registration in two categories "mobile phone ownership", and "high levels of awareness of mobile money" among phone owners[3738]. This suggests that the lack of phone ownership excludes women from opening a mobile money account. Upon opening an account, women are as likely as their men to try the services and become regular users. Addressing the gender gap that occurs prior to the registration stage is hence key to reducing overall gender gaps in mobile money usage and later in digital spaces.

According to the same GSMA report that looked at Mali and Côte d'Ivoire, among phone owners, no barrier was consistently higher for women across all stages of the mobile money customer journey. Poor understanding of the service, perceived lack of need, and lack of money were the primary barriers reported by men and women in both countries. Other lesser, secondary barriers were low literacy levels, transaction fees, poor registration experience,

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30 Ibid

31 Côte d'Ivoire Urban Population, Worldometers, Link : https://www.worldometers.info/demographics/cote-d-ivoire-demographics/#urb (consulted on September 08 2020)
Côte d'Ivoire, Education and Literacy, Link: http://uis.unesco.org/en/country/ci (consulted on September 08 2020)
GBP per capita (current US$) - Côte d'Ivoire, The World Bank Data, Link: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=CI (consulted on September 08 2020)

32 Diallo B., 'The Big Digital dates in Côte d'Ivoire', *Afrikatech*. November 2019. Link: https://www.afrikatech.com/startbusiness/the-big-digital-dates-in-ivory-coast/ (consulted on September 08 2020)

33 Kemp, S., 'Digital 2020: Côte d'Ivoire', *DataReportal*. February 2019. Link: https://datareportal.com/reports/digital2020-cote-divoire

34 Ibid

35 'Contribution de l'économie numérique au PIB de la Côte d'Ivoire ', *op. cit.*

36 'Connected Women: Mapping the Mobile…', GSMA. April 2017 Link : https://tinyurl.com/y4uv828t (consulted on September 08 2020)

37 Ibid.

38 'National overview: Côte d'Ivoire', GSMA. Link: https://tinyurl.com/y55svqls (consulted on September 08 2020)

lack of trust, and technical issues. Secondary barriers were not consistently reported across the two countries[6]. There are however issues to be considered relating to gender-based violence and socio-cultural barriers that are highly prevalent in Côte d'Ivoire.

Affordability (and taxation): Affordability is a key barrier to the take-up of mobile services among low-income individuals, particularly women. Inequality is a big challenge in Côte d'Ivoire: the per-capita income of the top 20% of the population is seven times that of the bottom 40%. Government policy can help make services more affordable – for example, taxes on devices were reduced in 2015. Similar initiatives could help reduce the cost of mobile ownership. Mobile operators can also play a role in providing more affordable services through continuing to develop pricing structures and payment models that align with the needs and ability to pay of those on the lowest incomes and designing products and services for the needs of underserved groups, such as women[7].

***Online security*:** The government of Côte d'Ivoire has developed a number of measures to combat cybercrime as part of its national cybersecurity strategy. The strategy is based on a national assessment of the state of cybersecurity (completed in 2015) and multi-stakeholder consultations during events such as the West Africa Internet Governance Forum, of which Côte d'Ivoire is a member, or the Initiatives for Internet Governance in Côte d'Ivoire (IGICI), or the 2020 African Cyber Security Conference which took place in February[39]. Côte d'Ivoire adopted a specific cybercrime legislation, the Law n° 2013-451 on cybercrime. It includes criminal substantive rules as well as procedural rules. These texts are available on dedicated pages of the CERT's website and of the Telecom Regulation Agency's website[40].

Section 1: Policy and Regulation for Digital and Gender

***Digital*:** In December 2015, the government adopted the National Development Plan (NDP) 2016–2020, aiming to make Côte d'Ivoire an emerging country with a strong industrial base, reducing poverty and better distributing the fruits of growth, particularly for the least privileged and most vulnerable.

The country also has a National Master Plan for ICT[41] based on the following five axes:

1. Establishment of a regulatory framework for the telecoms and ICT sector;
2. Infrastructure development; Accessibility of ICTs;
3. Electronic governance;
4. Training and human capacity building;
5. The National Master Plan for ICT aims to achieve a contribution of ICTs to 15% of GDP by 2035[42].

The government of Cote d'Ivoire has been able to strengthen its role in the sector's development in recent years, especially after the establishment of the National Agency of the Universal Service of Telecommunications (Agence Nationale du Service Universel des Télécommunications, ANSUT) in 2012.

Working under the Ministry of Digital Economy and Post , ANSUT is tasked with steering the public digitalisation efforts, as well as regulating sector operators. A series of legal measures were implemented in order to accelerate the integration of the country's private and public sectors with the digitalisation efforts. In July 2013, the

39 'Why Abidjan, Côte d'Ivoire', Africa CyberSecurity Conference. 2020 Link : https://www.africacybersecurityconference.com/why-abidjan-cote-divoire (consulted on September 08 2020)

40 Ministère de l'Economie Numérique et de la Poste. Link : http://www.telecom.gouv.ci/

41 The Government telecom site exists but was unavailable at the time of publication.

42 Ibid

National Assembly adopted new laws to govern electronic transactions and e-commerce activities. The law also validated the use of digital signatures, a necessary founding step for the establishment of a digitalised public administration. The same year saw the approval of a law to strengthen the protection of personal data, setting-out the legal privacy guidelines for online users in the country.

Due to insufficient government server capacity, the Plan National de Développement (the National Development Plan), is among the few Ivoirien policy papers, along with the Health and Education plans, whose update and publishing to the public via official government website is constant and regular. The plan institutes articles that set the grand political directions for the following years. The 3rd strategic pillar of the plan focuses on ICTs as follows: "with the will to make the business environment more attractive and the economy increasingly competitive, the economic policies will be softened to attract international firms and favour the creation of local firms, notably in the digital and the ICT sector with the support of research and innovation […]. The second pillar of the NDP concentrates on the "human capital development and social well-being", although it seems natural that women are included in the "human capital", women and gender equality are not mentioned in any of the 5 pillars. In the ICT domain there were 5 priority sub-pillars identified under the NDP 2016-2020: the adequate development and implementation of a legislative and regulatory framework, the development of a broadband infrastructure, the promotion of access to ICT use, the catalysis of development of local content on technological and digital platform, and the development of a national expertise in terms of ICT[43].

During preparatory meetings concerning the NDP 2021-2025, several objectives regarding ICTs were discussed and provisional and temporary concessions were made. There was a consensus among experts and politicians that digital economy was essential to supporting economic structural transformation. There is a need to update the provided information concerning the adopted texts between 2011 and 2013. A clearer allocation of the tasks between ARTCI, the Ivoirien Agency of Frequency Management, the National Agency of Universal Telecommunications/ ICT services, and the National Society for Information Development would also be useful.

As of now their duties are respectively to: regulate the ICT and postal sectors; to exclusively manage radio-electrical frequencies; to carry out the activities relevant to the universal telecommunication services; and to dematerialise the procedures within public administrations and support the reinforcement of technology capacities of administrative agents. In the strengthening of information technology capacities, the construction of several laboratories and restoration of equipment should be completed. These include the Optical laboratory, the 3G laboratory with HUAWEI equipment and the multimedia.[44] The provisional agreements of the meeting regarding the 2021-2025 ICT NDP also established the wish to see an increase in the deployment of the fixed internet network, with only around 300 000 subscriptions in 2018.

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43 'Le Plan National de Développement 2016-2020', Ministère du Plan et du Développement, Gouvernement de Côte d'Ivoire, June 2017, Link : http://www.plan.gouv.ci/accueil/odd/3 (consulted on September 08 2020)

44 Anonymous source (3 Mars 2020, 10:30 – 13:30), *PND 2021-2025* - Réunion Ministère de l'Economie Numérique et de la Poste, ESATIC (Ecole Supérieure Africaine pour les TIC). URI

The meeting also served as a result assessment of the previous NDP. The G-byte per second capacity increased from 66 to 220 from 2016 to 2019, the total coverage of the population mobile telecommunication increased from 94 to 97%, the percentage of the population using internet went from 29 to 56%. In the case of linear fibre construction the state went from 1, 949 km in 2013 to over 7,000 km in 2017, beyond what was intended, even if some of these kilometres may not be operational. There are 6 national challenges to be surmounted in this new NDP some of which are reminiscent of the 2016-2020 NDP: the expansion of the telecommunications coverage to reach 100% of Ivoiriens, increase national cyberspace protection capacities, take measures beneficial to the development of e-commerce, plan for ICT applications within social sectors, form a national ICT expert pool and final develop administrative applications under free softeware. [45]

These regulatory reforms provided a framework for the emergence of e-commerce operations, several of which popped up in the following months. In 2013, international media and emerging markets-focused telecom firm Millicom launched several online commerce platforms, including Hellofood, a food delivery service. Furthermore, Nigeria-based online retailer Jumia, owned by Rocket, sells mobile phones, perfumes, jewellery and home goods to Ivorian consumers. Although a severe low point hit the Nigerian company in August 2019 with claims of fraud, and share price sinking on the New York Stock Exchange from 49.77 $ to 2.15$ in just 4 months, forcing the company to remove their Rwandan, Tanzanian and Cameroonian, the Ivoirien market today remains strong and the uncontested number one adversary to other e-commerce services[46].

Several other local brick-and-mortar retailers have since created their own online platforms. In 2016 regional retailing group CFAO launched Africashop, offering Ivorians online access to several brands. In 2016, Prosuma, a local supermarket firm, announced the establishment of Yaatoo, its own online market. Since then, the platform has increased its accommodation of references from 4 500 to 12 000 and has partnered with European brands to market products such as clothes, shoes and known brands.

Yaatoo collaborated with local digital initiatives to deliver products such as ALS, specialized in package consignment and transfer, and the National Poste. With solid allies like Ecobank Côte d'Ivoire that ensured secure and efficient online payment, Yaatoo was on its way to becoming a trusted platform. Yet, Ivoiriens that "used" and visited the platform were behind in the uptake of e-commerce habits. For example, over half of the clients still paid by cash upon delivery, and certain "costly" articles (i.e. electronics) were rarely confided to the delivery system. According to JeuneAfrique "despite the rapid boom of the sector, only 0.2% of the commercial transactions are realised online"[47]. For this reason, along with the competition from Jumia and the French Carrefour, Prosuma shut down Yaatoo, its e-commerce branch[48].

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[45] Ibid

[46] 'Jumia: the e-commerce start-up that fell from grace'. BBC News Africa. April 28 2020. Link: https://www.bbc.com/news/world-africa-52439546 (consulted on September 08 2020)

[47] Coulibaly, N., 'Côte d'Ivoire: Yatoo defie Jumia sur le terrain de l'e-commerce", Jeune Afrique Economie & Finance. 07 June 2019. Link : https://tinyurl.com/y2gmt4rc (consulted on September 08 2020)

[48] Konandi, J.M., 'Yaatoo, le fleuron ivoirien du e-commerce, ferme ses portes', SIKA Finance, 16 Septembre 2019. Link: https://tinyurl.com/y3y6alof (consulted on September 08 2020)

Another important regulatory step for the sector taken in 2013 was the establishment of a law to reduce the threat of cybercrime. The new law followed the previous establishment of the Platform for Fighting Cybercrime (Plateforme de Lutte Contre le Cybercriminalité, PLCC), which, since 2012, has acted as a task force to collect information and prosecute online crime offenders.

In parallel with the establishment of the national broadband network, the bulk of governmental IT projects over the coming years are set to come from the implementation of the country's ambitious e-government programme. Digitalisation of government services is specifically important for Côte d'Ivoire, where the political capital, Yamoussoukro, and the main economic hub, Abidjan, are some 230 km apart. As of Abidjan is still largely the de-facto political and economic centre of Côte d'Ivoire, there are a few governmental meetings in Yamoussoukro each month in an effort to de-centralize the power in the south. Digitalization and e-government development would be a stepping stone to continue this effort, decreasing considerably the time-distance complex.

In January 2019, Côte d'Ivoire introduced a tax on mobile money transactions of 7.2%, despite being intended as the responsibility of providers, it is unknown whether the costs will be passed on to the issuers of mobile money/electronic platforms.

***Challenges*:** Despite some progress and the implementation of a number of appropriate strategies and policies, there are still areas that are lacking and little or no consideration is given to gender throughout. There remains insufficient infrastructure and therefore utilisation. Other challenges relate to poor collaboration between the Government and infrastructure companies and there is an overall lack of skills in the area of digital services. However, there are ongoing discussions at the government level about development of new strategies to develop the digital economy.

According to Alain François Loukou in his 2012 "obstacles and implications to internet diffusion in Côte d'Ivoire" Study the main reasons are a low technological and economic dependence of Ivoiriens and an overall low literacy rate. In some of the poorer rural areas, the technological dependence is as simple as electricity and landline connection deficiencies. The socio-political instability of the 2000s resulted in an environment in which, where other sub-saharan African countries were significantly enhancing their infrastructure, Côte d'Ivoire took a serious delay. For this reason, in more rural areas, the uptake of technological habits is behind in comparison to the national economic capacity. The economic barrier is partly due to the scarcity of the technological infrastructure, but access to devices to access the internet is an issue itself. The literacy barrier is the final major restraint to internet diffusion. Despite the 1960 alphabetization campaign led by the government, illiteracy is still prevalent among the adult population. Under half of the population is literate (47%), it has one of the best rankings of West African francophone countries but still 10 to last globally.

Map of literacy rates in Africa[49]

Illiteracy renders technology and internet uptake practically inexistent. The most basic of technological skills are extremely complicated to master without founding literacy capacities. These three barriers are self-influencing and restrain each other from drastic short-term ameliorations. Cost and affordability can more easily be curbed with informal and underground markets, however literacy is a national effort that requires will and capacities from the top to the bottom political levels. Like in many developing countries, the vulnerable populations are those for whom these barriers are more prevalent, women in Côte d'Ivoire for example, have a literacy rate of 40%. The challenge of closing the gender digital gap in Côte d'Ivoire passes first and foremost through alphabetisation of women.

Côte d'Ivoire has another underlying issue caused by the armed struggles of the 2000s: the legislation, national data and administrative records are all outdated. The first real efforts to have comprehensive cross cutting policies in all political departments date back to 2013, since then the regulatory framework has not been the priority and only now are the authorities re-concentrating on these issues. It is hence difficult to find recent information sources or statistics that are nationally recognized and cover all areas. To some extent Côte d'Ivoire can be an indication to other countries where national data is lacking (i.e. Sudan), that even over a decade after the strife, there are still issues in getting representative information.

Whilst Côte d'Ivoire can be said to be more advanced in terms of digital development than some countries in West Africa - in terms of digital economy development and weight in the national GDP it is the 1st country of the West-African Economic and Monetary Union, and the 3rd country in the West African States Economic Community behind Ghana and Cape Verde - remains much less developed than African economic counter-parts such as Rwanda and Kenya in East Africa.

***Gender*:** During the 2001 political crisis, the gender power relations worsened. A 2008 United Nations Population Fund (UNFPA) report claimed that 67% of women were affected with gender based-violence (GBV) including physical, verbal, psychological and sexual respectively. The weaponization of sexual violence during the conflicts generated a collective trauma and stigmatization which further

[49] 'Modeling Literacy', ArcGIS, ESRI 2018. Link: https://desktop.arcgis.com/fr/analytics/case-studies/modeling-literacy.htm (consulted on September 08 2020)

aggravated the dynamics between women and men. The need for gender parity efforts post-conflict was especially relevant in Côte d'Ivoire; the way was paved for to push for women empowerment. National reconciliation programmes led by the Ivoirian government, the AfDB, 58 national NGOs, and UN agencies, were designed to contain components seeking to build the capacities of institutions responsible for the re-insertion of women and survivors into society[50].

At the beginning of the decade, politics dove into the integrating women and gender parity into decision making and conciliatory processes. Upon voicing their commitment to following various international recommendations, namely the 2012 World Bank Report: Gender Equality and Development and the Beijing Platform for Action, Côte d'Ivoire stepped up their creation of governmental bodies dedicated to bridging the gender gap[51].In 2012 the government of Côte d'Ivoire, in partnership with UN-Women facilitated a meeting with 40 key women rights advocates and government representatives. They came to the conclusion that gender issues should be integrated in all political procedures so as to address them comprehensively[11].In 2014, the government successively established the National Council for Women and the Observatory for Equity and Gender. Their role is to promote gender equality through a participatory approach, advise the government on women's rights and gender related decisions.

In 2018 Côte d'Ivoire became the second African country to set up and launch the African Women Leaders Network, hence galvanizing the movement of women leaders playing a role in the continent's transformation. The network's objective is to build and maintain connections with women in leadership positions and key societal sectors to involve themselves in the advancement of women and developmental issues in Côte d'Ivoire. 2018 also marked the year of the Ministry of Women, of Family and Children was re-structured[12].

The decree no. 2018-950 saw the attributions of services as follows: a cabinet, general directorates, external services and affiliated departments. This re-organization allowed a division and concentration of services, increasing their efficiency. An example of this is the creation of the Directorate of training institutions and of female education. Their specific missions are elaborated, written and available for all on government websites and published in public records, signalling a wish for advancement and transparency[52].

***Challenges*:** Côte d'Ivoire has come a long way in terms of achieving gender parity yet; it remains one of the countries where gender inequality is highest. The efforts

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50 'Côte d'Ivoire: Emerging from Conflict/multisector Support Project (Gender-Based component)', African Development Bank Group. Link: https://tinyurl.com/y6vn7sp8 (consulted on September 08 2020)

51 'Côte d'Ivoire launches the National Council for Women to guide efforts on women's rights', UN Women, Link:. https://www.unwomen.org/en/getinvolved/step-it-up/commitments/cote-divoire (consulted on September 08 2020)

11 'Being a Woman in Côte d'Ivoire: Empowerment Challenges', World Bank Regional Office Côte d'Ivoire. June 2013. *Link:* https://documents.worldbank.org/en/publication/documents-reports/documentdetail/263671468243906965/being-a-women-in-cote-divoire-empowerment-challenges-abidjan-country-office-gender-consultations-report-summary (consulted on September 08 2020)

12 'Côte d'Ivoire launches its chapter of the African Women Leaders Network', UN Women. 6 February 2018, Link: https://africa.unwomen.org/en/news-and-events/stories/2018/02/onu-femmes-lance-le-reseau-des-femmes-leaders-africaines-en-cote-divoire (consulted on September 08 2020)

52 Ministère de la Femme, de la Famille et de l'Enfant. Link: http://www.famille.gouv.ci/public/ministre/difef

after the political events and conflicts of the early 2000s did allow for a reformed thinking and genuine wish for development. Women lack same educational and professional opportunities men have and access to healthcare and family planning is limited. World Bank Chief Economist for Côte d'Ivoire Jacques Morisset claims that a three-fold approach to promoting gender parity should unfold in the country if an economic growth were to occur. These are: "a proactive policy aimed at reducing inequalities" especially in education, "identifying champions, and better yet, female champions able to carry this agenda forward" as it would impact families and the labour market upon implementing said policies[53].

Section 2: Existing EU Programmes in Gender and Digital

There are currently several EU funded programmes in Côte D'Ivoire. The 11th EDF (2014-2020), allocates 273 million € to 3 focal sectors: state building and peace consolidation (€60 million), Agriculture (€60 million) and Energy (€139 million). Within these, the following sub-projects exist:

- T**he Sectorial Reform Contract/Support for the Civil Status Reform in Côte D'Ivoire** has an important digital component**.** It is in its formulation stage and aims to develop more robust, trustworthy and secure systems to manage the civil registry and to ensure the accurate and effective delivery of civil status. This will modernise the current system and allow for more reliable data and IT systems.
- **OCWAR-C:** this project seeks to enhance the security and combat-abilities of the ECOWAS region's cyber-space. The idea is to "support regional initiatives to address the main threats to peace, security and stability" by "strengthening coordination and cooperation in security" and implementing "programmes to deal with other specific threats facing the region". This programme's gender component is not explicit, nevertheless, women seem to be the primary targets of online harassment and threats. Female officials are to be integrated in the OCWAR-C training and mentoring processes to tend to specifically to this. The ECOWAS countries will be consulted on how to gender-mainstream their recruitment procedures and policies. Although women in this project are included in the digitalization component and as beneficiaries, the relationship between the two components remains indirect because they are not the beneficiaries but will eventually enjoy increase security online.

[53] 'Côte d'ivoire: Policies supporting gender parity Could Bring $6-8 Billion to Country's Economy', The World Bank, *Press Release No: 2017/165/AFR*, 24 July 2017, Link: https://tinyurl.com/yd6a2y7p (consulted on September 08 2020)

Section 3: Selected Best Practices of Digital for Women's Initiatives

Whilst Cote d'Ivoire has made steady progress in recent years, ensuring that women also benefit from digital technology advancements has required some specific initiatives to be implemented. One of the most successful initiatives is the Orange Money Côte d'Ivoire "Offre Femme" (Offers for Women) programme. In August 2018, Orange Money Côte d'Ivoire had grown their base of female users of the service by a remarkable 84%. Women's average revenue or spend also grew by 20%. Offre Femme was one among a number of strategies that Orange implemented and was developed based on the following key findings:

- Orange Money female customers did not see the purpose of mobile money in their daily lives, they found the experience of using the service too complicated and often lacked the skills necessary – highlighting the literacy challenge in Côte d'Ivoire of 67% of women aged over 15 years old being illiterate;
- Women also reported lack of money as a barrier to mobile money uptake and use. And, as is often the case, women found they simply could not afford to use the service.

The service responds to the needs of both women running small business who need to transfer larger amounts of cash and individuals who transfer small amounts. Female mobile money customers receive preferential pricing on the two most popular mobile money services: P2P (person-to-person) and cash-out. Offre Femme customers have lower cash out fees at ATMs and women do not need a bank account and can simply request a code via their mobile phone to withdraw or deposit cash, recharge and request account balance. Both trust of and access to traditional mobile money agents in Côte d'Ivoire has been a challenge for some time. Reports in 2015 suggested that there were highest rates of customer per agent against the regional average (483 customers per agent, compared to a regional average of 220). Services have addressed this by offering assistance 24 hours per day, 7 days per week.

In designing Offre Femme for women, Orange recognised the importance of understanding how mobile money fits a woman's day-to-day routine; from running the household to earning an income. The research also observed the positive influence of a woman's social circle and found that women were reachable through women's associations, in particular women employed in agriculture as well as in more urban administrative roles. Orange Money are also aware that women are more likely to engage with influential females, both in their communities and through advertising. In addition to recruiting women as ambassadors for Offre Femme, they have invested in a TVC (Televised Campaign) to promote the service in a way that better resonates with women[54].

Education:

[54] Ryan, O. It doesn't need to be complicated – When simple tariff plans and affordable pricing for women works. GSMA, Friday 20 September, 2019, Link: https://tinyurl.com/y6nfu8hd (consulted on September 08 2020)

TRECC (Transformer l'Education dans les Communauté de Cacao – Transform Education in the Cacao Communities) : this initiative funded by the Swiss Jacobs Foundation aims to better the standards of living of children through the provision of quality education in part thanks to the private sector. TRECC also conducts scientific and social studies to measure the impact of literacy and education programmes in Côte d'Ivoire.

Achievements: In partnership with 12 firms from the cocoa and chocolate industry, with governmental and research institutions and with civil society organizations, TRECC has managed to positively impact 22 000 children in Côte d'Ivoire.

Eneza Education, operating under the product name of iEduk and also funded by the TRECC Programme, is an educational content subscription service for children in primary and secondary schools in Côte d'Ivoire. Developed in-house by local teachers in each field (Mathematics, French, English, History, Physics etc.) and aligned with the national curriculum, students can access lessons and assessments on any mobile phone via SMS with a daily, weekly or monthly subscription.

***Achievements*:** iEduk was launched in January 2019 and already reached over 3,500 cumulative users on the platform. Among these children using the service are close to 150 pupils aged 9 to 16 from the small city of Adzope, where their parents are farmers within the Cocoa cooperative of Cayat. Through a partnership with Nestle, the children were given a free access to iEduk content based on the promise from parents that their children would attend school every day.

A screenshot of an iEduk campaign during the Covid19 Pandemic (translation: with iEduk, your children will continue to learn and be on top. It's free!)[55]

These education projects, unless implemented in all girl schools, do not specifically benefit women and girls. However they are included in the beneficiaries. Moreover, it is highly recognized that mothers, being the primary caretakers of the children of the households, benefit from them being educated from the spill-over effect.

Environment & Recycling

[55] TRECC, 2020 https://tinyurl.com/yyhapqcl

Coliba, is a solution aiming at collecting and transforming plastic waste in Côte d'Ivoire. The start-up is working through the entire plastic recycling value chain. Coliba team collects plastic waste from households and businesses through a mobile app and a 40+ strong team of employed collectors, sorts and cleans the plastic at Coliba's facility. The team transforms the clean plastic into pellets and resells these pellets to local or international buyers who use them to create new goods.

***Achievements*:** Coliba now collect plastic bottles from over 3,000 monthly active users on the mobile app and recycle up to 2 tons of plastic a day, the start-up tackles no less than 3 local challenges: protecting the environment by avoiding for tons of plastic waste to end up in the nature, creating a mind-set change among the population by incentivising them to recycle, and fighting unemployment by formalising the waste picking business.

Similarly to the project above, women and girls are not the primary targets of this project. Nonetheless, women are over-represented in the informal sectors; it is not hard to imagine that they are especially interested in the formalization of the waste picking business.

Digital literacy training:

In 2015, MOOV launched Cyberlab with the aim of training for free 4,500 young Ivorians to deepen their knowledge of ICT, help them master digital tools and allow them to lead and develop economic activities on the internet. The professional training will allow beneficiaries to develop technical in digital and ICT competences. 240 free training sessions will be facilitated in over 20 cities and towns with the objective to educate the youth with a particular focus on active women of the rural zones. Originally a phone operating service, MOOV recognizes the importance of literacy and especially that of women and youth in rural areas, both as an economically viable investment and a gateway to development outside agglomerations.

Achievements: MOOV already has 6000 members aged from 18 to 35 that are waiting training. [56]

M-health:

In 2014, working closely with local authorities, Orange Côte d'Ivoire launched a mobile birth registration pilot service to allow people to register the birth of a child from isolated villages. Each village leader was given a mobile phone to register births in their local community. Similarly, the company established the MVaccination programme to re-inforce the vaccination rate in Côte d'Ivoire. The agreement was signed between the three parties involved the Vaccine Alliance, the Ministry of Health and Public Hygiene and Orange Côte d'Ivoire on the 4 of June 2018. The mobile network Orange is mobilised by sensitization and educative vaccination campaigns for children between the ages of 0 to 11 months and pregnant women[57]. The agreement also covered the gratuity of SMS and vocal

[56] MOOV Cyberlab 2020. *Moov Côte d'Ivoire.* 2019 https://www.moov.com/moov-cyberlab.html

[57] 'E-santé', Orange Côte d'Ivoire, Link: https://business.orange.ci/business/1/10845/esante-107639.html (consulted on September 08 2020)

messages responses to obtain more information. These initiatives were implemented through a collaboration with the Government[58].

E-government:

For the referendum and parliamentary elections in 2016, Safran Identity & Security implemented a voter registration system using biometrics, enabling the digital identification of voters. As a global leader in identity and security online, it was selected by the Independent Electoral Commission of Côte D'Ivoire to accompany the holding of two important ballots for the country. The implication of Safran Identity & Security provided a solution to the problem of revising the electoral list, biometrical registration permitted recording of new voters and those having changed household. At the time of voting, electronic identities were verified through digital prints. Biometrical secured tablets were also provided to authorities fastening the voting processes[59].

Vote supervising agents using the MorphoTablets to register voters in Côte d'Ivoire[60]

***Achievements*:** At the time of the 2016 referendum there were 6.3 million registered voters, around 60% of the population of voting age (over 18). In a period of two years, from 2016 to 2018 over 30 000 MorphoTablets have been delivered to the government of Côte d'Ivoire. Yet, at the time of the local elections in fall 2018, the use of the tablets has not been up to expectations. Tablet malfunctions, especially in rural areas.

Agriculture:

Advans Côte d'Ivoire has partnered with MTN to offer cocoa farmers a digital savings account using USSD, which makes it accessible across different types of phone and where digital literacy is a barrier for farmers. The cocoa sector in Côte d'Ivoire is vital to the country's economy; it contributes to 10% of the GDP. The workers of this area, considered too risky and costly to be clients, do not have access to traditional banking systems. Advans

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58 'Côte d'Ivoire: Orange CI aux côté du Gouvernement pour mettre en place un «Centre d'Information Gouvernementale sur le COVID-19»', Business France, mercredi 1 avril 2020, Link: https://tinyurl.com/y9qaqdpj (consulted on September 08 2020)

59 'Safran identity & security a contribué à la réussite des scrutins tenus en 2016 en Côte d'ivoire', Safran. https://tinyurl.com/y6rumrze (consulted on September 08 2020)

60 Ibid

Côte d'Ivoire first accelerated the financial inclusion of the targeted populations. Through the banking services, the workers receive their cooperative's payment as a digital and instant transfer. With existing agents like MTN Money, workers can deposit or withdraw funds as they please. To ensure the backing of the cocoa producers throughout their introduction to digital banking, Advans provided services of accompaniment – these are especially necessary given 47% of their clients are illiterate. Advans has taken the step to form and guide the farmers thanks to a network of agents mobilised on the field to facilitate this sensitization. Furthermore Advans developed a "school credit" project which seeks to help farmers of cocoa cooperatives have easier access to credit if it is used to pay for their children's enrolment fees.

Achievements: In 2017, more than 14 000 cocoa farmers from 188 cooperatives had subscribed to the service and had a savings account in a formal financial institution. The pilot "school credit" was a success in 2017; the following year 1100 producers were able to enrol their children in school. [61]

Section 4: Cote d'Ivoire Tech Ecosystem

With just around $2 million of funding received by local tech start-ups in 2018 according to VC firm Partech, Côte d'Ivoire remains a nascent tech ecosystem only now entering the top 20 African markets in terms of funding. Despite being a young ecosystem there are some promising tech ventures, which are often similar in that they are using mobile and digital technologies to offer solutions tackling local socioeconomic challenges, such as the examples presented in the above section.

There is a desire for mobile operators to join forces with the local start-ups. A message reiterated during the GSMA Mobile 360 West Africa conference where it was stressed that Education, Access to energy, Agriculture, Transportation were at the head of Orange local strategy[62]. Therefore, there are encouraging opportunities for collaboration between tech actors and providing funding mechanism for bringing ideas to scale.

With this boost, further success in boosting the country's IT sector will rely on a well-developed local talent pool. A set of measures to increase training for sector, involving public and private participation, are set to increase availability of human resources. A growing number of domestic and international instruments to support innovation are also expected to positively impact the ICT sector in the medium term. In order to further boost the technology ecosystem in Cote d'Ivoire, the Ivorian government, supported by professional federations, has been able to simplify business creation and offers tax advantages to ICT companies in the following ways: tax exemption during the first year for ICT companies; reduction of the administrative burden related to the tax audit of SMEs[63].

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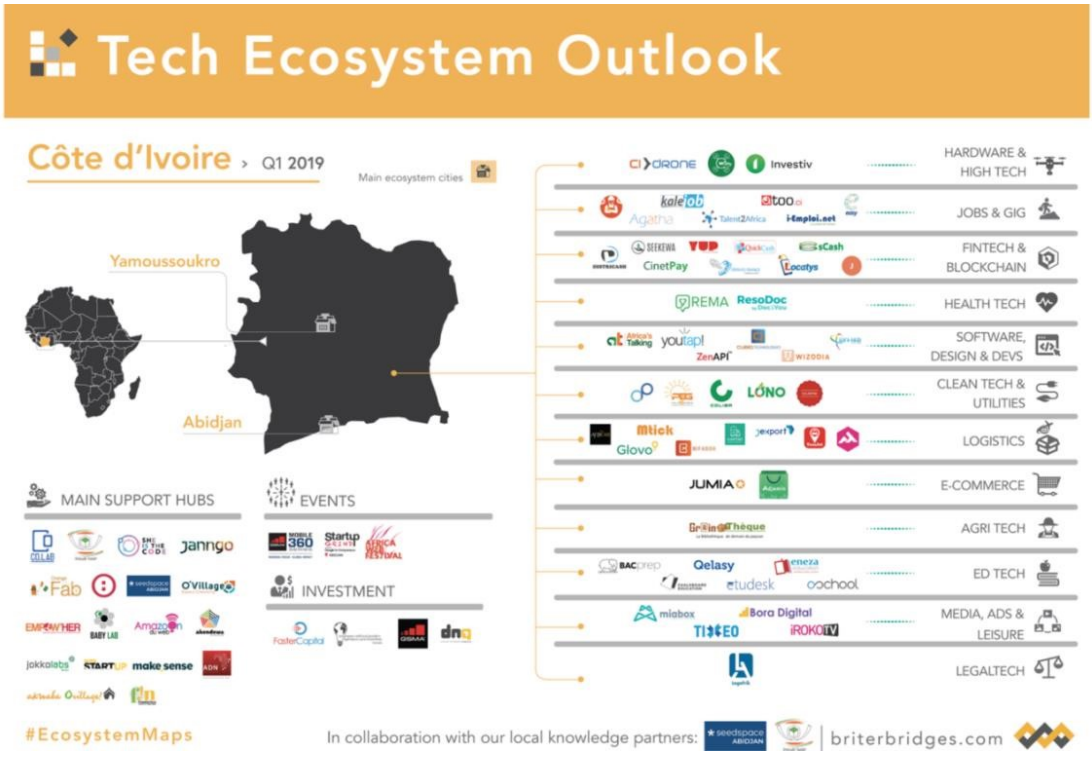
[61] 'Advans innove avec un service de banque à distance pour les producteurs de cacao ivoiriens', *Jeune Afrique*. Link: https://www.jeuneafrique.com/landing/advans-cacao/ (consulted on September 08 2020)

[62] Bayen, M., 'Akwaba to the Côte d'Ivoire tech ecosystem!' GSMA, Mobile for Development, April 2019 Link, https://tinyurl.com/yxnbs2np (consulted on September 08 2020)

[63] 'Dynamics of the Startup Ecosystem in Côte d'Ivoire', Digital Africa. 2018 Link: https://tinyurl.com/y2vdoz7h (consulted on September 08 2020)

The below diagram shows some of the key actors in Côte d'Ivoire's tech ecosystem in:



One success story in Côte d'Ivoire is that of "Jaango" – the self-acclaimed 'first African social startup studio'. In January 2020, Janngo launched the Capital Startup Fund, which is endowed with EUR 60 million will be committed to boosting the financial capacity of tech-enabled startup accelerating progress towards the Sustainable Development Goals (SDGs) in Africa. The venture fund comes with a support investment of EUR 15M (USD 16.6 M) from the European Investment Bank (EIB); the world's largest multilateral financial institution and the biggest provider of climate finance.

Founded in 2018 by Fatoumata BA, Jaango's focus is on developing, nurturing and investing in pan-African digital champions with proven business models and inclusive social impact. They also have a focus on supporting women entrepreneurs as currently talent is equally distributed between men and women but opportunities are not especially in terms of access to capital. That is why they invest 50 percent of proceeds in startups founded or co-founded by or benefiting women[64]. The venture fund develops ecosystems in high-growth sectors by providing business support and digital platforms allowing Small and Medium Enterprises (SMEs) to scale and contribute to the economic empowerment of youth and women through job creation and capacity building.

[64] Innovation Village, 2014. https://innovation-village.com/

Fatoumata BA , creator of Janngo, launching Jexport, the platform to accelerate access to markets for SMEs[65]

Section 5: Opportunities

Ongoing economic growth, combined with governmental measures to promote the sector, are setting the stage for the continued expansion of digital technology over the coming years in Côte d'Ivoire. One critical component for structuring the sector for the long term, however, will be securing an adequate volume of IT-savvy workers. This will depend, to a large degree, on government-led programmes to both train public administration workers to adapt to the ongoing e-government programme and expand the education and training possibilities for Ivorian graduates. However, as the private sector moves to adopt increasingly advanced IT solutions, in-house training within Ivorian firms will also make the difference in accelerating the adoption of IT.

Given the patterns of growth experienced by Côte d'Ivoire's economy, the ICT sector is set to follow the development pattern in other sectors. However, improving conditions for domestic IT companies to thrive, as well as calling on them to participate on the government-led programmes taking place, will help ensure that the expansion taking place in the IT sector can be maintained for the coming years[66].

- **Increase the human capital in technology and ICT sector through capacity building programmes.** Strengthening research and development in higher education as well as using the skills and knowledge of Ivorian diasporas who have practical experiences to take the digital economy transformation to a significant step forward; Using ambassadors to encourage uptake of technology and digital uptake has proven to motivate beneficiaries to do the same in countries like Rwanda (digital ambassadors). The more beneficiaries can identify to ambassadors, the more likely they will be to adopt their advice on how to integrate technology in their professional and personal lives. For this reason it is crucial to have women ambassadors.
- **Continue to support innovation funds and encourage applications from entrepreneurs, especially women;**

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[65] Trevor, 'Côte d'Ivoire: Janngo, the 1st social startup African studio […]' Africa News, 8 December 2018. Link: https://tinyurl.com/y5tm6dra (consulted on September 08 2020)

[66] 'Infrastructure, digitalization set pace for ICT Sector growth in Côte d'Ivoire', Oxford Business Group. 2020 https://tinyurl.com/y4cw5qna (consulted on September 08 2020)

- **Government and private sector should work together for shifting consumers' behaviours** towards digital transactions, making traditional traders understand the use of digital technology. Focus should also be given for awareness creation, encouraging digital entrepreneurship, innovation as well as attracting foreign investors who can transfer knowledge in building digital **economy**;
- **Support private sector led solutions to economic growth and eradication of poverty.** Rather than running large grant programmes, identify successful private sector businesses or existing start-ups and support them to create employment. Such programmes should target women disproportionately in order to mitigate the digital gender gap that will continue to increase if efforts are only **geared** towards men.
- **As seen in the Digital Challenges section:** the real solution to closing the digital gender gap and to digitalize Côte d'Ivoire further would be to increase the literacy rate, especially women's, given the considerably high literacy gender gap. Increased support to the education sector, especially in remote areas, and grass-root measures to convince children and their families to attend school as long as possible. Grass-root and communal initiatives such as TRECC are set out on this track.

3. DEMOCRATIC REPUBLIC OF CONGO – CASE STUDY

Country Snapshot

Pop.(2020)[67]	Total land area (Km2)	Pop. Density (pp/Km2) (2019)	Urban/Rural Pop. (2019)		Life Expect. (2020) / years			Adult Literacy Rate (2018)			Total fertility rate (live births/ women) (2020)	GDP/ capita (USD) (2018)
			Urban	Rural	Ave.	Men	Women	Ave.	Men	Women		
89,561,403	2,267,050	38	46% 40,848,447	54% 48,712,956	61.6 years	60.0 years	63.2 years	77.04%	88.52%	66.50%	6.0	561.8

Digital: The Democratic Republic of the Congo (DRC) is one of the poorest countries in the world, with a GDP per capita of US$562 and with 72% of the population living below national poverty lines in 2018. Social and political unrest have also affected the country in recent years. In this complex environment, mobile telephony represents a success story for the country. Mobile penetration grew from 2.2 million unique subscribers in 2005 to over 35 million in 2020. Furthermore, the mobile industry is thought to contribute more 30% of the revenue collected by the national tax collection agency. Despite some recent developments, the DRC lags behind many African countries in mobile connectivity.

Some key reasons underpinning these challenges include; the large population, dispersed and with low levels of education, which creates challenges in expanding coverage and encouraging purchase and use of mobile services; significant infrastructure challenges facing operators and consumers alike in terms of energy transmission. Frequent power interruptions or complete lack of infrastructure in some areas, mean that operators must use alternatives at significant cost or not cover parts of the country; and finally, complex taxation and regulation on mobile operators increases the costs of doing business, with mobile-specific barriers including mandatory paper-based customer registration for consumers. Operators are also subject to uncoordinated national and regional regulations and taxes, have to make payments to multiple revenue authorities and are subject to oversight by a

[67] DR Congo Population (Live), Worldometer, Demographics, DRC, Link: https://www.worldometers.info/demographics/democratic-republic-of-the-congo-demographics/ (consulted on September 08 2020)
DR Congo, Education and Literacy.UNESCO, Link: http://uis.unesco.org/en/country/cdWorld Bank Data. Link: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=CD (consulted on September 08 2020)
'GDP per capita (current US$) – DRC', World Bank Data. Link. https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=ZM (consulted on September 08 2020)

number of different regulatory bodies often with overlapping jurisdiction.

Internet users in the Democratic Republic of the Congo:

- There were 16.35 million internet users in the Democratic Republic of the Congo in January 2020.
- The number of internet users in the Democratic Republic of the Congo increased by 9 million (+122%) between 2019 and 2020.
- Internet penetration in the Democratic Republic of the Congo stood at 19% in January 2020.

Mobile connections in the Democratic Republic of the Congo:

- There were 35.13 million mobile connections in the Democratic Republic of the Congo in January 2020.
- The number of mobile connections in the Democratic Republic of the Congo increased by 1 million (+3.1%) between January 2019 and January 2020.
- The number of mobile connections in the Democratic Republic of the Congo in January 2020 was equivalent to 40% of the total population.

Gender: In DRC, women have far lower literacy rates than men. This stems from deep rooted socio-cultural norms that favour the education of boys over girls and that exclude women and girls from accessing technology. Furthermore, girls are often afraid of going online due to their lack of digital skills but also because they are fearful of digital security. DRC has experienced high levels extortion and harassment online which has resulted in many girls saying they do not want to be connected because of risks of exposure and fear of being harmed.

Affordability (and taxation)*:* The mobile industry is playing an increasingly important role in driving economic growth and digital inclusion across the DRC. However, taxes on the mobile sector are disproportionately high compared to other African countries. The mobile sector contributes approximately 20 per cent of total tax revenue, despite accounting for just 3.6 per cent of GDP, meaning the total tax contribution of the mobile sector is almost six times the size of the sector in GDP terms. Reducing excise duty on mobile services from 10 to three per cent would make mobile services more affordable and would increase service usage.

Online security: The DRC was ranked 154 out of 180 countries in the World Press Freedom Index of 2018 by Reporters Without Borders. The DRC does not have a law specifically on the interception of communications, besides the Framework Law 013/2002. This law protects the privacy of mail sent through telecommunications services, but states that this privacy can be infringed by public authority when "needed for public interest as described in the law." This vague language, and the lack of an explicit definition of "public interest," leaves communications incredibly vulnerable.

A transparency report released by Orange, one of the leading telecom companies in the country, has revealed evidence of mass surveillance by the Congolese government, with the assistance of telecom service providers and ISPs. The report stated that in 2015, Orange received up to 385 requests for customers' data from the Congolese government. It has also been reported that social media profiles of journalists, activists, and politicians are monitored by intelligence agents and informants. Some suspect that the government uses mass surveillance tools such as RANDOM, which records telecommunications complaint against ANR for allegedly blocking their phone numbers for four months. In the media, Diongo claimed that the telco companies produced a letter from the national intelligence agency (ANR), requesting not only their numbers, but the phone numbers of four other opposition leaders (Samy Badibanga, Fidèle Babala, Delly Sessanga, and José Makila) to be blocked[68].

[68] 'Joint Submissions to the United Nations Human Rights Council, for the 33rd Session of the Universal Periodic Review for Democratic Republic of Congo', Contact Now and Rudi International. Link: https://www.accessnow.org/cms/assets/uploads/2018/10/DRC-digital-rights.pdf (consulted on September 08 2020)

Section 1: Policy and Regulation for Digital and Gender

Digital: The Plan National Stratégique de Développement (PNSD) 2017-2021 was the country's first national development plan with ambitious targets for the medium term, including a goal to achieve middle-income status by 2021. The mobile sector can play an important role in achieving these aims by improving access to information, developing skills and enhancing opportunities for trade. In addition, according to the World Bank, increased levels of 3G penetration will provide the DRC's population with improved access to the internet, as just 6.2 per cent of individuals reported using it in 2016. To unlock these significant socio-economic benefits, the DRC government needs to take steps to reform mobile sector taxation. By doing so it will help increase access to mobile data and broadband, particularly among lower income rural communities, as more than 70 per cent of new subscribers come from low-income groups in all scenarios. Furthermore, the country needs to update and implement a number of policies relating to digital technology as currently policies are very outdated and in some cases obsolete.

The legal framework for ICTs in the DRC currently includes:

The Congolese Constitution of 20 January 2002, which states in Article 19 that "everyone has the right to freely express and disseminate his opinions in speech, writing, image, or any other means of communication..." Article 20 says that "the secrecy of correspondence, telecommunications or any other form of communication cannot be violated except in the cases provided by law."

Law No. 8-2001 of 12 November 2001 on the freedom of information and communication guarantees the freedom to access information and communicate, including on the internet.

Law No. 9-2009 of 25 November 2009 regulating the electronic communications sector. This law describes the conditions for the installation and operation of networks and electronic communications services. In Article 6 it states that "electronic communications activities are practiced freely in accordance with the terms of the legislation and regulations." This law, which also deals with the protection of users' privacy, prohibits cyber surveillance. Article 125 states: "It is unlawful for any person other than the users to listen to, record, or store communications and traffic data related to them, or submit it to any other means of interception or surveillance without the consent of the users concerned, except when legally authorised to do so…"

Law No. 11-2009 of 25 November 2009 establishing the regulatory agency of postal and electronic communications. In Article 5 it states that the agency promotes and protects the interests of users in the field of postal and electronic communications.

Other laws are being drafted, including a law on the protection of personal data, a law on cyber security, a law on the fight against cyber crime, a framework law on the Congolese information society and digital economy, and a plan for national broadband development in the Congo[69].

[69] Mbengou, R. 'Civil Society and cyber surveillance in the Republic of Congo', Global Information Society Watch. 2014. Link: https://www.giswatch.org/en/country-report/communications-surveillance/republic-congo (consulted on September 08 2020)

After pressure from the World Bank, the Congolese government has made progress in the ease of starting a business by opening "guichet-uniques" in two major cities, Kinshasa and Lubumbashi. This has helped in assisting businesses to become formal faster and at lower cost, but at the same time has reinforced the reason why so many prefer to stay informal. Harassment by tax officials has increased now that they also have easy access to information on new businesses. Tax laws are notoriously ambiguous in DRC, so inexperienced start-up entrepreneurs make for ripe pickings for the tax inspectors, who now knock on their doors even before reaching revenue. The government has yet to develop a comprehensive policy on youth entrepreneurship, especially for tech start-ups[70].

Challenges: A major challenge in DRC is that they do not have robust policies in place. Whilst there is now an Advisor to the President on digital technologies this has not yet translated to the implementation of supportive or enabling policies.

Gender: Decades of armed conflict have led to the deaths of over 2 million civilians and estimates suggest over 1 million women have been raped. Though articles 5, 14 and 15 of the DRC constitution establish a legal basis for equality and equity policies, women currently occupy only 7.2% of positions at the highest level of decision making at a national level in the parliament and government. Up to 52% of women in DRC are survivors of domestic violence and 39% of Congolese women report having being threatened or injured. 27% of women in DRC are victims of harmful traditional practices. Early marriage is common, with 2007 reports indicting 39% of women in their early twenties were married or in a union before the age of 18. Very few Congolese women have access to decent jobs, and in general women and girls have less access to education than men and boys, as well as higher rates of illiteracy[71].

Section 2: Existing EU Programmes in Gender and Digital

The European Union supports four initiatives across different sectors, which incorporate components related to digital, listed below:

- **The Commerce Aid Program:** IT systems (SYDONIA World) are installed, training is provided and used across customs offices and operators to improve the judicial security system, facilitate commerce, enable commercial policies and render the economy more competitive at the national, regional and international levels.
- **Support Program for navigating the waterways (PANAV):** the aim of this program is to obtain and exploit hydrolographic, hydrology, and bathymetric data necessary for the management and improvement of conditions for the different categories of waterways.
- **Program for supporting the security sector reform (PROGRESS):** Modernising and optimising the administrative management of human resources and finances through the use of digital tools. This will ultimately improve governance of structures and justice.

[70] Zuidberg, B. 'The DRC Entrepreneurial ecosystem, its challenges and the rational for creation of "Ingenious City" - an incubation platform in Kinshasa', ELAN RDC, UK AID, December 2018, Link: https://static1.squarespace.com/static/5bc4882465019f632b2f8653/t/5c7378ee971a18427790b8c0/1551071476214/25+-+The+DRC+startup+ecosystem+and+its+challenges_formatting.pdf (consulted on September 08 2020)

[71] Democratic Republic of Congo. UNWomen – Africa. Link :: https://africa.unwomen.org/en/where-we-are/west-and-central-africa/democratic-republic-of-congo (consulted on September 08 2020)

- **Reinforcing mechanisms and engagement of civil society organisations, local authorities and populations of Katanga:** This project aims to build a web-based platform to allow for interaction of multiple actors to improve participatory governance (local and citizens) and allow for monitoring of public policies, transparency and the legitimization of CSOs in decision making dialogues.
- Enhancing tax collection from mining through effective regulation and monitoring of mineral production

The above initiatives focus primarily on the use of digital for enabling more effective collection and use of data and information as well as building structures and policies that are more transparent and sustainable. The digital components do not specifically mention or are adapted to women and girls, however the last initiative focused on civil society participation, could enable greater participation of women and women's organisations. Other mechanisms and initiatives to introduce digital and consider gender are presented in the following section.

Section 3: Best Practices of Digital for Women Initiatives

Whilst men and women face the same challenges when it comes to connectivity, women face additional barriers relating to gender inequality. In DRC this stems from deep-rooted socio-cultural norms and customs where women are given fewer opportunities than men, particularly when it comes to education and training. Low literacy levels and a lack of understanding of basic human rights leads to a high prevalence of gender based violence in the country.

RUDI

RUDI is a leading non-profit organization in DRC that focuses on bridging the digital divide by inciting more women to consider a career in ICT and to try to build an online environment that is free from violence against them. Rudi did this through the provision of targeted trainings and helping women attend ICT related events, conferences. Since 2016, with the rise of Internet-freedom violations happening in the country, RUDI has expanded their reach and started being involved in a number of other issues. Rudi is currently the leading organization in the country doing:

- **Capacity building:** engaging human rights activists and the ordinarily citizen to understand their rights and be in a position to claim them whenever they are violated.
- **Research:** documenting violations and use the data for advocacy;
- **Advocacy nationally and internationally:** influencing policies and calling for international support[72].

Given the challenges in DRC across the tech ecosystem, there are few successful start-up stories to share in DRC. The examples that stand out are eMart and Labes Key/Schoolap, neither of which came from incubators. Both are still young start-ups, too young to determine their success[73].

[72] Rudi ICT Programs. Link : https://rudiinternational.org/rudi-ict-programs/

[73] Zuidberg, B., *op. cit.*

Ingenious City

As the first tech incubator in DRC, Ingenious City has set the stage to bring together tech innovators in the country and create an environment that enables tech enterprise growth by providing co-working spaces, incubation programs with technical and practical training models and access to sector networking events. They aim to encourage young entrepreneurs and provide skills and the right connections to overcome unemployment. They partner with over 10 academic institutions, private companies, government and investors, a network of 150 mentors and have supported 55 starts-up to date.

Tujenge STEM

A number of the Start-ups based at the Ingenious City have programs that are focused on support women and girls including in the digital sector. The Tujenge STEM aims to economically empower girls in STEM, through cohorts of 25 girls hosted at the Ingenious City to gain digital skills and knowledge to enter into the job market or create their own businesses.

Women's Technologies (Wotech)

Women's Technologies (Wotech) is a Congolese cooperative employing female and male engineers - led by engineer and entrepreneur Thérèse Izay Kirongozi - was hired by Congolese authorities to develop humanoid robots to regulate traffic in the DRC's capital. The robots work by video recording traffic behaviour and transmitting footage to the police to deter drivers from breaking road regulations. The robots, powered by solar panels stand at 2.5m high and are made of aluminium. Residents reported that they mistrust human traffic officers due to high levels of corruption. Officials have reported fewer road incidents since deployment of the robotic models[74].

[74] Hay, M., 'Traffic RoboCops are Making Streets Safer in Congo', June 2015, Link: https://www.good.is/articles/congo-traffic-robots-womens-technology (consulted on September 08 2020)

Section 4: DRC's Tech Ecosystem

The DRC economy needs digital transformation and this presents a fertile ground for entrepreneurs. The political environment, whilst lagging behind neighbouring countries, specifically Rwanda when it comes to the tech ecosystem, is trying to support local innovations and to push more local entrepreneurs to create new companies. The new president is talking a lot about local entrepreneurship promotion, and now has a digital advisor to support with new initiatives, including a recent hackathon to address the COVID-19 response.

Challenges remain, however with internet connectivity and the high associated costs as well as with weak skills relating to digital technologies. The education system in DRC trains students in areas that are not in line with the demands of the job market and it is difficult to find entrepreneurs or students equipped for the use of digital means to align with their project ideas and concepts. Furthermore, there is a lack of entrepreneurial skills, and shortage of local support structures to start-up enterprises. These challenges exist for both men and women although women are more inhibited by low literacy levels and lack of support to embrace education and training opportunities.

As in other francophone countries, entrepreneurship in DRC is not encouraged and significant barriers exist. This is in part due to the language barrier to accessing information in English on the internet, sometimes literacy in French is also not sufficient to draw on information published from sources in French as well. More importantly the education system and role models do not seem to promote growth-entrepreneurship. In general, entrepreneurship in DRC is perceived as something that one does out of necessity, after having failed to find "proper" employment. The lack of inspiring local examples of entrepreneurship, especially for start-ups, make it difficult for aspiring entrepreneurs to convince their families that entrepreneurship can be a viable career choice and to attract seed capital from family and friends.

Of the young Congolese that turn to start-up entrepreneurship, many appear to be from affluent backgrounds as they have their family wealth as safety nets, which can also be used as seed capital. However, often this type of affluence-based start-up entrepreneurship does not support developing a sustainable tech entrepreneur culture available to other segments of the population. Finally, donors and NGOs have been operating for a long time in DRC, mainly through the utilization of grants. This has led to a mind-set of asking for hand-outs in lieu of pitching for investment in viable business propositions.

As with many countries, the lack of funding for DRC-based start-ups is another major issue. There are some early-stage investors, however they do not fully grasp the needs of start-ups and so offer products or services that are not in fact helpful to start-up entrepreneurs. The recent growing interest of the government has resulted in several incubation programmes, guarantee funds, and business creation facilitations being launched which are all positive signs and could give the ecosystem the boost it desperately needs. The map below highlights some key actors in the Tech Ecosystem in DRC:

Section 5: Opportunities

DRC is an emerging market when it comes to digital technologies. Whilst the ecosystem is nascent, there are positive signs of progress being made that could support a more fertile ground for tech entrepreneurs. Continuing to work with the government to formalize the policy environment with supportive and inclusive policies, and focusing on tax reformations to reduce costs and increase affordability are critical milestones that could open up more opportunities to tech entrepreneurs. The following are proposed interventions and areas of opportunity that should be address to breakdown the gender digital divide:

- **Focus on interventions that deconstruct the deep-rooted socio-cultural norms** that are entrenched in society and result in women and girls missing out on training and education opportunities;
- **Develop targeted and structured programmes** to encourage female entrepreneurship and support women to secure finance, receive mentoring and access other resources needed for success and sustainability;
- **Provide generic training on start-up entrepreneurship** in order to cover the gap left by secondary and tertiary education;
- **Provide entrepreneurs with mentors, coaches, suppliers and distribution channels** needed to fine-tune and improve their business models;
- **Engage with communities and especially men and boys** to shift negative perceptions of women accessing education and training, particularly relating to digital technologies;

- **Provide funding or similar incentives** via innovative financing mechanisms such as Innovation Funds, Public Private Development Partnerships or direct support to tech hubs / innovation hubs and female and young innovators;
- **Lobby for government policies and greater support to policy implementation** that will make digital more accessible for all by lowering internet and mobile service costs and prioritising public access programmes;
- **Build the capacity of government around gender sensitive policies** that uphold women's online rights, and protect citizens from bulk surveillance, Internet shutdowns and censorship.

4. KENYA – CASE STUDY

Country Snapshot

Pop.(2020)[75]	Total land area (Km2)	Pop. Density (pp/Km2) (2019)	Urban/Rural Pop. (2019)		Life Expect - years (2020)			Adult Literacy Rate (2018)		
			Urban	Rural	Ave.	Men	Women	Ave.	Men	Women
53,593,840	569,140	92	28% 14,975,059	72% 38,796,237	67.5	65.0	69.9	81.53	84.99	78.19

Digital: Kenya has one of the oldest and most thriving innovation ecosystems in Africa. Digital solutions such as M-Pesa and Ushahidi have gained global recognition. With relatively high Internet penetration rate, fast Internet speed, and English as its national language, Kenya is an attractive environment for digital entrepreneurs as well as investors[76]. In addition to that, supportive tech policies are contributing to development of infrastructure and the creation of local content. Kenya is making excellent progress towards achieving its target of universal broadband coverage by 2030 and there is an opportunity for the government to accelerate the country's digital transformation with more supportive policies.

Internet users in Kenya 2020[77]

- There were 22.86 million internet users
- The number of internet users in Kenya increased by 3.2 million
- Internet penetration stood at 43%

Mobile connections in Kenya 2020[78]

- There were 52.06 million mobile connections
- The number of mobile connections increased by 4.2 million

[75] Kenya Population (Live). Worldometer, Demographics, Kenya. Link: https://www.worldometers.info/world-population/kenya-population/ (consulted on September 08 2020)
Kenya, Education and Literacy. UNESCO, Link: http://uis.unesco.org/en/country/ke (consulted on September 08 2020)
GDP per capita (current US$) - Kenya, The World Bank Data, Link: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=KE (consulted on September 08 2020)

[76] Lena Nitsche , "Finding digital solutions to local problems, Kenya's innovation scene is no one-hit wonder" *DW Akademie.* 17 January 2019 link: https://www.dw.com/en/finding-digital-solutions-to-local-problems-kenyas-innovation-scene-is-no-one-hit-wonder/a-47119339 (consulted on September 08 2020)

[77] Kemp, S.,'Digital 2020: Kenya', DataReportal, 18 February 2020 Link: https://datareportal.com/reports/digital-2020-kenya (consulted on September 08 2020)

[78] Ibid

- The number of mobile connections was equivalent to 98% of the total population.

In June 2016 the government laid 6000 Km of national fibre optic backbone across all 47 counties, installed internet connectivity infrastructure in 29 counties, began construction of the infrastructure in 12 counties, and was overseeing the approval for the design in 5 other counties[79]. This may result in an increase in the use of computers and other knowledge and information intensive technology (other than mobile phones), in turn increasing digital literacy. However currently, only 10% of Kenyans are using laptops or computers according to the 2019 census.

Gender: According to the findings of the World Economic Forum's Global Gender Gap Report 2020[80], Kenya is ranked 109 out of the 153 countries that were rated on their progress towards gender parity in 2019. The important take away here is that Kenya is ranked lower than her East African neighbours Uganda, Tanzania, Rwanda, Ethiopia and Burundi.

Affordability (and taxation) & Literacy: Digital technology plays an important role in Kenya's economic growth and for this to continue, significant investment in mobile networks, and addressing barriers to adoption, such as affordability, is required[81]. In Kenya, affordability is an issue to access due to the excise taxes, which increase the cost of using mobile services. 1 GB of prepaid data costs over 6% of the average Kenyan monthly income. The unaffordability is exacerbated by the opportunity cost or perceived value of use. In Nairobi's slums for example, only 20% of women are connected to Internet (compared to 57% of men), and of these 20% only a quarter have used the internet for educative or informative purposes related to rights and opportunities.

In this case affordability and digital literacy are intrinsically linked, the less the population is digitally literate the less technology is affordable, specifically because the sacrifice of 6% of a salary is not cost-effective. Creative new efforts of establishing Wifi hotspots in areas of interests are hence welcome[82]. Kenya being a front runner in digital transformation in the region faces an issue to close its digital gender gap due to affordability. Improving the affordability of mobile services could boost economic growth and improve women participation in the economy, and to maintain its position as a frontrunner in the tech sector.

Online security: Women's online sexual harassment, surveillance, unauthorised use and manipulation of personal information, including leaked images and videos, are a prominent feature of the Kenyan cyberspace. Over 1 in 5 Women in Kenya in the IAWRT survey reported having experienced harassment online. The legislation context surrounding cyber-criminality and harassment is not geared towards women and girls[83]. 55% of women report using mobile banking applications to access finances, a relatively good score. This percentage is encouraging and should be protected via cyber-security efforts specially targeting women so as to continue in the right direction.

While the growth of digital technology and the subsequent rapid growth in use of the social media have been seen as positive for the country, this development has had its downsides and to tackle some of the issues that many people especially women and girls face, in 2018, Kenya signed a law called Computer Misuse and Cybercrimes Act, which outlaws abuse of people on social media.

Another important milestone in this regard was in 2019 when Kenya passed new data protection laws, which comply with the European Union's General Data Protection Regulation. This has now become an example for the neighbouring countries to adapt and as internet adoption in Africa continues to grow despite the obstacles of cost and speed, cyber security has become more

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79 Njuguna Ndung'u, 'Digital technology and state capacity in Kenya', CGD Policy paper 154, August 2019, Link: https://www.cgdev.org/sites/default/files/digital-technology-and-state-capacity-kenya.pdf (consulted on September 08 2020)

80 'Mind the 100 Year Gap', World Economic Forum. 16 December 2019. Link: https://www.weforum.org/reports/gender-gap-2020-report-100-years-pay-equality (consulted on September 08 2020)

81 Karlsson M., Penteriani, G., Croxson, H., (GSMA), and by Stanek, A., Miller, R., Pema D., and Chitiyo F.,(Dalberg Advisors) 'Executive Summary: Accelerating affordable smartphone ownership in emerging markets'. GSMA, July 2017 Link: https://tinyurl.com/y4x9fpxr (consulted on September 08 2020)

82 'Women Rights Online Report Card, Kenya, Measuring Progress, Driving Action', IAWRT , World Wide Web Foundation, Link: https://www.iawrt.org/sites/default/files/field/attachments/WF_GR_Kenya.pdf (consulted on September 08 2020)

83 Ibid

important and many governments and Civil Society Organisations are more geared to tackle sole of those issues[84].

Section 1: Policy and Regulation for Digital and Gender

Digital:

Kenya's ICT sector is governed by national policy implemented in 2016, which in itself was an update of national policy from a decade earlier. Although both the vision ('a prosperous ICT-driven Kenyan society') and mission ('to improve the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable and affordable ICT services') remain unchanged, the policy has been updated to ensure alignment with the 2010 Constitution and Vision 2030. The policy review was also driven by the 'new developments that have taken place in the field of ICT, especially the convergence of ICT technologies'[85].

The National ICT policy was updated in 2019, setting out new objectives entailing the current realities of the rapidly changing technology scenery. The first policy highlighted is "Mobile First". This is in line with Kenya's strategy of continuing the promotion of internet, data driven economy and digital spaces through mobiles. The connectivity of mobile phone can be reached by 99.99% of Kenya's citizens. In other words, service reception is ubiquitous in Kenya. Nine sub-objectives are explained in "Mobile First", seeking to increase the inclusiveness and the quality of mobile and digital services[86]. The new policy has few mentions specifically to women and gender, yet broadly considers the need to provide an inclusive ICT environment by encouraging gender equality and specifically under human resources (6.3.4) to create opportunities and provide assistance to vulnerable groups to acquire ICT skills.

Kenya's digital strategy is set out in its Digital Economy Blueprint. The Blueprint states that a digital economy will be premised on the provision of universal broadband access that will drive digitally enabled services for a digitalized population and economy. There were over 52 million mobile connections in Kenya in 2020; therefore, the mobile sector has a key role to play in ensuring universal access to digital services. To achieve the objectives set out in the digital strategy, Kenya should continue to improve its regulatory and taxation framework to support the development of the mobile sector and hence achieve its connectivity objectives and facilitate a swift transition to a digital economy. Kenya Vision 2030 sets out Kenya's long-term development strategy, while the 'Big 4' Agenda – implemented through the medium-term financial plan – sets economic development objectives for 2018-2022. The 'Big 4' Agenda aims to not only support economic growth, but

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84 Kazeem Y., 'The biggest trends in African tech and startups in 2019', Quartz Africa. 31 December 2019. Link: https://tinyurl.com/y5wr6zpv (consulted on September 08 2020)

85 Nyambura Ndung'u, Charley Lewis, Onkokame Mothobi, 'After Access: The state of ICT in Kenya', Research ICT Africa. June 2019 Link: https://researchictafrica.net/publication/after-access-the-state-of-ict-in-kenya/ (consulted on September 08 2020)

86 'National Information, Communications and Technology (ICT) Policy'. Ministry of Information, Communications and Technology, Kenya November 2019, Link: https://www.ict.go.ke/wp-content/uploads/2019/12/NATIONAL-ICT-POLICY-2019.pdf (consulted on September 08 2020)

also create higher value-added employment, raise the living standards of every Kenyan citizen, end inequality and lift more Kenyans out of poverty.

Broadband connectivity will be critical in enabling the societal and economic benefits of the digital economy. In this context, a supportive regulatory and tax policy environment will enable Kenyan customers to embrace mobile services and mobile broadband, and hence deliver on the Government's agenda. Kenya's low rate of mobile internet adoption is primarily driven by affordability issues. Taxation — in particular, excise duty – plays a key part of the lack of affordability of mobile broadband; excise duties are levied at a headline rate of 15% of the value of mobile services. Reducing the level of excise duties paid by consumers would increase affordability and could thereby reduce the usage gap. Other barriers to mobile internet adoption include perceived lack of relevance, low level of digital skills, and safety and security concerns. Mobile operators are addressing these challenges by supporting digital literacy programmes, working with adjacent suppliers to provide affordable smartphones, and with the app-developer community to encourage the development of relevant content in local languages. In turn, this could further reduce the usage gap, improve connectivity and drive financial inclusion.

Challenges:

There is no shortage of policy issues, implementation challenges and regulatory imperatives affecting the digital sector in Kenya. The difficulties lie in implementation, monitoring and evaluation. Furthermore, the digital divide between the countryside and rural areas is a major barrier in promoting digital entrepreneurship across the country. Women, who constitute more than half of the population, continue to lag behind in technology use, meaning there are an increasing number of missed opportunities for them to benefit from Kenya's development. A number of factors are commonly cited as obstacles to women getting online, including: Internet affordability, lack of Internet knowledge, limited access to smartphones, tablets, computers or other Web-enabled devices and fear or insecurity on the Web[87].

In terms of legal barriers, ICT national policies are too technically geared and lack some of the underlying social lines that should be prevalent. In other words, they are too technical and do not sufficiently incorporate social realities. For example, the 2019 National ICT Policy goes in depth about infrastructure construction, market benefits and data protection. There is no clear national strategy to include women specifically, apart from article 12 of section 6.3.4 "create opportunities and provide assistance for the disadvantaged; people with needs, women and the youth to acquire ICT skills through e-inclusion and e-accessibility activities and programmes" and article 8 of section 4.1 "providing an all-inclusive ICT environment by encouraging gender equality and accessibility to persons with disabilities"[88]. Moreover, even with the existence of strategies to oversee women integration in tech-spheres, there is a lack of provision and enforcing power for implementation. This may suggest that digitization in Kenya is still seen as an economic process that requires capital and technological knowledge rather than a

[87] Margaret Nyambura Ndung'u, C. Lewis, O. Mothobi, *op. cit.*
[88] "National Information, Communications and Technology (ICT) Policy". *op. cit.*

population-wide prioritized effort. Whilst the supply side is considerably well underway, there is still a lack of demand, especially from rural and poor areas.

According to the GSMA Gender Gap Report 2020, 38% of men and 33% of women who are aware of mobile internet, but have not used it, cited affordability as the single most important barrier to adoption. Affordability has increased in significance as a barrier to mobile internet use[89]. Though Kenya has the cheapest communication and Internet connectivity charges on the continent, it is still expensive compared to incomes.

E-government is well underway in Kenya, digitization has been instrumental in strengthening the relationship between governmental services and populations. For example the Fiscal and Revenue Administration has largely benefited from digitization, through the increase of "efficient payments, platforms; lowered the cost of raising tax revenue, and reduced bureaucracy, middlemen and agents". In turn, it caused the reduction of fraud, corruption, evasion of tax and embezzlement, all phenomena that have been plaguing the Kenyan government. Similarly, the digitisation of the banking systems has led to an increase in tax categories (money transfers, VAT withholding, capital gains tax, etc.). The Integrated Financial Management Information System (IFMIS) was introduced in 2003 as an automated system for public financial management. It harmonizes the planning, budget and expenses, audits, reporting etc. of the Kenyan Government between ministries, agencies and departments, increasing efficiency and creating computerized checks and balances that are internal to the system. Kenya is a precursor in the region on the way payments from and to the government is realised: a reduction of paperwork, direct, rapid payments from private accounts to Central Banks, increased transparency, reduced bureaucracy, and the creation of the eCitizen platform where Kenyans can apply for government services (ID cards, insurance, visas, permits, certificates etc.) are possible today thanks to early bank digitization. In contrast, public institution continue to "report low automation levels; limited accessibility of public data, information stored in silos and disparate non-standard formats; siloed provision of government services by government agencies, and limited capacities for countries to roll out e-government services."[90]

Ndung'u's report on Digital Technology and State Capacity in Kenya elaborates extensively on the challenges to digitalization as well as those that arise when digitalization takes places in a faulty legislative framework or state ineffectiveness. To continue reaping the benefits of digitization and securing the ones already achieved, several steps to be taken are identified, they are discussed below.

Firstly, a secure retail electronic payment interoperability and transparent pricing must be established. Interoperability is the possibility of mobile money being transferred from party to party connectively and in a harmonized way regardless of the service provider. This would encourage inclusiveness, transparency and competitiveness and lower operating prices. However for an operator such as Safaricom that dominates the operator market with a market share soaring at 71.9% above Airtel (14.6%) and Orange (8.4%) there is a conflict of interest because financial institutions are either the client or competitor of Safaricom. The dominant operator hence has little incentive to ease the access of other operators

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89 'Connected Women The Mobile Gender Gap Report 2020', *GSMA*, March 2020 Link: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/05/GSMA-The-Mobile-Gender-Gap-Report-2020.pdf (consulted on September 08 2020)

90 Njuguna Ndung'u, *op. cit.*

to Unstructured Service Data (USSD) technology, the technology through which most mobile banking services are distributed in Kenya[91].

Secondly, a proper and controlled increase of connectivity across the country should be set up. If infrastructures allowing for more mobile 3G and 4G technology is introduced without taking into account network quality, affordability, digital literacy, and creation of content considering local realities (languages, traditions, electrical power availability etc.), the digital divide will widen between nations, gender and age groups; the demand side of the equation should be further incorporated

Thirdly, the digital regulations ought to be strengthened of. The cyber-criminality and security legal framework is still too weak when considering Symantec ranked Kenya as the primary state source of cyber-attack, malware, spam and phishing host numbers, in the whole sub-continent[92]. Other regulations on innovations originating from increased digitization of societies should cover crowdfunding and transnational mobile money transfers (for remittances, for populations living near and crossing borders frequently, for more flexible payment methods that do not require access to real bank structures).[93]

In fourth place, solidify the legal framework around M-Pesa, namely the National Payment System Act, to further protect both the consumer and the market. When the M-Pesa platform was developed, the regulations around it were agreed between the Kenyan Central Bank and the Telecommunication commission. This agreement has, given the extensive spread of M-Pesa, mobile money in general, and online banking, aged and does not take into account the new condition of the market. Information disclosure, data privacy, handling system failures, consumer complaints and billing procedures, are all duties of the mobile money service provider. Yet they are lacking legislation to protect their costumers and the market.

Finally, Kenyan authorities should continue the dispersion of Digital Identification and mitigation of the barriers that currently exist within national registration. These include the faulty programming of mechanisms and the duplication or disjoining of information. The civil registration covers only 63% of births and 45% of deaths, the reliance on manual dealings in rural counties, and the lack of biometric data and fragile legal framework still prevails.

Digitization can be furthered, both in scope and inclusiveness, if the above short term difficulties that exist because of the digitization gap, are surmounted. Although more concrete actions, directly targeting the inclusion of women are necessary to bridge the gender gap specifically, increasing inclusiveness, by definition, entails expanding access to women[94].

Gender:

Kenya has seen significant action in recent years to build institutions, infrastructure and policies to promote gender equality, including a Plan of Action to implement the National Policy on Gender and Development, launched in 2008. The country has made some progress on maternal mortality, has achieved gender parity in

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91 Ibid

92 'Cybercrimes and Cyber Security Trends in Africa', Symantec, November 2016. Link: https://tinyurl.com/yxkp9tr2 (consulted on September 08 2020)

93 Ibid

94 Ibid

primary education enrolment and is approaching parity in secondary education. The impact of legal and policy frameworks on the lives of girls and women, however, has been undermined by weak implementation and a lack of gender-responsive budgeting. Pervasive discrimination and cultural norms influence women's land tenure and participation in labour markets; child, early and forced marriage; female genital mutilation (FGM); food security and nutrition; and access to finance and technology. Many girls and women still lack access to basic services, and women remain under-represented in decision-making positions and political leadership.

Article 27 of the 2010 Constitution guarantees equality and freedom from discrimination stating that every person is equal before the law and has the right to equal protection and equal benefit of the law. Beyond the supreme law, the development **blueprint Kenya Vision 2030** has reinforced the same. Other policy and legal frameworks have been enacted to promote, enforce and monitor equality and non-discrimination. These include National Human Rights Policy and Action Plan; The Marriage Act 2014; The Matrimonial Properties Act 2013; The Land Act 2016; and Draft National Policy on Gender and Development among others.

Kenya recognizes that women's economic empowerment is critical to achieving gender equality as well as sustainable development which encompasses productive employment and decent work for all, ending poverty and reducing inequalities. To this end, the Government put in place various programmes that include gender mainstreaming, affirmative action and gender-responsive budgeting. The government has set aside special catalytic funds dedicated to women, persons with disabilities and the youth for development programmes. These include:

- A Women Enterprise Fund[95] that provides micro-finance credit and other financial support for women;
- The Youth Enterprise Development Fund[96] that provides credit for young men and women to enable them to establish businesses;
- The Uwezo Fund[97] that gives seed money as start-up capital to the special interest groups.

In addition to the above, Kenya has also ratified the **African Charter on Human and Peoples' Rights on the Rights of Women in Africa**, which explicitly requires countries to enforce laws prohibiting all forms of violence against women and to punish the perpetrators. It must not be forgotten that Kenya is also a state party to the African Charter, the International Covenant on Civil and Political Rights (ICCPR) and the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), which also require governments to protect women against violence.

The 2019 National Policy on Gender and Development dedicates a section to Information and Communications Technology. The e-commerce, e-governance and e-education emergence are acknowledged as powerful instruments to inclusive economic growth. Innovations in economic sectors, employment, democratic participation and social advocacy are all expected results of including

[95] Women Enterprise Fund Link: https://www.wef.co.ke/index.php/blog/57-our-products
[96] Youth Enterprise Development Fund. 2016. Link: http://www.youthfund.go.ke/
[97] Uwezo Fund: http://www.uwezo.go.ke/

women in the digital sphere. In Kenya, however, the barrier that keeps them from said inclusion, are the socio-cultural norms enrooted in the traditional values that women are not welcome in knowledge and information intensive sectors like science and technology[98]. This entails that the efforts should directed towards behaviour change communication, advocacy and outreach programmes and campaigns.

Challenges:

Several years after enacting radical new constitutional provisions to tackle the marginalization and under-representation of women, the fight for equality in Kenya remains far from won. Although small but significant gains by women have been made - including the election of Kenya's first female senators and governors - the constitution still requires that not more than two-thirds of elective or appointed public bodies be of the same gender. This is commonly referred to as the "two-thirds gender rule". Violence against women is endemic in Kenya. A recent (2019) national health survey found that almost half of Kenyan women aged between 15 to 49 say that they have been beaten, harassed, or raped, often by someone they know. Kenyan women are overcoming social and other barriers to speak out against this violence[99].

In the "Connected Women" issue of Mobile for Development, Adrine Muhura explains the three self-influencing general barriers to accelerating digital inclusion of women in Kenya. Affordability is a key issue not solely because of high prices, but of payment mechanisms. Women in Kenya, like women in most Sub-Saharan countries operate in the informal sector, this means their incomes are on daily bases and vary. If payment plans could be made over 3 to 6 months, women, as well as lower-income consumers, will be able to own smartphones more easily.

Digital Skills is the second barrier most prevalent, simple skills often block a major part of the consumption of technology. The example of Android, which are cheaper than other products and their most basic use necessitates a Gmail Account. Lastly relevance is an issue in technology; women believe they are not the target of electronics because they are not aware of the extent of services they can access. Promoting education, content for children and health for the self and the family, are areas of interest for women who are for the most part, the household managers. It is about showing how technology can make life easier rather than complicate it.

To reach women in rural areas is all the more challenging because the lifestyle of each place differs. The important thing to realise, that has been a success in the past, is to create partnerships with local and trusted services that will make women relate more to the technology. In rural Kenya, a partnership with a micro and group financing institution "Chama", widely used by women, was created to allow them to make group payments for smartphones. This endeavour was then highly marketed through traditional promotion channels (radio stations, at certain times during the

[98] 'National Policy on Gender and Development', Republic of Kenya, Sessional Paper no. 2 of 2019. Link: https://gender.go.ke/wp-content/uploads/2019/10/NATIONAL-POLICY-ON-GENDER-AND-DEVELOPMENT.pdf#page=1 (consulted on September 08 2020)

[99] Wabwire, A., 'Who Cares About Kenyan Women?', Human Rights Watch 17 April 2019 Link: https://www.hrw.org/news/2019/04/17/who-cares-about-kenyan-women (consulted on September 08 2020)

day, with a defined clear message) to connect with a maximum number of women[100].

Section 2: Existing EU Programmes in Gender and Digital

Based on available resources, several (approx. 4) in-country initiatives have been identified with a digital component being implemented in Kenya. Most of the initiatives being implemented are the areas of **energy, land governance, and job creating** using technology as an **enabler**. The overall objective linked to digital as per respective are:

- Strengthening the sustainable energy sector in Kenya with emphasis on electricity/energy access, electricity generation from renewable energy sources and energy efficiency;
- Food security of smallholder farmers and pastoralists' communities strengthened with improved access to agriculture services and to land;
- Accelerate inclusive economic growth in Kenya through more sustainable and efficient urban mobility. To support energy sector modernization and digitalization, innovative business models and the long-term sustainability of energy systems, thereby establishing the necessary pre-conditions for increased access to energy and renewable energy development;
- Building partnerships among leading African and European incubators, exploring models for technology transfer and access to market and capacity building among African tech-entrepreneurs.

AgriFI - EU Initiative: Support to the agriculture sector transformation process and to decentralised land governance: launched in 2018, it protects the smallholder agriculture throughout the transitions into a productive, adapted and market integrated enterprise. One of the activities carried out is supporting the establishment of digitized community land registries, integration of land information and costumed functionalities in 7 countries. The digital objective is to generate equitable access and land management for standard of living improvement and socio-economic development. Land registry would allow women to own land and actively take economic decisions, empowering them to take increasingly participating roles in their surroundings. Given women are to be included in the development of value chain, gender empowerment is one of the finalities of the initiative. Other women-targeted activities are undertaken in the project. For example, grants will be awarded primarily to women and youths, as they are the ones struggling to find entry points into the value chain development. By incorporating women and primary stakeholders as the beneficiaries in all its activities and outcomes, this project shows real interest in proposing a strategy striving for gender mainstreaming.

[100] Muhura A., 'Accelerating digital inclusion for women in Kenya', Mobile for development, *GSMA*. 28 May 2019. Link: https://www.gsma.com/mobilefordevelopment/blog/accelerating-digital-inclusion-for-women-in-kenya/ (consulted on September 08 2020)

The EUD is an active gender equality promoting actor. Currently the delegation co-chairs the gender development partners group. The forum spearheads efforts of bilateral and multilateral development agencies in Kenya to harmonize activities around gender and to form partnerships around women empowering activities. Furthermore, the EUD is an active supporter, both financially and technically, for the creation and support of mobile applications that address GBV. However, more specific initiatives can be developed on digital for gender equality and women's empowerment.

Section 3: Best Practices of Digital for Women Initiatives

Agriculture

Twiga Foods was created in 2014 to reduce fragmentation in the produce market. The agritech start-up runs a mobile-based B2B food supply platform that supplies fresh fruits and vegetables sourced from farmers in rural Kenya to small- and medium-sized vendors, outlets and kiosks in the country's capital, Nairobi. The mobile-based cashless platform allows Twiga Foods to offer higher prices and a guaranteed market to farmers, and lower prices and a reliable supply to vendors. It also helps to reduce post-harvest losses and waste as it matches demand with supply. Twiga supports women by empowering a network of mostly female produce vendors to increase sales and profits.

***Achievements*:** Co-founded in Nairobi in 2014, Twiga Foods serves around 3,000 outlets a day with produce through a network of 17,000 farmers and 8,000 vendors. Parties can coordinate goods exchanges via mobile app using M-Pesa mobile money for payment. Furthermore, in 2019 Twiga foods financed $6.25 million of the funding in debt and $23.75 million in equity, classified as a Series B round. IFC, TLcom Capital and Creadev joined Goldman on the VC side.

Health

Safaricom backed M-tiba is a mobile phone-based solution that efficiently and transparently links patients, providers, and payers to improve the financing and delivery of care. The digital platform helps families create "health wallets" to save mobile money and pay for health services from affiliated providers. Payers can offer patients insurance products or vouchers to cover the costs of care. And providers can use the platform to improve their care, attract patients, and receive payment from patients and insurers.

***Achievements*:** M-tiba has 4.3 million users across Africa and almost 3000 health workers on their platform. They have also received recognition by the president of the World Bank Group and plan to scale to other similar markets.

Good Governance

Ushahidi was developed to map reports of violence in Kenya after the post-election violence in 2008. Since then, thousands have used our crowdsourcing tools to raise their voice. Ushahidi is a social enterprise that provides software and services to numerous sectors and civil society to help improve the bottom up flow of information.

***Achievements*:** Ushahidi has received numerous international awards and grants for its work, and the organization's founders have leveraged this growing acclaim and influence to stoke the flames of Kenya's software community.

Digital Skills and Job Creation

AkiraChix was founded in 2010 with the aim to challenge the status quo by encouraging and facilitating more women to take up careers in technology-related fields. They provide hands-on technical training and mentorship to young women and girls, to increase the number of skilled women in tech and positively impact the community.

***Achievements*:** AkiraChix has come a long way from its beginnings, where they trained young women from Nairobi in a bus fitted with computers, to a fully-fledged residential campus with a goal of serving young women from all over Kenya and other African Countries.

Solar Energy

M-Kopa is a Kenyan solar energy company that has pioneered and built one of the world's most advanced Pay-As-You-Go platforms to upgrade millions of lives in East Africa. M-Kopa was launched commercially in 2012 and part of the business model's plan is to offset the dangerous use of kerosene (paraffin) lamps to light homes that are off electric grids. The system also helps customers who need to charge batteries and mobile phones. Women who are the primary cooks and feeders of the household, spend more time in the house and are more negatively affected by the toxic fumes of charcoal smoke. They are the primary targets and beneficiaries of the M-Kopa initiative.

***Achievements*:** The power of M-Kopa lies in the delivery of a better, safer alternative for household energy that saves our customers money. Approximately 80% of the households we serve are low-income, earning $2-3 per day per household member. To date, they have sold over 750,000 off-grid solar systems, providing 3 million individuals with clean, safe lighting solutions. Since inception in 2010, M-Kopa has unlocked nearly a quarter of a billion dollars in micro-loans for low-income customers across East Africa, creating a pathway out of poverty.

Access

Safaricom's low-cost smartphone offering as part of its **Maisha ni Digital** (Swahili for "life is digital") umbrella focuses on the key barriers preventing Kenyan women from using mobile internet: affordability, digital skills and relevance. These barriers were considered in both the design of the handset and in marketing and distribution activities. Recognising the commercial benefit of migrating male and female 2G customers to mobile internet, Safaricom partnered with Google to launch subsidised, entry-level Neon range smartphones at a competitive price of $35–$40, helping to address the affordability issue. A notable trend is the increasing popularity of initiatives that centre on low-cost, internet-enabled handsets, such as Safaricom's Maisha Ni Digital Neon range smartphones in Kenya.

Achievements: In offering a wider range, lower cost products and convenient payment platforms, they seek to digitize 2 million Kenyans.

Section 4: Kenya's Tech Ecosystem

The arrival of fibre optics in 2010 opened up a new world for Kenya with the first major wave of investments in the digital sector[101]. According to the GSMA Tech Hub Mapping, Kenya, already established as the heart of East Africa's technology ecosystem, and there are almost 50 tech hubs operating across the country. Kenya also represents the Eastern point of this innovation quadrangle, and new investors and corporates are attracted by the Kenyan market, looking to seize the fast-

[101] 'Kenya's reputation for quality leads companies to choose Nairobi', *Financial Times. Link:* https://www.ft.com/content/367907d0-d558-11e9-8d46-8def889b4137 (consulted on September 08 2020)

growing pool of tech talents in the country[102]. It is therefore, not at all surprising that Venture capital funding[103] for start-ups in Kenya jumped from $92.7 million in 2016 to $147 million in 2017, which makes it the second highest level on the continent after South Africa[104].

The Kenyan government has acknowledged the vast opportunities that digital technology is bringing to the country and the region. It has therefore invested in major infrastructure development plans which include a new fibre-optic network to enhance the nation's telecommunications capacity. Major global tech firms such as Google, Siemens, HP, IBM and Samsung have already set up operations in Kenya with major support from the government[105]. Many of these firms are particularly interested in closing the Digital Gender Divide, with initiatives such as the Google Impact Challenge that aims at supporting ideas to create economic opportunities for women in their communities. However, there is still a significant issue for women to secure financing as expressed by one of the stakeholders, "it is a hard sector to navigate with little support and understanding for women led businesses and especially if you are targeting female users". To support more female entrepreneurs, recently (2020) Absa Bank Kenya committed a Sh10 billion loan fund for women-led small and micro enterprises (SMEs) amid raising banking competition and calls for support of the sector by the government[106]. The users will access small loans within a 48-hour turnaround period, facilitated through a new facility called Wezesha Express[107].

The below ecosystem map showcases the FinTech scene in Nairobi and aims at providing a comprehensive overview of the main stakeholders involved in the country's ecosystem, from entrepreneurs to sponsors and events. However, the information provided on these maps is not gender specific.

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[102] '618 Active Tech Hubs: The Backbone of Africa's Tech Ecosystem', *GSMA Mobile for* Development. 10 July 2019 Link: https://tinyurl.com/y4t8x3aq (consulted on September 08 2020)

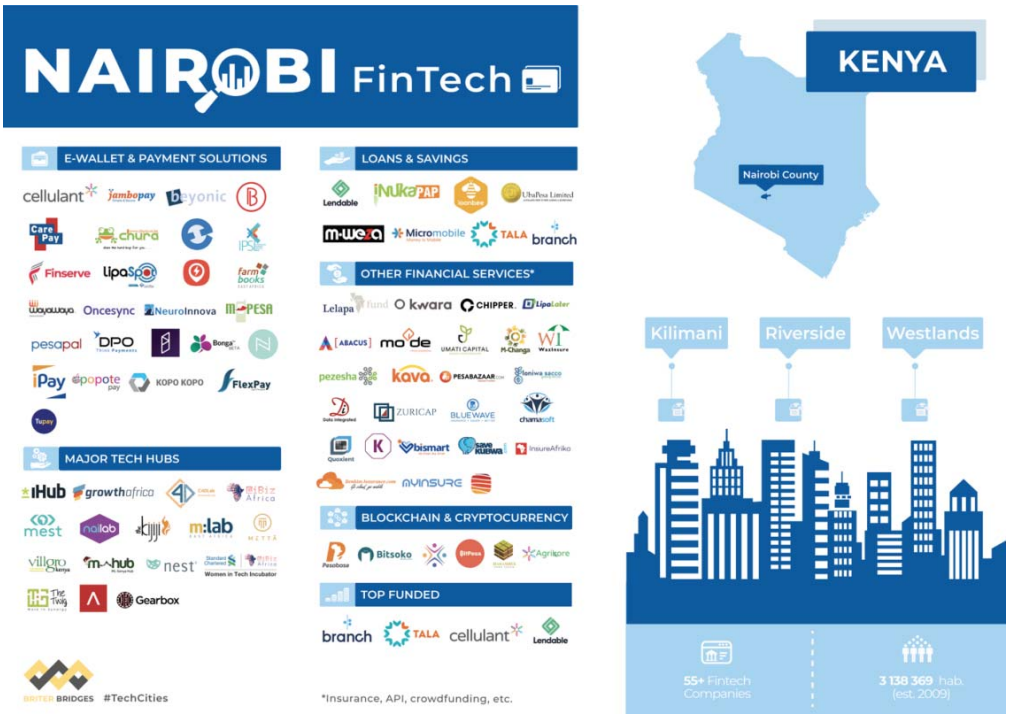
[103] Kazeem,Y., 'Startup venture funding jumped more than 50% in Africa last year to a record high', *Quartz Africa*. 21 February 2018 Link: https://tinyurl.com/y2j5br5b (consulted on September 08 2020)

[104] Ibid.

[105] '618 Active Tech Hubs: The Backbone of Africa's Tech Ecosystem' *op. cit.*

[106] Kivuva, E., 'Absa Eyes women SMEs with Sh 10 billion Fund', Business Daily Africa. 26 February 2020 Link: https://tinyurl.com/w8utlz4 (consulted on September 08 2020)

[107] Mwago, S., 'Absa Bank Kenya Unveils a Sh10 BN Funding Kitty for Women Entrepreneurs', Ken Invest. 27 February 2020 Link: https://tinyurl.com/y4r9tra6 (consulted on September 08 2020)



Section 5: Opportunities

From innovations in agriculture and health to disruptive technologies and infrastructure, there are lots of motivating and exciting factors to observe in the Kenyan tech sector. Mobile has continued to register positive growth, with increased uptake and usage of mobile phone services. The increase in mobile network coverage has led to a decline in fixed-line networks as we mentioned earlier. The positive growth witnessed in the mobile money services market has been driven largely by the widespread use of mobile money solutions, and by Kenya's commitment to advancing financial inclusion. Widespread adoption of mobile money services among traditionally underserved groups has been facilitated by an enabling regulatory environment for digital financial services. With expansion of fibre-optic infrastructure across the country, more homes will be connected to better-quality, higher-speed broadband services, which will be extended to the rural areas. This growth poses challenges and opportunities for the regulators and policymakers. More regulations and guidelines will be needed in the sector to address the emerging situations. With the state still having interests in the sector, it is important that the authority to issue regulations resides with the regulator and not the Ministry to avoid any conflict of interest[108].

Based on the research as well as interviews with various stakeholders, the opportunities to create more impact when it comes to digital and gender in Kenya are proposed as follows:

- **Increase affordable access for women and girls** as digitals are still not affordable to large numbers of people, alternative and complementary access strategies such as free public WiFi, lower cost dynamic and secondary spectrum deployment and scaling up of community network and microcell

[108] Nyambura Ndung'u, C. Lewis, O. Mothobi, *op. cit*

operators will need to be urgently considered. To reiterate the point made in the country snapshot, affordability and digital literacy have a positive relationship. The higher digital literacy is, the higher the perception of technology value will be, it will seem more affordable. Increasing affordable access therefore implies decreasing the opportunity cost of purchasing access to technology by increasing digital literacy. This can be realised through mentorship or ambassador programmes where a digital/ tech role model with whom the beneficiaries identify, shares their experience;

- **Cybersecurity** remains a real challenge in Kenya. Therefore, there is a need to revisit the National Cybersecurity Strategy and Regulations, to address these emerging challenges comprehensively;
- **Policy work** and active consideration should be given to revising the Computer Misuse and Cybercrimes Act, and to re-examining the proposed Data Protection Bill, to ensure closer alignment with international best practice, and a better balance between freedom of expression and consumer protection for women as they pose to be a bigger target in this sector. Ensure gender-targeted intimidation, threats or coercion is integrated in anti-online harassment efforts. Guarantee added privacy and data security of women run accounts, especially women advocates, which are more susceptible to malware and hacking;
- **Create a more inclusive environment** for women to enter the digital start-up space by working with incubators and innovation hubs to encourage more female-led applicants and participants;
- **Develop targeted and structured programmes** to use digitals to help female entrepreneurs secure finance, receive mentoring and access other resources needed for success and sustainability;
- **Identify income generation and job creation opportunities** that are inclusive of women, require lower digital literacy and are accommodating of existing unpaid care work. Financially support technology-related initiatives led by women, technically support further technological integration or introduction for non-technology-related initiatives (i.e. online visibility, outreach, purchasing, promotion…).
- **Provide funding or similar incentives** via innovative financing mechanisms[109] such as Innovation Funds, Public Private Development Partnerships or direct support to tech hubs / innovation hubs and female and young innovators;
- **Strengthen the judiciary's ability to address gender-based violence**. Through digital capacity building, support the creation of an information data collection system to make educated and appropriate responses to correct numbers and statistics of gender-based violence in Kenya. This also relates to the policy work required related to cybersecurity and online violence.

[109] 'National Development Plan', National Planning Authority, Link: https://tinyurl.com/y6daz3ge (consulted on September 08 2020)

5. MOZAMBIQUE - CASE STUDY

Country Snapshot

Pop.(2020)[110]	Total land area (Km2)	Pop. Density (pp/Km2) 2019	Urban/Rural Pop. (2019)		Life Expect. (2020) / years			Adult Literacy Rate (2018)			Total fertility rate (live births/ women) 2020	GDP/ capita (USD) 2018
			Urban	Rural	Ave	Men	Women	Ave	Men	Women		
31,123,309	786,380	39	38% 11,978,439	62% 19,276,996	62.1	59.1	65.0	60.66	72.6	50.3	4.9	499.0

Digital: Mozambique is a country characterised by a weak fixed telecommunication network and a relatively strong mobile network. The mobile network has been growing since its deployment and accelerated considerably with the introduction of a second and a third mobile operator in the country. The percentage of individuals using internet is also amongst the lowest in the region while the gender and rural-urban gaps for internet usage is among the highest. In 2017, an estimated 24% of rural Mozambicans use internet regularly while only 4% of rural populations do, resulting in an 85% gap. As for the gender gap, more than half of all men (50%) have mobile phones as compared to only 32 percent of women.[111]

Internet users in Mozambique 2020[112]

- There were 5.36 million internet users in Mozambique in January 2020.
- The number of internet users in Mozambique increased by 439 thousand (+8.9%) between 2019 and 2020.
- Internet penetration in Mozambique stood at 17% in January 2020.

Mobile connections in Mozambique 2020[113]

[110] Mozambique Population (Live), Worldometers, Link : https://www.worldometers.info/world-population/mozambique-population/ (consulted September 08 2020)
Mozambique, Education and Literacy. UNESCO, Link: http://uis.unesco.org/en/country/mz (consulted September 08 2020)
GDP per capita (current US$) – Mozambique, The World Bank Data, Link:. https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=MZ (consulted September 08 2020)

[111] 'State of ICT in Mozambique', Research ICT Africa. 4 Apr. 2019 Link : https://researchictafrica.net/2019/04/04/ict-in-mozambique (consulted September 08 2020)

[112] Kemp, S.,'Digital 2020 : Mozambique', DataReportal. 18 Feb. 2020 Link: https://tinyurl.com/y5l26c2w (consulted September 08 2020)

[3] Ibid.

- There were 15.31 million mobile connections in Mozambique in January 2020.
- The number of mobile connections in Mozambique increased by 842 thousand (+5.8%) between January 2019 and January 2020.
- The number of mobile connections in Mozambique in January 2020 was equivalent to 50% of the total population.

Percentage of Households using ICTs[114].

	National (%)	Urban (%)	Rural (%)	Location Gap (%)
Landline	1	2	0.1	95
Desktop	2	5	0.3	94
Laptop	1	7	4	43
Tablets	8	15	4	73
Television	23	40	10	75
Radio	37	40	35	13

Such low percentages and high gaps make more sense when considering that 52% of households in Mozambique have no access to electricity.

Gender: Extreme poverty and the HIV/AIDS epidemic have contributed to the precarious status of women and girls in the country. Low levels of education, high maternal health risks, pressure to marry at a young age, limited economic prospects, gender-based violence, and accepted cultural norms place women at a high disadvantage. Domestic violence is pervasive in Mozambique and laws against it are rarely enforced. According to the Ministry of Women and Social Action, "at least 54% of women will endure some form of physical or sexual violence at some point in their lives. Early and forced marriages remain common in rural areas"[115].

Affordability (and taxation)*:* Affordability of devices that are necessary to access the Internet and e-literacy are the main barriers to Internet access in Mozambique with a study showing that 76 people out of 80 respondents claim that they do not have access to the actual devices and an additional 1 respondant saying that internet itself was too expensive. Affordability and digital literacy are tightly linked, the perceived value of using technology and internet is too high, not just in financial terms but because of the opportunity cost of the time spent figuring out the services available.

Online security: In 2018 the Mozambican government approved a resolution ratifying the African Union's convention on cybersecurity and data protection. The convention is a legal instrument that aims to provide security and a legal framework necessary for the emergence of the knowledge economy in Africa. As cybercrimes have increased in recent years the government is reluctant to strengthen legislation on the fight against cybercrime.

E-government: Registration for national elections was computerized for the first time in 2008. 128 computer kits were delivered to each to Mozambique's district allowing squads to carry out local registration of names, information details, photos, fingerprints, and delivering voter cards. Around half of the 20 million population, thus 10 million people, was effectively provided with such a card. This is a non-negligible achievement considering the lack of electrical power in rural areas, the expected malfunctioning of the equipment, and the fact that in 2008 the population under 18 years of age accounted for almost half of the population (0-14 years old consisted of 45.80% of the total population)[116].

[114] 'State of ICT in Mozambique' *op. cit.*

[4] 'Freedom in the World 2019, Mozambique' Freedom House. Link: https://tinyurl.com/yxeehj4c (consulted September 08 2020)

[116] Digital Inclusion in Mozambique', Panos London, May 2010. Link: https://www.m-iti.org/uploads/Pa10.pdf (consulted September 08 2020)

Section 1: Policy and Regulation for Digital and Gender

***Digital*:** Mozambique is a pioneer in recognizing the importance of ICTs in development. Their ICT Policy Commission began drafting its first national report in 1998. The policy was adopted in 2002 and has been reviewed and adapted throughout the decades. Some of the key areas covered by the policy included infrastructure, access, human capacity, E-government and Business Development.

ICT policy, regulation and implementation are spread across multiple government departments and organisations. The Ministry of Transport and Communications is responsible for the national telecommunications policy. Responsibility for 'ICT policy' resides within the National Institute of Information Communication Technology (INTIC) and is housed in the Ministry of Science and Technology[117]. A review of the Telecommunications Act of 2004 was launched in 2012 by the Ministry of Transport and Communications (MTC) with a series of public consultations. However, due to a delay in the implementation of the new telecommunications law, this has led to very little sector development and not been able to fully optimise global technology and service innovation.

The authorities' attention to technology and digitalization is featured in other policy reports: the 2025 Agenda, the Poverty Reduction Action Plan, the Science, the Rural Development Strategy approved in 2007 and the 10 year Mozambique Science Technology Innovation strategy (MOSTIS). The latter policy report recognizes 5 cross cutting areas that should essentially be mainstreamed in all sub-policies: Social, Human Sciences and Culture, Gender Equity, Ethno-Botany; HIV/AIDS and Environmental Sustainability. Article 5.2 "Gender Equity" stresses that encouraging "more women studies to enrol for science-related degrees at the tertiary level" creating a "larger pool of women with S&T expertise that may work within the S&T system" is a solution to bridging the digital gender divide. It is then explained that reforms within the education system are only effective in the medium and long-term. In order to fast-track women integration in digital spaces MOSTIS underlines the need for the implementation of "specifically-designed programmes" enabling women to "gain the necessary S&T expertise"[118]. In the "Gender Challenges" section below, we discuss why policies are not sensitive to the reality of rural and poor women are unable to complete tertiary studies.

Challenges: Primary causes of digital exclusion are education and income. Although there are slight differences in mobile phone and Internet usage, broadly speaking, men and women of a similar education level and income group access these services similarly. As women are more concentrated among the poor, lacking education and therefore unable to gain employment, they are disproportionately marginalised from the benefits of ICTs to enhance their well-being. Mozambique was one of the first countries in the region to adopt a comprehensive ICT policy and implementation strategy. As a next step, it needs to become fully gender responsive.

The 2010 London Panos "Digital inclusion in Mozambique" explains some of the failures of the National ICT policy. The policy discusses clear cut objectives: "a national broadband backbone connected to provincial capitals and expected to cover all districts

[5] 'State of ICT in Mozambique' *op. cit.*
[118] 'Mozambique Science, Technology and Innovation Strategy (MOSTIS)', Time Horizon: 10 Years Council of Ministers, 27 June 2006 Link: https://tinyurl.com/y7d4fhx8 (consulted September 08 2020)

by 2011"; "lower charges for dial up internet access rolled out by the Universal Access Fund"; the "SchoolNet Programme to equip secondary schools with computers, the piloting of a secondary ICT curriculum and the university-level distance education"; "creation of a government supported incubator and a stronger legislation around electronic transactions". With its straightforward goals, the policy can seem refreshing in comparison to the broad-lined and generic strategies commonly established in developing countries' ICT sectors. Unfortunately these results in unrealisable objectives, excessive optimism in regards to implementation and over-estimation of state capital and capacity to deploy knowledgeable and trained human resources to carry out missions. Furthermore, the external funding generated did not match the expected amounts and resources lacked for the larger coordination-intensive projects. Finally, the ICT Citizen Consultative Forum that was planned was never created ensuing in an unrelatable and out-of-touch policy.

Gender: Gender issues have been considered systematically in Mozambique since independence in 1975. In 1995, Mozambique adopted the Beijing Declaration and Platform for Action. Since, to promote gender equality and advance women, Mozambique has developed a well-articulated institutional and legal framework. Especially, the National Council for Advancement of Women and Ministry of Women and Social Action were created in 2004; the constitution explicitly recognises gender equality; and, in 2006 the Council of Ministers adopted Mozambique's Gender Policy and its Implementation Strategy. The Ministry of Gender and social action (MGCAS) promotes and monitors policies and programmes in the areas of women and gender. Other national efforts to protect women through legal means include: the approval of laws to decelerate gender based violence (2018), child marriages under 18 years old (July 2019), maternal deaths, land misappropriation (December 2018), and child absenteeism in schools; and the setting of priorities to coordinate and monitor the mechanisms working against gender inequality; and the revision of the national gender strategy in September 2018. The amendments and adoption of the aforementioned laws are an important step in the right direction.

***Challenges*:**

The above policies exist and offer a stepping stone to action-taking. This may explain some of the areas in which gender indicators are performing better such as the political representation of women, consisting 40% in parliament making it in 2014 the 27th country in the World Economics Forum Global Gender Gap Indicators, ahead of many developed countries. However, the poorer and more rural regions impact results negatively. Mozambique is the 180th country out of 189 on the UN's Gender Inequality Index. This suggests that one of the barriers to gender equality is the lack of application of law. In areas that can be directly enforced by government (i.e. instituting quotas for political representation) Mozambique performs better, but in reality, entrenched traditional and patriarchal values are still highly prevalent in the rest of the country[119]. This is the case of the still considerably high Maternal Mortality Ratio (489/100 000 live births) and the Adolescent Birth Rate (135/1000 women)[120]. Moreover, the political representation quota system (40% of parliamentary seats are attributed to women) has proven to be ineffective in allowing women to push for pro-women progress agenda. Women are appointed; they do not campaign and hence do not really have an influencing or participatory role in the decision-making. The December 2013 Article 223 illustrates this well, although 98 women

[119] 'Gender Country Profile; Mozambique', JICA, February 2015 Link: https://tinyurl.com/yxfxwggy (consulted September 08 2020)

[120] Gender Inequality Index, UNDP 2020. Link:: http://hdr.undp.org/en/composite/GII (consulted September 08 2020)

occupied parliamentary seats out of 250, the law allowing the rapist of an under-aged girl to go free if he marries his victim, to protect the honour of his family, was adopted.

A 2014 study investigating Mozambique's respect for the agreement to the Beijing Declaration and Platform for Action found that Mozambique has made significant improvements in the area of women adult literacy and vocational training, and that a special emphasis on science, technology and innovation had been placed. Although a clear increase from 24 705 to 41 569 women in two years, have successfully benefited from vocational training, there are very few indications of the digital literacy improvement. Not unlike other countries with high percentages of people living in rural areas (i.e. 62%) with faulty administrative systems, data collection and documentation of population trends are difficult to realise and is a challenge[121]. The available information differs from source to source and is generally outdate by over a decade.

Mozambique is today largely dependent on the humanitarian aid it receives, for its extreme fragility in facing climate change related crises. Two consecutive cyclones and droughts have ensued public health and acute malnutrition urgency. 10% of the population is in need of life saving immediate assistance and the internally displaced population continues growing[122]. Moreover, the government shows inadequacy in facing armed insurgency movements in the north and obtains an overall 26 out of 100 on the corruption perception index. Vulnerable populations, women, children and people with disabilities tend to be most affected.

Although the situation for women in Mozambique has improved and the economic situation is steadily growing, the country still has a long way to go when it comes to gender equality. Violence against women is a widespread issue and, according to U.N. Women, "economic empowerment remains a challenge for the women of Mozambique"[123]. A 2019 South African Journal of Economics found that the gender gap in employment rates in Mozambique is of 18 percentage points. Women tend to work less in the non-subsistence sector and formal sector, they are largely attributed household and agricultural labour that. Empowering women economically in Mozambique would require a shift of mindset on gender roles. Some of the international cooperation actions today are instrumental in targeting this, such as the EU "Spotlight" project discussed below.

Section 2: Existing EU Programmes in Gender and Digital

Several in-country initiatives[124] (approx. 9) have been identified with a digital component being implemented in Mozambique. The initiatives are being implemented are the areas of gender based violence, **agriculture, rule of law, and good governance** using technology as an **enabler**. Some of the activities the EUD oversees integrated include:

Education sector:

- Creation of curricula in professional and high education institutions;

[121] 'Gender Country Profile; Mozambique', *Op. cit.*
[122] 'Revised Humanitarian Response Plan 2018-2020', WHO, August 2020 Link: https://tinyurl.com/y566xtdl (consulted September 08 2020)
[123] Shabeeb, M., 'Finding Steady Work was Already Difficult for Women in Mozambique. Then Came Cyclone Idai' Care. 13 Sept. 2019 https://tinyurl.com/y3ylrvxt (consulted September 08 2020)
[124] Based on Action Documents and resources provided by DEVCO

- Grants and technical support for investment projects generating employment and access to markets;
- Grants and technical support for regional projects in diffusion of literature in the PALOP-TL;

Good governance sector:

- Online platforms on Information Law implementation monitoring and education and health services delivery;
- Automated tax systems e-taxation system rolled out with improved business processes;
- Citizens participates in definition and evaluation of water & sanitation planning proposals of the line municipality sector;

The Spotlight Initiative: This is the EU and UN phare project, implemented in 17 countries of which Mozambique is part, tackling violence against women and girls (VAWG). VAWG is a prevalent issue in the country acting as a major barrier to gender equality. The action, built on the momentum of the SDG 5 efforts, will be intensified around legislation/policies, institutions, prevention, deliver of and access to services and data collection, disaggregation and sharing. The first idea is to have political entry points in the national discourse of the targeted country provided by key national figures in the current political sphere. The second idea is to ensure the participation and engagement of the civil society represented by NGOs and gender equality advocates to ensure relatability, sustainability of outcomes and enlargement of scope. This will be supported and coordinated by the UN agency system and its partners. The digital space is to play a key role in this project, activity 4.2.3 plans for the promotion of the legal literacy of young girls and women on available services on Sexual, Gender-Based Violence (SGBV), Harmful Practices (HP), HIV/AIDS through social media resulting in the 4.2 output that predicts access to services by VAWG survivors and their families and an improvement of recovery.
Some of the activities realised under Spotlight in Mozambique specifically include:

- Promoting legal literacy of young girls and women on available services on SGBV, HP and HIV through social media;
- Use of SMS platforms such SMSBiz/U-report for peer counselling to improve adolescent and young people's access to comprehensive and personalized SMS based information on HIV, SGBV and early marriage;
- Design of an integrated digital system (software Info Violencia) for data management of violence cases using Real Time Monitoring

There are several ICT-related activities that are innovative for Mozambique. Firstly the creation of the information system with records of cases in the country. Better identification of SGBV will lead to a more country-suited response. The use of the ICT to maximize communication outreach, stimulate social action and behaviour change regarding reproductive health and SGBV[125]. There is a direct relationship between the digital/ICT components and the gender components of the project.

PRO-ACT: This project currently in the implementation process seeks to enhance the resilience of targeted vulnerable and food insecure communities and strengthen social protection systems to respond adequately to climate change hazards. The project is tightly linked to ICT use, the goal is to monitor and forecast droughts and inform the first

[125] Spotlight Initiative Mozambique, 2020 Link : https://www.spotlightinitiative.org/mozambique

hit populations in preparation for difficult harvest periods. The Early Warning System (EWS) depends on the creation of a data base system comprising high-quality satellite pictures. The project will be rolled out in priority of vulnerable households, namely those headed by women, moreover there will be an active fostering of women participation within “training of farmers” groups. They will be using an e-voucher system and employing data for drought monitoring and forecasting to gain further insights into the situation on the ground;

While PRO-ACT has successfully mainstreamed the digital component within its functioning, the gender component is lacking. It is mentioned, it seems, as a formality rather than as a real strategy setter. The two components possess a indirectly influencing relationship. A way to influence this relationship and include women more strategically in the project would be to establish quotas such as “50% of the drought forecast information receivers must be women” or lower barriers on commodities such as “to ensure that women have access to the drought forecast information, women led households will receive a subsidized smartphone”.

With the available information, it can be concluded that the majority of initiatives are not necessary designed exclusively for women and girls. However, gender is either being mainstreamed in all EC initiatives, or the activities’ benefits will eventually reach women.

Section 3: Best Practices of Digital for Women Initiatives

Although Mozambique has a challenging path ahead to realise the full potential of the digital sector in developing its economy and to include women on that journey, it still has some modest tech success stories to pave the path for future innovative initiatives that benefit women. One of the main takeaways from the interviews with the stakeholders were that many initiatives focused on women or led by women founders are one off pilots that cannot survive beyond the pilot phase. This due to the fact that they cannot secure future financing, weak business mode as many entrepreneurs are self-taught and find it challenging to manoeuvre the male dominated environment.

The initiatives presented in this section are not necessarily focused only on women and girls due to the limited gender-specific initiatives, but they provide examples of digital services that are accessible to women in some cases.

Agriculture

The Connected Farmer Alliance (CFA) is a public-private partnership that seeks to promote commercially sustainable mobile agriculture solutions and increase productivity and revenues for 500,000 smallholder farmers across Kenya, Tanzania and Mozambique. The programme also aims to increase revenues for agribusinesses and agricultural value chain service providers.

Farm Field Schools - In 2014, the Government of Mozambique and FAO agreed that targeted “smart subsidies” using e-vouchers coupled with a participatory agricultural extension approach (FAO Farm Field Schools), as powerful tool to facilitate farmers’ access to seeds, fertilizers and other inputs needed to increase production and productivity.

Ecommerce

IzyShop - is an online supermarket for grocery products that connects producers to the consumer market. Izyshop has been mentioned as a success story in Mozambique as it

had successfully raised institutional investments. This is a major milestone not only for Izyshop, but for the Mozambican entrepreneurial ecosystem and has led to opening the door for more similar deals to occur in the future. It gained 1,000 plus customers in one year, holds about 60% of its own inventory and runs its own delivery service.

Access

In the Republic of Mozambique, the development-finance institution GAPI is lowering barriers to women's mobile access by providing offline Internet browsing, rent-to-own options, and tailored training in micro-entrepreneurship for women by region.

Mobile Banking

Business Women Connect has partnered with various Mozambican financial service providers (such as Letshego bank and M-Pesa) and has been working with their women agents to provide services in their communities. The tech platform has helped Mozambican women improve their businesses and increase access to savings.

Digital Literacy

The UNESCO **YouthMobile** project deployed in Mozambique aimed to empower the next generation with the skills they need to become creative actors and leaders in our increasingly digital societies. During the course, students learned to design, develop and implement digital solutions addressing local challenges. By the end of the 4-months programme, students had developed over 50 mobile phone application prototypes that offered concrete solutions fitting the local context. The training was open to students who had little to no previous experience in mobile applications development. They were trained in programming languages such as Java and computer programming tools, such as Android studio.

Online job board

Biscate is an online job board platform using inclusive technologies such as SMS, USSD and web to connect skilled workers from the informal sector with customers. The service is designed to work not only on smartphones but on many workers' low-cost basic handsets.

Section 4: Mozambique's Tech Ecosystem

Over the past few years a huge increase in the quality of start-ups has evolved in Mozambique, as Universities focus more on improving their tech curriculum, local start-up events get more popular, more founders share their insights and knowledge.

The local youth is clearly interested in creating start-ups and becoming entrepreneurs, what they are lacking is structured training, mentoring, networking, access to finance, and physical spaces to meet and develop their products into businesses. Luckily enough, a group of dynamic individuals have been pushing for the ecosystem to develop, two female entrepreneurs that initiated IdeiaLab[126], motivate and train young entrepreneurs, especially women, inspiring them to follow their dreams. Also noteworthy are the initiatives of MozDevz[127], a team of young developers who regularly meet at IdearioHub and promote training sessions at universities. Finally, there are also more institutionalised

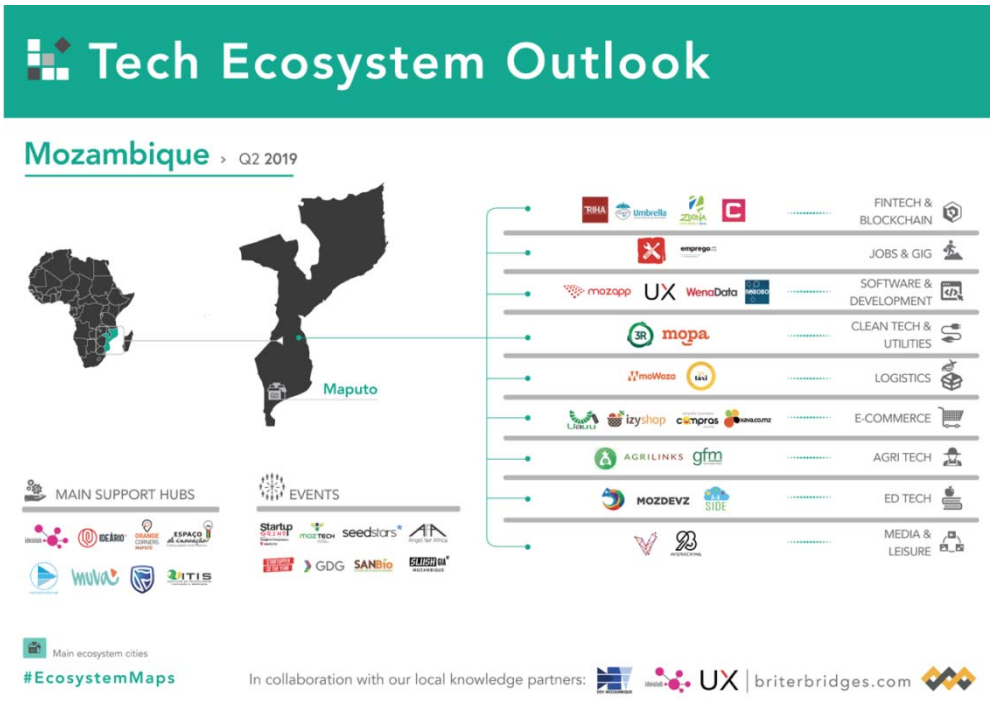
[126] IdeiaLab, http://www.ideialab.biz/
[127] MozDevz, http://www.mozdevz.org/

organisations like ANJE[128], the national association of young entrepreneurs, and the state initiative IPEME[129], who provide networking and financial incentives.

Some of the other incubators and accelerators include RLabs Mozambique[130], Maputo Living Lab[131] and in 2017 launched Standard Bank[132] incubator programme. Finally, there is also a very vibrant initiative called the Orange Corners[133] which is an initiative supported by the Dutch Embassy, that aims to equip Mozambican founders with the skills to scale their start-ups.

When it comes to access to financial services, Mozambique has a very limited number of venture capital financing institutions. The stakeholders consulted with during this assignment pointed out the importance for venture capital services needed specifically for women.

The Tech Ecosystem in Mozambique is primarily based in Maputo with 8 main support hubs and a few tech companies across the different sectors from Fintech and Blockchain to Agritech. Based on second quarter 2019 data, the Briter bridges Tech Ecosystem Outlook gives a current snapshot of this progress. The below ecosystem map showcases the country's tech scene and aims at providing a comprehensive overview of the main stakeholders involved in the country's ecosystem, from entrepreneurs to sponsors and events.



[128] ANJE, https://www.facebook.com/anjemocambique/
[129] http://www.ipeme.gov.mz/
[130] https://rlabs.org/
[131] http://www.maputolivinglab.org/
[132] http://www.standardbank.co.mz/en/News/Incubator-officially-open
[133] https://mz.orangecorners.com/

Section 5: Opportunities

Based on the research as well as interviews with various stakeholders, various opportunities were identified to create more impact when it comes to addressing the digital gender divide in Mozambique, they are as follows:

- **Improve digital education** and integrate digital skills training into the curriculum early on, to equip girls with the tools they need to enter the information economy.
- **Provide affordable and safe public access** in order to facilitate access for women. These might include NGOs, women's employment centres, libraries and health centres. For example, providing Internet bandwidth but also technology (smartphones, computers, tables) to access the bandwidth, in a local health centre could bring the added benefit of increasing women's access to health information during their visits.
- **Help to reduce the cost of mobile Internet** as affordability is a huge issue for women to get connected. This could for example be through introducing a subsidised or free Internet access scheme, providing more women with the opportunity to use the devices they already have to get online.
- **Develop targeted and structured programmes to use digitals** to help female entrepreneurs secure finance, receive mentoring and access other resources needed for success and sustainability.
- **Create a more inclusive environment** for women to enter the digital start-up space by working with incubators and innovation hubs to encourage more female led applicants as well as solutions specifically addressing female users.
- **Identify income generation and job creation opportunities** that are inclusive of women, require lower digital literacy and accommodate existing unpaid care work.
- **Ensure engagement of relevant stakeholders** on user-centred programme designs that consider the needs of different consumer segments of women so they can design and deliver relevant, safe and secure products and services to help close the digital gender gap.
- **Foster rural initiatives and the desire to enhance digital economy.** Adapting digital initiatives to the rural-urban divide is crucial. This could mean covering topics relevant to rural populations (agriculture, local news, local bus services etc.) and establishing the means to use them (wifi hotspots in villages, grouped or micro-credit loans to access smartphones etc.) It could also mean that all digital initiatives that are implemented nationwide, should include step by step and local context sensitive actions to undertake in remote zones. This is especially for women in rural areas who are more susceptible to encounter the barriers to digitalization and thus consideration of their narrative and points of views should also be integrated in the efforts to increase technology uptake in the outside of urban centres.
- **Adult and senior women should not be left-out of digital initiatives.** Although increasing digital literacy and skills among younger female generations is a priority, older rural women are a potential platform to accessing women's circles in rural areas. Without young children to care for and often more respected by their male peers, they can have the time and legitimacy to learn and uptake digital solutions. In turn, they can become activists for their communities and advocate for the rights of the younger women and girls around them. It is the older adult women may have experienced

early, forced marriages and intimate partner violence that act as ambassadors to existing resources, programmes, trainings and centres available in their areas.[134]

[134] 'Rural women tackle drought-affected Mozambique's rise in child marriage', UN Women. 8 November 2017. Link: https://www.unwomen.org/en/news/stories/2017/11/feature-mozambique-rural-women-tackle-drought-related-rise-in-child-marriage (consulted September 08 2020)

6. NIGER – CASE STUDY

Country Snapshot

Pop.(2020)[135]	Total land area (Km2)	Pop. Density (pp/Km2) (2019)	Urban/Rural Pop. (2019)		Life Expect. (2020) / years			Adult Literacy Rate (2018)			Total fertility rate (live births/ women) (2020)	GDP/ capita (USD) (2018)
			Urban	Rural	Ave.	Men	Women	Ave.	Men	Women		
24,072,871	1,266,700	18	17% 4,002,638	83% 20,204,006	63.6 years	62.4 years	64.9 years	30.56	39.06	22.55	7.0	414.0

Digital: Despite mobile operators' efforts to connect the rural communities of the vast and landlocked country, mobile uptake remains unbalanced across different regions of Niger, with only 47% of the population owning a mobile phone and thereby accessing the internet. The limited fixed infrastructure, shortage and unstable supply of electricity, and relatively low uptake of mobile broadband defines a low national internet uptake. According to the World Bank, internet penetration stood at 0.1% in 2000, increased to 1.3% in 2010 and rose to over 10% in 2017[136].

- **Internet and social media users in Niger 2020**[137]
  - There were 2.78 million internet users in Niger in January 2020.
  - The number of internet users in Niger increased by 220 thousand (+8.6%) between 2019 and 2020.
  - Social media penetration in Niger stood at 2.1% in January 2020.
- **Mobile connections in Niger 2020**[138]

[135] Niger Population (Live). Worldometer, Demographics, Niger, Link: https://www.worldometers.info/world-population/niger-population/ (consulted on September 08 2020)
Niger, Education and Literacy. UNESCO, Link : http://uis.unesco.org/en/country/ne (consulted on September 08 2020)
GDP per capita (current US$) - Niger, The World Bank Data, Link:. https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=NE (consulted on September 08 2020)

[136] Niger, Individuals using the internet (% of population), The World Bank Data, Link:. https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=NE (consulted on September 08 2020)

[137] Kemp, S., 'Digital 2020: Niger', Datareportal. 18 February 2020 https://datareportal.com/reports/digital-2020-niger (consulted on September 08 2020)

- There were 11.10 million mobile connections in Niger in January 2020.
- The number of mobile connections in Niger increased by 1.2 million (+12%) between January 2019 and January 2020.
- The number of mobile connections in Niger in January 2020 was equivalent to 47% of the total population.

Gender: Gender inequality and social norms around digital usage impact the gender digital divide in Niger, for which the mobile phone ownership is an estimated 45%[139] . A 2020 Unicef report estimates that, in Niger, three in four girls are married before the age of 18 and one in four girls are married before the age of 15. For example, in the Maradi region, rates of child marriages can reach up to 89%[140]. A 2017 National Statistics Institute study reported that 30% of women were promised before marriage and also married under 18 years old[141] . This leads to some of the lowest rates of female secondary school completion in the world[142]. 81% of women between the ages of 20 to 24 with no education and 63% of women with only primary education were already married at 18 years old. This is a sharp contrast to the 17% of women who were married as children that have secondary or higher education[143]. This affects women's literacy level in Niger, which is as low as 11% in some parts of the country[144]. Along with girls' education and early, forced marriage being major issues in Niger, there are little investments to raise women's participation in the labour force and their productivity at work.

Affordability (and taxation)*:* Affordability of mobile services is the key barrier preventing access and usage in Niger for both women and men. According to GSMA research, the typical monthly cost of voice and SMS services corresponds to 47% of average monthly Gross National Income (GNI) per capita, compared to 14% on average across Least Developed Countries (LDCs)[145].

Online security: The government of Niger adopted in 2013 the Sectorial Policy on Telecommunications and the Information Communication Technologies (ICTs) in Niger. This includes elements for the development of Internet security and the creation of a Computer Incident Response Team (CIRT Niger) in charge of cybercrimes. In addition to this, a law on cybercrime has been adopted in 2019[146]. In 2019, article 31 of the draft law no. 0267 relating to cybercrime mitigation, was adopted by the Nigerien council of ministers. The law condemns the "diffusion, production, and the provision to others of data able to destabilize public order or offend human dignity through information systems". The law against cyber-criminality was condemned by Amnesty International in March 2020 for allowing excessive room for interpretation and for its utilization by authorities as a tool to arbitrarily arrest political dissidents[147], hence infringing on the freedom of expression and press. The authorities use the spread of fake news relatively frequently to justify the need to muzzle critiques (i.e. COVID-19 response).

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[138] Ibid

[139] 'Connected Women 2015: Bridging the gender gap – Mobile access and usage in low- and mobile-income countries'. GSMA.2015, Link: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/02/Connected-Women-Gender-Gap.pdf (consulted on September 08 2020)

[140] 'Ending child marriage in Niger', Unicef, March 2020. Link: https://tinyurl.com/y44dotmg (consulted on September 08 2020)

[141] 'Les Causes Et Impacts Du Mariage Precoce Au Niger', National Statistics Institute, September 2017. Link: http://www.stat-niger.org/wp-content/uploads/2020/06/Rapport_Analyse_Mariage_Precoce.pdf (consulted on September 08 2020)

[142] Alana McGinty, 'Digital Gender Divide: Latifa Yari's Story", Digital@DAI. 29 July 2019 Link: https://dai-global-digital.com/digital-gender-divide-latifa-yaris-story.html (consulted on September 08 2020)

[143] "Ending child marriage in Niger", *op. cit.*

[144] Ibid.

[145] 'Digital Inclusion and mobile sector taxation in Niger' GSMA & Deloitte. January 2017. Link: https://tinyurl.com/yxhzfcd5 (consulted on September 08 2020)

[146] Cybercrime policies/strategies – Niger. Link: https://tinyurl.com/y4ov5844 (consulted on September 08 2020)

[147] 'Niger: La loi sur la cyberciminalité est un instrument de répression des voix dissidentes', Amnesty International, 8 Mai 2020. Link : https://tinyurl.com/yyj3wuwr (consulted on September 08 2020)

Section 1: Policy and Regulation for Digital and Gender

Digital: The Ministry of Posts, Telecommunications and Digital Economy is responsible for the ICT sector in Niger. The road map for ICTs in the country is the 2012 Sector Policy Paper on Telecommunications and Information and Communication Technologies (Politique Sectorielle Télécommunications 2011-2020). Niger has rolled out ambitious sectoral digital initiatives under various ministries, such as e-health, e-agriculture, e-education and e-government programmes, and made advances in rolling out an internet backbone network. It has also developed a legal framework by adopting several laws on electronic transactions, including on e-commerce and consumer protection. The six directing principles and their sub-strategies, lacks a road map for establishing the internet. The 4th principle dictates "universal access to services" for every citizen independent of their geographical localization and price affordability conditions. This is the only segment of the policy which addresses women's access to technology[148].

In 2016, the government rolled out the Programme de Renaissance II with the commitment to promote mobile uptake and infrastructure investment. The ambitious programme includes a number of targets considering tax reform on the mobile sector: achieving 100% mobile coverage and 70% penetration by 2021, becoming a regional leader for new technologies in francophone West Africa, improving the regulatory and institutional framework for the sector to stimulate an inclusive and competitive digital economy, encouraging the development of mobile-based services for delivering healthcare and improving communication[149]. End of 2015 figures indicated that 75% national coverage and 39% penetration was achieved, in which the two public providers, SONITEL and SAHELCOM were nationalized[150].

In line with this, the Government of Niger in collaboration with the World Bank has initiated a digital transformation strategy. The World Bank is partly supporting the Ministry of Planning to implement the "Smart Villages" work stream of the National Strategy for Information and Communication Technologies 2017-2021[151]. Niger also joined the Alliance Smart Africa, started in 2013 in Rwanda, with the objective promoting ICTs in the country.

The 2017-2021 "Plan de Développement Economique et Social" or Economic and Social Development Plan (ESDP) supported by the Government of Niger weighs high importance on technology development and digitalization. The ICT results of the previous ESDP (2011-2015), demonstrate that investments and measures led to the rate of the telecommunications penetration to increase by 23.8% and the rate of the number of households owning at least one fixed line telephone line or mobile phone to increase by 58.6%. Each Sustainable Development Goal (SDG) is applied to Niger's context. SDG 1, eradication of poverty and SDG 9, infrastructure

[148] 'Document de politique sectorielle des télécommunications et des technologies de l'information et de communication 2012 -2020', Ministère de la communication et des nouvelles technologies de l'information, République du Niger. Janvier 2019

[149] 'Digital Inclusion and mobile sector taxation in Niger', *op. cit.*

[150] Chapitre VIII : Du Développement des services. Programme de Renaissance II, Niger Inter, Link : https://tinyurl.com/yy6mbvjm (consulted on September 08 2020)

[151] 'Project Information Document/ Integrated Safeguards Data Sheet (PID/ISDS)', The World Bank. 15 October 2018. Link: https://tinyurl.com/y6y3yq47 (consulted on September 08 2020)

and industrialization development, both establish technological progress as the foundation to reach the objective. The ESDP presents in depth on how to launch economic and social development by sector[152] with new technologies and digitalization considered a cross-cutting mechanism to solidify government actions.

Niger's government has recognized the potential of digitals for the development of its youth, and made a commitment to support start-ups to leverage digital technologies for the country's economic and social development; in 2019 the government launched the Niger 2.0 Strategic Plan[153]. The project has been criticized for being too ambitious, however is receiving strong support from the International community. There are four main thematic areas e-government; the *Smart Villages project*; the creation of "Technopole", a city of innovation and technology; and the promotion of digital technologies to all, particularly youth and women.

On the 19th of July 2019, the Nigerien government adopted the document planning the policies for the postal sector (2019-2028). It recognizes that with the emergence of ICTs, the postal services have majorly evolved through, in part, digitalizing information systems. To further integrate them, would create the possibility to perform financially inclusive exchanges[154]. If these exchanges are to take the form of micro-credit loans, women may gain from the capacity enhanced postal services.

Challenges: Despite the ambitious government commitments to close the digital divide, the development of digital is lagging in Niger and the country is one of the worst performers among all Sub Saharan countries with marginal fixed-line broadband and low mobile access. There are several factors that can explain the Tech Ecosystem in Niger:

- A large rural population - with 81% of the total population living in rural areas;
- Low access to electricity;
- Low coverage of the mobile networks;
- Affordability;
- Low digital skills/education especially for women and girls, who are largely illiterate.

It is therefore crucial for the government of Niger to outline concrete steps that should be taken to ensure that women are offered the same opportunities as men to connect and empower themselves through digital technologies. Ensuring monitoring of the targets outlined above and follow through in terms of investing in the commitments should be made by the government, donors as well as civil society.

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[152] 'Plan de développement économique et social 2017-2021', Ministère du plan, République du Niger. Link : https://www.undp.org/content/dam/niger/docs/UNDP-NE-PDES%202017-2021.pdf (consulted on September 08 2020)

[153] "Leaving no one behind: Niger's Smart Villages Project", ITU News. 9 September 2019 Link: https://news.itu.int/leaving-no-one-behind-nigers-smart-villages-project/ (consulted on September 08 2020)

[154] 'Adoption du document de la politique sectorielle postale au Niger-PSP', Agence Nigérienne de Presse, ANP. 20 Juillet 2019. Link: https://tinyurl.com/y46pa4fg (consulted on September 08 2020)

***Gender**:* Niger has several international conventions promoting equal opportunities for men and women, including the Convention on the Elimination of Discrimination Against Women (CEDAW) and the 2004 optional protocol on violence against women. The ratification was completed with reservations that still exist today.

On a national level the promotion of gender equity is mentioned in various programmes, strategies, and policies[155]:

- The Renaissance Act II programme of highlights the elimination of all forms of discrimination against women and girls;
- The equality of men and women features prominently in the Niger 2035 Strategy for Sustainable Development and Inclusive Growth (SDDCI) as well as the 2017-2021 Economic and Social Development Plan (ESDP). In the Sub-Programme 3.1 "social development and demographic transition", the ESDP lays out the plan to educate rural populations. Niger, having one of the highest gender gaps in literacy and lowest rate overall, must tackle this issue urgently to avoid the transfer of the unbalance to the digital sphere. Three principles are listed in this sub-programme catering specifically to women and girls: (xiii) deploy scholarships to female students of colleges, (ix) sensitize actors to develop access to education and the maintenance of girls, (iii) the support, socio-economic integration of those exiting the systems, including girls and the vulnerable groups. The sub-programme 4.2 is entirely focused on the "promotion of young women and girls' enrolment and training".
- In 2017, Niger adopted its National Gender Policy (PNG) and made the decisive commitment to achieve equity and equality between men and women;
- Niger has also implemented strategies such as the Gender and Islam Strategy, the School for Husbands Strategy, the Initiative for Adolescent Girls in Niger, and the implementation of awareness programmes for behavioural change.

Challenges: With regards` to the digital inclusion of women, there are strong socio-economic gender inequalities in Niger, which also spread through the digital sector. In 2017, 62% of males own a mobile phone against 43% of female, the third most important relative gap within all Sub Saharan Africa (after Ethiopia and Chad)[156]. The gender gap in device ownership is quite prominent which limits the use of digital services. Increasing access to digital devices and services can catalyse development by empowering women to pursue education, new professions and to access critical government or private services[157].

Section 2: Existing EU Programmes in Gender and Digital

There are two programmes currently carried out by the EU in Niger with prominent digital components:

[155] 'Economic Impacts of Gender Inequality' The World Bank. 31 October 2019. Link : https://tinyurl.com/y22xk5jw (consulted on September 08 2020)
[156] 'Project Information Document/ Integrated Safeguards Data Sheet (PID/ISDS)', *op. cit.*
[157] Ibid.

- **Support for the Operationalisation of the "Integrated Regional Agricultural Information System" (ECOAGRIS)** relative to the food security program in West Africa, which will allow for accurate information on food security and nutrition needs, gaps and vulnerabilities and to assist with evidence-based decision making through a reinforced IT system at both the national and regional levels. Women are identified as one of the beneficiary groups, however clear indicators, activities and objectives for women are not well defined and therefore do not demonstrate or support a direct relationship between the digitalization and women's social and economic empowerment.

Photograph of the ECOAGRIS Kick-off meeting in 2015[158]

- **Support programme for Civil State reform (PAREC) Niger 2017-2020,** whose aim is to develop a modern IT system for citizens to access their vital records (birth certificates, etc.) and for the government to have up-to-date and well managed records. Regulating civil status plays a vital role in promoting gender equality as it recognizes for all state authorities, the same status for women and men, opens doors to the official and non-subsistence economic sector, to political participation and to education. The digitalization of the marriage and birth administration would also mitigate child marriages. Indeed, an official digitalized document accessed by the government would indicate the ages of young women and girls and signal the legality of marriages. Today, 77% of women in Niger between the ages of 25 and 49 claim to have been married before the age of 18 and 28% before the age of 15[159]. This is especially true in rural areas where populations have little to no access to government agencies and services. Although, there is a link between digitalization and women social and economic empowerment and addressing violence against women and girls, women are not the primary beneficiaries of the project. Moreover, the project does not tackle the entrenched cultural values and social norms that perpetuate early marriages.

The above projects are not gender-specific, but even if oriented to the whole population they can benefit women. For example providing easy access to

[158] Union Européenne au Niger, Facebook Page https://tinyurl.com/y3uuhb5q

[159] Tuone-Nkhasi, M., 'Lutter contre le faible taux d'enregistrement des naissances en Afrique', Mecanisme de Financement Mondial. 8 August 2019 Link : https://www.globalfinancingfacility.org/fr/lutter-contre-le-faible-taux-denregistrement-des-naissances-en-afrique-les-certificats-de-naissance (consulted on September 08 2020)

government civil status records could allow girls to register for school and other programmes. Furthermore, the EU Delegation (EUD) in Niger is currently in the process of designing and establishing a school to host digital skill enhancing courses (programming, coding, basic software use etc.) This project is carried out under one of the main EU priority areas in Niger: Supporting a resilient economy, new economic opportunities, job creation, private sector development and inclusive growth. The project does not have a specific focus on women, however it will promote female participation through various activities. The Niger EUD actively participates in the provision of more gender specific digital programming, encouraging the use of a gender lens when designing the programmes.

- Niger is one of the beneficiary countries of the **UN and the EU's joint Spotlight Initiative programme**. The programme's activities revolve around decelerating gender based violence. The areas of action in Niger are: restorative surgery campaigns for survivors of female genital mutilation and private sector commitment to inform about discrimination against female workers. The latter project engages with ICT operators to disseminate via SMS and other means, interactive debate animations and informative campaigns[160].

This project's digital and gender components interact directly with one another, here the beneficiaries, via digital means, receive gender disparity mitigating services.

Section 3: Best Practices of Digital for Women Initiatives

Niger is ranked as having one of the world's youngest populations, with close to 50% of the population being under 15 and 60.7% under 20 years old[161]. Education is a major issue in Niger, with extremely low rates of literacy and education, both caused by and feed back into a cycle of poverty and early marriage. In rural areas, schools are often far from the village and students walk several kilometres each way, many do not have functional latrines and so when girls have their periods, they are obliged to stay home[162]. These are some of the reasons why women and girls in Niger are between the least educated, compared to the rest of the world. Although, as highlighted in Section 1, there are legislative efforts to create the policy framework around educating girls, the structural and socio-cultural barriers need to be addressed to allow girls to access education and embrace the opportunities of the growing digital sector.

There are numerous actions targeting the gender disparity in education in Niger, partly spearheaded by international institutions. In April 2020, the World Bank announced a 140 million $ plan to improve the quality of education and learning in Niger. The Learning Improvement Results in Education (LIRE) project targets the "fragile" regions of the country with the intention to enhance the distance learning

[160] Spotlight Initiaive, Niger, 2020. Link: https://spotlightinitiative.org/niger

[161] Niger 2019 'Population pyramids of the world 1950 to 2100', Populationpyramid.net. Link: https://www.populationpyramid.net/niger/2019/ (consulted on September 08 2020)

[162] Filipovic, J., 'How do you get girls to school in the least educated country on earth?', The Guardian. 15 May 2017. Link: https://tinyurl.com/l7cx7d3 (consulted on September 08 2020)

programmes (especially in view of the COVID-19 crisis)[163]. The World Bank has financed several programmes over the years which have proven to be successful in increasing women and girls' education and literacy, which can contribute to increased digital literacy and opportunities. These include:

- **Financing Host Families and Scholarships for Girls' Secondary School Retention:** through this effort, 984 girls were able to receive lower secondary education in seven regions across Niger from 2006-2010. Along with those who received the scholarships, and those who were in host families, girls were more willing to attend the project-targeted schools. The schools which were subject to the financing showed an 11% point increase in girls' attendance.
- **"Girls in School" community and stakeholder's involvement:** This project was implemented from 2008 to 2009 and aimed at sensitizing the schools, communities, girls and their parents about the importance of young women and girls remaining in school. Sensitization activities also included religious sermons, local radio programmes and revitalized the school spirits by upgrading equipment, assigning awards to teachers and financing school committees.
- **NGO consortium to improve infrastructure teaching quality and community participation:** with the goal to increase completion rate of girls' primary education, this project carried out over two years from 2008 to 2010, was able to benefit 200 schools in twenty towns across Niger.
- **Providing at-risk girls with a second chance and vocational training:** Orange Foundation, a French phone operator with large ICT market shares in francophone Africa, was the implementing partner. The components revolved around offering young women and girls' second chances and vocational trainings in education and increasing community engagement and awareness in the education of their women and girls.
- **An integrated response to girls' nutrition and education issues:** 1564 girls benefited from this project which sought to mitigate the high acute malnutrition rates (15% of the population) and through the offer of educational opportunities. The female students received food supplies enriched in micro-nutrients and supplements and scholarships were given to the most vulnerable groups[164].

Through UN and UNICEF programmes, bilateral development agencies are also financing girls' education in Niger, the issue is relatively well recognized throughout human development actors. In essence, the Danish cooperation (DKK) issued around $7.5 million US to the "Safe School Initiative in the Sahel Region"[165]. Similarly, the World Food Programme incorporates girls' education activities within their nutrition projects in Niger. Nutrition and education have a self-feeding positive relationship whereas if one is strengthened, so is the other, which in turn strengthens the first one again[166].

[163] "Niger Receives $140 million to improve quality of education and learning", the World Bank, 6 April 2020. Link: https://tinyurl.com/yyhgnvg8 (consulted on September 08 2020)

[164] 'Tackling Gender Inequalities in Niger's Educational System', UNESCO, 2016. Link: http://www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/Dakar/pdf/TacklingGenderInequalitiesNigerEducationalSystem.pdf (consulted on September 08 2020)

[165] Andriamasinoro L.F., 'Education is the way to gender equality', UNICEF, 13 March 2019. Accessed: https://www.unicef.org/niger/stories/education-way-gender-equality (consulted on September 08 2020)

[166] 'Niger Country strategic Plan (2020-2024)', World Food Programme, 1 March 2020, Accessed: https://www.wfp.org/operations/ne02-niger-country-strategic-plan-2020-2024 (consulted on September 08 2020)

There are certainly significant challenges for women and girls, but there are also opportunities. Many young female students are eager to access information (online); however, access, affordability and digital skills are a major issue. Not to mention that the country also suffers from the lack of teachers and therefore, e-learning in education in rural areas can bring a massive opportunity to many women and girls left behind. According to the GSMA, it has been proven that mobile phones allow Nigeriens to use a simple form of information technology, which may enhance educational development and achievement. One example is the 'ABC project', an implemented project which taught adult students in over 110 villages in the Dosso and Zinder regions of Niger how to use simple mobile phones, appears to have improved educational attainment and information retention[167]. The following initiatives are not necessarily focused only on women and girls, therefore good practices are limited due to the lack of vibrant tech ecosystem.

Digital Skills in Rural Areas

Women's Digital Centre is a training centre, inaugurated in 2018 by Orange Foundation[168] in partnership with the SOS Femmes et Enfants Victimes de Violences Familiales (women and children, victims of domestic violence), and committed to the fight against early marriage, violence and discrimination. The Women's digital Centre has trained 20 women and 10 girls in digital skills to date.

E-governance

World Bank and GenKey collaborate for civil servant and student biometrics. With funding from the World Bank, GenKey is collaborating with the Government of Niger to roll out biometric registration and verification schemes for future human resource management for civil servants, manage student grants and allocate pensions. This first phase will see GenKey facilitate the biometric capture of around 400,000 individuals – civil servants, students receiving grants and retirees – and their metrics added to a newly-created database. They will be issued with smartcards which will contain a barcode for easy reading.

Mobile Money

UNHCR in Niger launched in 2017 a project providing access to cash via mobile phones to 2500 Malian refugee households. This was an initiative in partnership with DEVCO through a public-private partnership with a mobile phone company. UNHCR provided monthly cash assistance to more than 10,000 refugees over a period of two years in Tabareybarey camp, near the border between Niger and Mali. GSMA research has shown that Mobile money may be a cheaper, more efficient way to supply aid than traditional methods of cash dissemination, as shown by a study on urban refugees in Niamey[169].

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[167] Aker, J. And Ksoll, C. Project ABS: The Impacts of CRS' Adult Education and ABC Program on Education, Agriculture and Migration. Catholic Relief Services, Tufts University, University of Oxford, June 2011.

[168] 'Niger: women welcomed by the first Women's Digital Centre in the country', Orange Foundation. Link: https://tinyurl.com/y4zekted (consulted on September 08 2020)

[169] 'Digital Inclusion and mobile sector taxation in Niger' GSMA & Deloitte. January 2017. Link: https://tinyurl.com/yxhzfcd5 (consulted on September 08 2020)

Niger Smart Villages

As mentioned above, the Niger Smart Villages initiative kick-started in 2019 is a government implemented initiative co-financed by international institutions such as WHO, FAO, UNESCO and Digital Impact Alliance (DIA). The leading idea is to invest in the broadband and infrastructures so that remote areas, where over 80% of the population lives, have secure and stable access to internet. With this access the government wishes to reach populations in 4 categories, e-health, e-government, e-education/learning and e-agriculture. E-health is particularly awaited for the tracking of patients who need to stay in touch with health workers. In rural areas those happen to especially be pregnant women and with young children[170].

Cartoon depicting the goal of Smart Villages in Niger[171]

Photograph of Smart Villages Team introducing digital services in Borgou-Darey and Sadore villages in Niger[172]

Section 4: Niger's Tech Ecosystem

In addition to the above, some of the main barriers to the non-nascent tech ecosystem in Niger include the fact that digital services are not well known due to inadequate financial education, low rates of digitalization of government agencies' payment systems and insufficient partnerships between financial institutions and mobile operators. Niger would need therefore a major quantitative leap forward in order to catch up the digital and finance sectors to be able to seize those opportunities for economic and social development offered by digitals, in particular for women, young people and refugees.

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[170] 'Smart Villages: Empowering rural communities in 'Niger 2.0', ITU News, 10 January 2019. Link: https://news.itu.int/smart-villages-empowering-rural-communities-in-niger-2-0/ (consulted on September 08 2020)
[171] Smart Villages Facebook Page https://tinyurl.com/y43rw2nl
[172] ITU Official Instagram Page: https://tinyurl.com/yxfsfjy2

With a more positive outlook, the digital sector plays an important role in Niger's economy and has been identified by the government as a key sector for supporting economic development. Therefore, in 2019 they have established an innovation and technology city at the International Crops Research Institute for Semi-Arid Tropics, as part of government's Niger 2.0 programme. The hub is developed around clusters (agribusiness, health, education and more), and is aimed to host a start-up and small-medium enterprises acceleration and incubation centre, a training and certification centre and a coding academy[173]. The latter, called Codeloccol, was launched through a public-private partnership supported by the Incubation Centre for SME of Niger (CIPMEN), the National Agency for the Society of Information (ANSI), and the African Development University. The first of its kind in the Sahel, Codeloccol aims to train over 300 students in the first three years using innovation and empowering pedagogy considering local contexts and regionally implemented. It expects to train 1000 programmers (of which 400 women) by 2024.

Photograph a CodeLoccol brainstorming and training session[174]

ANSI eGovernment: This state agency attached to the President's cabinet is in charge partly of the digital transformation of the country and partly of the design and diffusion of the eGovernment services. Additionally to this, ANSI plays a key incubation role in the Nigerien digital economic sphere. Indeed, they are a principal actor in the establishment of a tech ecosystem, funding coding schools, the "innovation city", start-up consortia, supporting other incubating actors etc. ANSI is always on the lookout for leverage possibilities and facilitating access to public markets[175].

[173] 'Establishment of an innovation and technology city in Niger' ICRISAT Happenings. 8 March 2019. Link: https://tinyurl.com/y2aeqbkt (consulted September 08 2020)
[174] CODELOCCOL, 2020 https://www.codeloccol.org/
[175] 'Transformation numérique & egov: numericité au Niger', Numéricité, 2020. Link : https://numericite.eu/2020/04/16/transformation-numerique-egov-numericite-au-niger/ (consulted September 08 2020)

Photograph of the ANSI team with members of an AFD technical support mission[176]

ADU: This prestigious university near Niamey has up to 500 students a year in certifying programmes such as English language, finances, accounting and administration, business and public administration as well as leadership trainings. The ADU is a supports fostering commercial or educative initiatives and can function as a digital MSME incubator or funder.[177]

Promotional photograph of ADU hall and female students[178]

CIPMEN: Headed by Almoktar Allahoury, is the first Nigerien MSME incubator and has been functioning since 2014 with 5 firms in incubation. CIPMEN was created as an association supported by a public-private partnership. One of the large French enterprises which gathered under this partnership is Orange. Currently there are 135 ICT and tech-related firms under incubation in areas of expertise range from digital platform development to renewable energies, environment protection and agro-business[179]. With CIPMEN incubation, they are also encouraged to increase their online

[176] Ibid
[177] Quentin Velluet, 'Niger : le parcours sans faute de l'African Development University', JeuneAfrique. 7 Janvier 2019. Link : https://tinyurl.com/y392btdd (consulted September 08 2020)
[178] African Development University Facebook Page Link: https://tinyurl.com/y4w5mqwy
[179] 'L'Entrepreunariat – La Generation Numérique Montante', Orange. Link : https://startup.orange.com/fr/actualites/entrepreneuriat-la-generation-numerique-montante/ (consulted September 08 2020)

visibility and digital capacity. CIPMEN also facilitates the training of key stakeholders (1720 have been trained today) and organized 27 events relating to MSME development and networking[180]. Some of CIPMEN's most notable "incubees" from 2019 and 2020 include:

TOTEM: This web and mobile software development and management start-up, is flagship ALGESCO project. ALGESCO is an management of training and education establishment". A connection between the different establishments is created through digital devices and means, allowing communication, a better synergy and higher efficiency. There is an easier and more rapid access to information relating to education services and an automated system to generate education administrative documents[181].

design, behind the "aid to the

NigerDigital: a digital marketing specialized start-up, for the provision of technological solutions such as design, mobile phone applications, product hosting reinforcement of server capacities. NigerDigital also added value technical services such as JOBOA, a professional job matchmaking platform for 8 francophone countries in the sub-west African region. Currently in the process of implementing a digital solution for cashiering, stocks, accounting, and commercial information for large commercial establishments, Niger Digital is now, and thanks to CIPMEN, well embedded in the Nigerien tech ecosystem[182].

responsible website and provides

Novatech wants to be the reliable and sustainable partner for public institutions, private firms, non-profit organizations and international actors in brining innovative and productive solutions in the technological, informational and communication domains[183]. Novatech's current E-Korkari (e-agriculture) project, is an "interactive voice responsive (IVR) platform" allowing "farmers, breeders and buyers to access information, advice, warnings and market prices in the field of agriculture and livestock"[184].

FOYERTECH: this 2019 "Incubee" targets the increase of standards of living of women along with environment conservation by manufacturing and commercialising carbonized mineral coal. The coal is safer and more efficient than fuel wood[185].

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[180] CIPMEN, 2018-2020 Niger Digital Talents. Link: http://www.cipmen.org/
[181] Ibid
[182] Ibid
[183] Ibid
[184] 'E-Agriculture Case Study on E-Kokari Published', e-agriculture, FAO, 23 January 2019. Link: http://www.fao.org/e-agriculture/news/e-agriculture-case-study-e-kokari-published (consulted September 08 2020)
[185] CIPMEN, 2018-2020 Niger Digital Talents. Link: http://www.cipmen.org/incubes/foyertech!5c5c79ce9685c4001594b112 (consulted September 08 2020)

The government has pledged financial resources to the Development Investment Fund (Fonds d'Investissement pour le Développement – FID) with the aim of ensuring investments into nation-wide terrestrial TV services. . With these commitments, the government seeks to become a leader in the sub-region of francophone, West Africa, and to attract investors, entrepreneurs and specialists with a favourable environment for tech sector growth[186].

Section 5: Opportunities

There are positive outlooks when it comes to further opportunities within the digital sector for women. With a large incentive from the government with its "Niger 2.0" strategy, especially through the "Smart Villages" programme, which will focus on the digital development of rural areas, women are being included in the government commitments.

There are major opportunities to tap into the recent development of e-government services such as e-Agriculture, e-Health and e-Education and to support financial inclusion through mobile money for women and men. Based on the research as well as interviews with various stakeholders, the opportunities to create more impact when it comes to digital and gender in Niger are as follows:

- **Digital strategies to engage women in rural areas** as they often perform income generation activities in the informal and agriculture sectors, digital solutions and services could offer economic opportunities that otherwise would be difficult to achieve. Digital services may be a low cost means of improving information flows and making agricultural markets work more efficiently;
- **Supporting women and girls in digital skills and literacy**. Literacy and digital literacy rates have a positive relationship, if one increases so does the other. As previously covered in section 2 and 4, having initial knowledge in digital technologies can influence uptake of ICTs and access to platforms. Increasing women literacy rates to increase digital skills, enhancing capacities in basic technologies to increase literacy rates. These can in turn be useful in supporting distance learning and academia as well as open up opportunities for advanced learning and job options and boost economic and political participation;
- Create a more inclusive environment **for women to enter the digital start-up space by working with incubators and innovation hubs to encourage more female-led initiatives and actions**;
- **Identify income generation and job creation opportunities** that are inclusive of women, require lower digital literacy and are accommodating of existing unpaid care work;
- **Lobby for government policies** that will make digital more accessible for all by lowering Internet and mobile service costs and prioritising public access programmes;
- **Ensure that women are part of the ambitious government commitment** to create an information society and lobby for laws and policies to be passed that

[186] 'Chapitre VIII: Du Développement des services. Programme de Renaissance II'. *Op. cit.*

uphold women's online rights, and protect citizens from bulk surveillance, Internet shutdowns and censorship;

- **Strengthen prevention and response of gender-based violence** especially the police and judiciary's ability to address gender-based violence and early marriages needs to be strengthened through training and capacity building;
- **Ensure that relevant stakeholders** work to understand the needs of different consumer segments of women so they can design and deliver relevant, safe and secure products and services to help close the digital gender gap.

7. NIGERIA – CASE STUDY

Country Snapshot[187]

Pop.(2020)	Total land area (Km2)	Pop.Density (pp/Km2) (2019)	Urban/Rural Pop. (2019)		Life Expect. (2020) / years			Adult Literacy Rate (2018)			Total fertility rate (live births/ women) (2020)	GDP/ capita (USD) (2018)
			Urban	Rural	Ave.	Men	Women	Ave.	Men	Women		
205,370,903	910,770	221	52% 107,112,526	48% 99,027,063	55.8 years	54.8 years	56.8 years	62.02	71.26	52.66	5.4	2,028.2

- The number of mobile connections in Nigeria increased by 12 million (+7.7%) between January 2019 and January 2020.
- The number of mobile connections in Nigeria in January 2020 was equivalent to 83% of the total population.

Gender Digital Gap:

- Of the women who do not own a mobile phone, 40% claim it is because of the lack of literacy compared to 22% of men
- Only 45% of women in Nigeria are aware of mobile internet and how to procure it compared to 62% of men[188]

Gender: The main barriers to access in Nigeria are similar for men and women, relating to connectivity and the strength of broadband. At the grassroots level however, rural women may be more negatively affected given they are less likely to travel frequently to urban areas for non-subsistence employment. As such, they remain in rural

[187] Nigeria Population (Live), Worldometer, Demographics, Nigeria, Link: https://www.worldometers.info/world-population/nigeria-population/ (consulted on September 08 2020)
Nigeria, Education and Literacy, UNESCO, Link: http://uis.unesco.org/en/country/ng (consulted on September 08 2020)
GDP per capita (current US$) - Nigeria, The World Bank Data, Link: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=NG (consulted on September 08 2020)

[188] 'Bridging the Digital Gender Divide, Include, Upskill, Innovate', OECD, 2018. Link: http://www.oecd.org/internet/bridging-the-digital-gender-divide.pdf (consulted on September 08 2020)

areas where internet availability is reduced. Additionally, women have less economic power and earn less than men, so often struggle to appropriate resources. If women have to choose between food essentials and purchasing mobile data or other components of digital access, they are likely to consistently choose food. This is because women tend to manage the household, the children and their education, and hence are responsible for the cost and the supply of food and primary necessities for the entire household. Ethnic origins and social norms also come in to play – for example, women tend to receive less formal and higher education and hence have lower literacy rates. Nigeria, like other countries in Sub-Saharan Africa, experiences both a gender digital divide and urban-rural divide when it comes to accessing technologies. While it cannot be overlooked that many women who are marketers use ICTs as a tool to facilitate their sales, ICT-related solutions are often seen as additional financial burden, which explains their reluctance to engage in them. Finally, women are often fearful about utilizing their voice online (e.g. social media) – this is the result of high levels of online volatility, insecurity and abuse. The socio-political context in Nigeria is complex; social media are often used negatively for activities relating to terrorism, radicalization and the spread of fake news and malware. Women who have spoken out can be shamed or bullied into silence. Such is the case of a Lagos native young woman, who told her story to the BBC. She was forced into having sexual relations with her university lecturer and has since dropped out of school after being subject to online abuse following the televised programme. She is now too afraid to return to school[189].

Affordability (and taxation): Internet data tariffs have significantly decreased since Nigeria's connection to undersea international links and increased competition in the market. Since 2010, there has been a massive 2,705% increase in the wholesale submarine bandwidth capacity available to Nigerian telecommunications operators. This was caused by the launch of four new undersea cable systems with landing points into Lagos. This additional capacity has the potential to change the landscape of Internet service provisioning and data connectivity in Nigeria through lowered wholesale international bandwidth prices and higher speeds[190].

Finally, Nigeria ranks 6th out of 49 countries on Research ICT Africa (RIA)'s African Mobile Pricing (RAMP) Index, and 10th on the 1GB pre-paid mobile data index. Even though Nigeria compares well in the affordability and price rankings, these rankings need to be weighed against the accompanying broadband objectives of increased penetration and quality of service on which the country fares less favorably. Individual Internet penetration is relatively low in Nigeria, at around 30%. Access to national fiber-optic networks is still limited and relatively expensive where available. Therefore, while it is true that submarine cables have expanded the capacity of overall international bandwidth, inland locations within the country are yet to experience any significant lowering of broadband prices. Based on recent RIA surveys in the country, data rates are still high while browsing speeds are slow and unreliable, especially to retail consumers. Amongst low-income segments of the population, it is clear that, even with competitively priced data products, significant numbers of Nigerians cannot afford their devices to be online or to use the Internet in a meaningful and well-being enhancing way[191][192].

Online security: As mentioned above, Nigeria faces Cybercrime and Cyber-insecurity challenges. In 2015, the Cybercrimes and Cybersecurity Act was introduced in Nigeria. It provides a framework for the prevention, detection and punishment of cybercrimes and the protection of critical national information infrastructure. A legislative review conducted in 2018, found that the combined legislation for cybercrimes and cybersecurity does not provide for sufficient management of cybersecurity and recommended that Nigeria consider maintaining separate laws for each of these areas.

[189] Phone Ownership in Nigeria", Telecommunications Policy Volume 43, Issue
[190] August 2019
[191] 'Nigeria Digital Economy Diagnostic Report', World Bank Group. Washington, DC, 2019, Link: http://documents.worldbank.org/curated/en/387871574812599817/pdf/Nigeria-Digital-Economy-Diagnostic-Report.pdf (consulted on September 08 2020)
[192] *Ibid.*

Furthermore, the legislative review specifically recommended, for one, that an amended cybersecurity legislation clearly state the penalties for breaches of obligations by Critical National Information Infrastructure (CNII) holders, rather than empowering the respective sectorial regulators— not all of which are yet in place—to define the penalties for cybersecurity breaches in their sector and potentially cause misalignment of penalties across sectors. Second, an amended law should also define the timeline for the reporting of cybersecurity incidents. Third, it should contain provisions requiring cybersecurity service providers and products to be licensed. Fourth, it was recommended that a revised law establish clear powers of Nigeria Computer Response Team (ngCERT) to prevent and investigate cybersecurity breaches. Lastly, an amended cybersecurity legal framework should set standards for IT security of government information systems and databases. Key agencies are ONSA and Justice. Improved content management and ensuring that young people and women in particular are better educated when it comes to cybersecurity are also critical. This is especially true in the north of the country where Boko Haram is still actively seeking to recruit and radicalize young men and women.

Section 1: Policy and Regulation for Digital and Gender

***Digital*:** Over the past decade, the government of Nigeria has been more supportive of ICT and digital solutions however there has been a lack of collaboration between the public and private sectors due to mistrust and concerns around agendas and financial gains. Without having established the buy-in from both sides, the two sectors have not seen growth in the same direction.[193] Until it was first published in June of 2012, no single national ICT policy existed in Nigeria. The Nigerian Ministry of Communication Technology sought to provide "a framework for streamlining the ICT sector, and enhancing its ability to catalyse and sustain socio-economic and development challenges while facilitating the transformation of Nigeria into a knowledge-based economy."[194]

An important strategy document "Nigeria ICT roadmap for the timeframe 2017-2020" was published in 2017 by the Federal Ministry of Communications in representation of the Federal Government of Nigeria. The ambitious targets defined in the Roadmap included the creation of two million jobs in the ICT sector by 2020. Nevertheless, critics have been vocal about a lack of implementation. The Federal government announced, in July 2018, that the formulation of a new national ICT policy relating to ICT infrastructure, internet and broadband, local content development and the legal and regulatory framework was in preparation. As of today, this ICT policy has yet to be published.

The Ministry of Communication (MoC) drafted for 2019-23, a New National Broadband Plan (NNBP) which sets out to support the development of an Integrated National Broadband Backbone, of a National Policy on Open Access and of the constitution of Inter-Ministerial Committee on ICT Convergence and related issues. The drafting of the NNBP followed engagement of strategic partners on subjects including funding, tax waivers and the

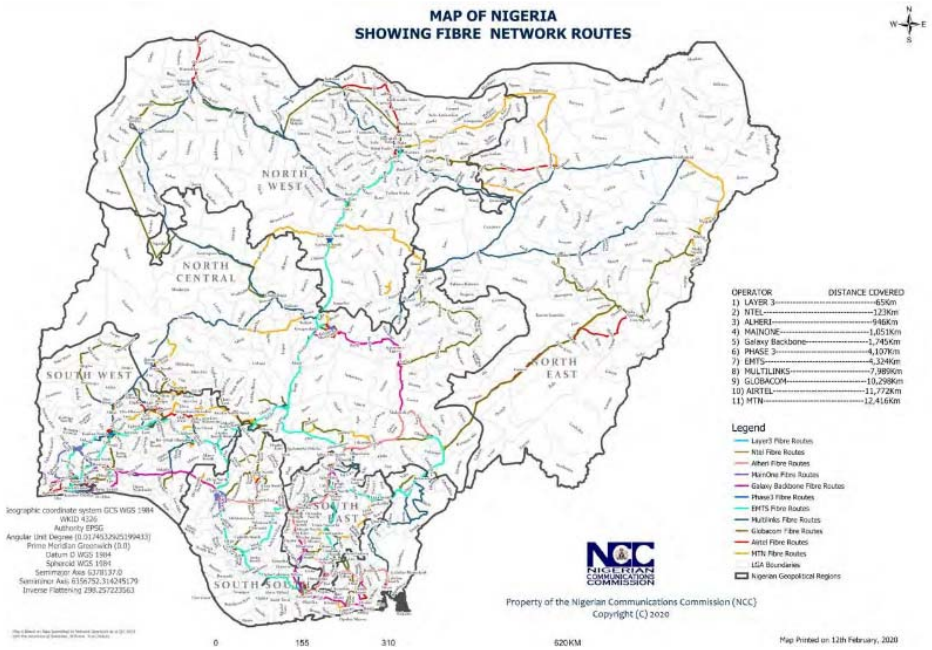
[193] Lou, K.K., Kreutzer, S., Sadeski, F., Lacave, M, Merkl, F. Unlocking the potential of the fourth industrial revolution in Africa – Country Case Study Nigeria. African Development Bank, 2019. https://4irpotential.africa/wp-content/uploads/2019/10/4IR_NIGERIA.pdf (consulted on September 08 2020)

[194] 'National Information Communication Technology Policy' – Draft. Ministerial Committee on ICT Policy Harmonization. January 2012. Link: https://www.researchictafrica.net/countries/nigeria/Nigeria_National_ICT_Policy_(draft)_2012.pdf (consulted on September 08 2020)

participation of stakeholders in the review process through improvement suggestions on new strategies[195].

The national ICT strategy is indicative of Nigeria's all-encompassing objective of becoming a top 20 economy in the world ICT-wise, and assuming leadership in both West African and across Africa. This has entailed promoting the development of key-ICT fields such as research and innovation, local manufacturing, capacity building and content development. The emergence of a vibrant ICT sector drives growth in other national production frontiers: agriculture, manufacturing, and service sectors[196]. The private sector was expected to conduct and oversee the majority of the 2020 vision implementation. Additionally, the National Broadband Plan, published in 2013, aimed to promote broadband deployment across the country. Some states (i.e. Enugu) developed their own policies and strategic plans outlining a wide variety of aspects, from the legal framework, universal access to ICT networks and services such as broadband internet and computers, to ICT infrastructure, the capacity building of ICT related skills at all levels of education, promotion of local content and manufacture of ICT products and services. These plans were comprehensive and covered e-Health, cybersecurity and safety (data protection), investment and funding for the ICT sector[197].

The National Broadband Plan (2020-2025) was adopted and launched in December 2019[198]. Below are some of the current broadband infrastructures in Nigeria.



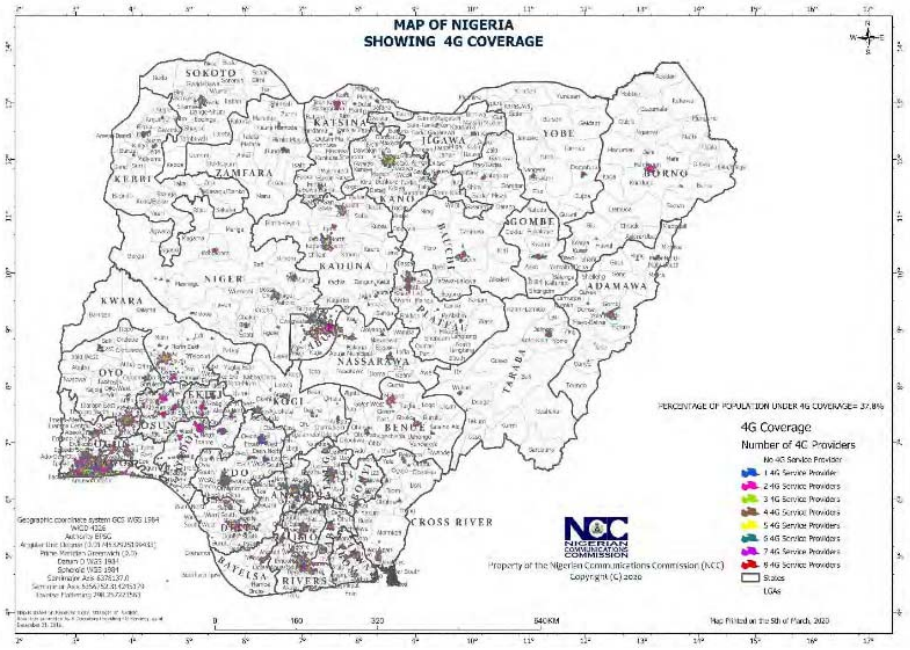
[195] Nan, "FG Urges stakeholders to support 2019 -2023 national Broadband plan", The Guardian. 8 February 2019 Link: https://guardian.ng/technology/fg-urges-stakeholders-to-support-2019-2023-national-broadband-plan/ (consulted on September 08 2020)

[196] Ibid.

[197] Ibid.

[198] Nigerian Central Government, Nigerian National Broadband Plan 2020-2025. Link: https://www.ncc.gov.ng/accessible/documents/880-nigerian-national-broadband-plan-2020-2025/file (consulted on September 08 2020)

This map shows well the disparities between some the Nigerian states in terms of Fibre Connection availability. Areas of higher demand tend to be near the coast and Lagos while other northern and central states, known to be poorer and with lower population density, have a less intrinsic fibre network.



Similar conculsions can be drawn from this map, depicting the 4G coverage. It can be concluded from both figures, that demand (where population density is highest, and where wealth is concentrated) drives the technological installations in Nigeria. There is more liberal market dynamics in comparison to countries such as Rwanda where the government efforts surpass the reality of national demand.

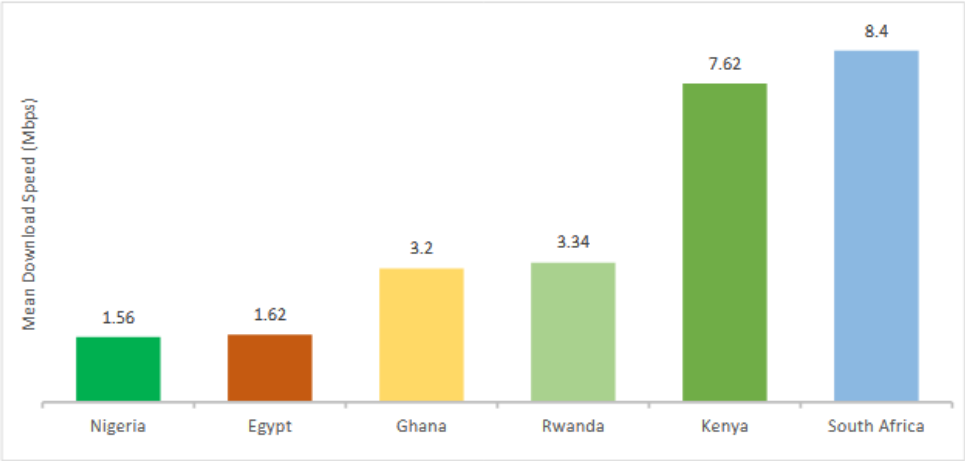


Figure 3.2: Mean Internet Download Speed 2019 Source: M-Lab

The graph above demonstrates that in comparison to countries with similar income levels the internet penetration remains severly below.

The national broadband targets are:

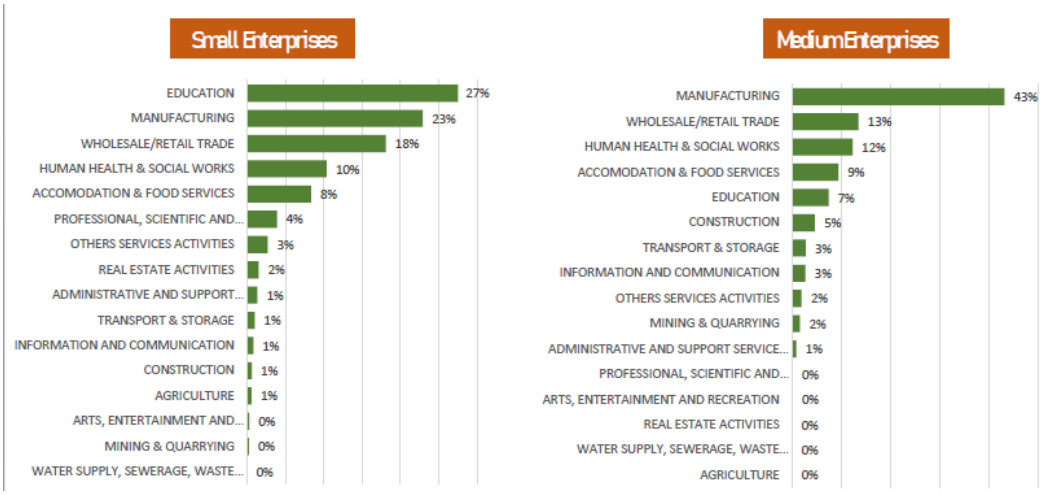
No.	Key Area	Details	Indices	Targets (2025)
1	**Coverage of Population**	Individuals	4G[1]	4G/5G mobile at 90% population coverage
2	**Speed**	Urban	Minimum Download speed[2,3]	10Mbps by 2023 25 Mbps by 2025
		Rural	Minimum Download speed	5Mbps by 2023 10 Mbps by 2025
3	**Penetration**	Number of connected individuals	Youth > 15yrs and Adults	70% of eligible individuals
4	**Fibre Reach**	Schools	Ensure Fibre build such that institutions are within 5km of fibre manhole or with a fixed connection	100% Tertiary Institutions[4] 50% Secondary Schools 25% Primary Schools
		Health Facilities		Connecting 1 General or Major Hospital per LGA and Federal Medical centres
		Local Govts.	Build in state capitals and major cities	90% of (774) Local Govts. HQ (secretariat) connected by Fibre. 10% by Satellite / Fixed /Other in hard to reach areas.
		Fibre to Towers	% Towers Connected	60% of Towers Connected
		Fibre Infrastructure	Open access shared Fibre	Minimum 120,000km needed. Non overlapping routes. All major roads, Federal + State. Minimum: 90% of LGAs
5	**Affordability:** **Data**	1GB for Data over 1 Month "1 for 2"	2% of median income/Capita i.e. 2% of (N19,460/month) @ N360/$1	N390 / 1GB
	Cost of Devices	Facilitate access to low cost broadband devices	Incentivize local manufacture of devices	At least 1 locally assembled Smart Device by 2023 Target Price[5]: <$ 50 (N18,000) by 2023; <$25 (N9,000) by 2025
6	**Digital Literacy and Skills**	Number of Youth & Adults (> 15yrs - World Bank) with basic digital literacy	ICT Degrees, Programs, Digital Education in Basic Education System.	Target: 60% Digital Literacy in Nigeria by 2025[6]
7	**Gender Equality**	Access to end user devices and data	% female mobile internet users compared to men	100% of Women in National Social Investment Programs have Digital Access. Target up to 5 Million women (Closer gender gap from 15% to 10% mobile internet users. A4AI)[7]
8	**Unserved Rural Communities**	Communities with no connectivity	Number of unconnected communities [8]	100% of unserved clusters to be covered (2025). This represents the last 10% not covered by 3G/4G targets. Use alternate technologies. e.g. satellite.

The Nigerian Communication Commission (NCC) plays a key role in assuring the infrastructure conditions are in place and that mobile network spectrums are given to providers able to actually implement changes. Several programmes were initiated by the Commission helping in the stimulation of demand and the acceleration of ICT tools and necessary services use. A few examples include:

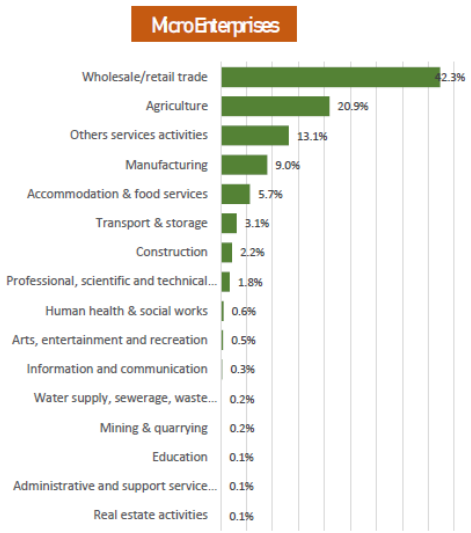
- The State Accelerated Broadband Initiative seeking the achievement of nationwide connectivity. This capital-intensive undertaking was implemented in the framework of Public Private Partnership (PPP) and licensed by private sector providers in order to deploy government-subsidized infrastructure.

- The Wire Nigeria Project helping to install fibre infrastructure around the nation. This in turn assures the creation of pathways for telecommunications providers to connect the country through infrastructure company licensing. Following an open access model the project sees the rolling out of fibre used by different providers. The ideal combination, which would bypass the stage where the entire country is connected via fibre, is to fuse the underground fibre in key areas with 'last mile' wireless connections through a spectrum. The mobile towers providing 4G and 5G connectivity need fibre connections.
- A Digital Bridge Institute providing training, skilling and creating manpower for telecommunications providers. The institute is still expanding, there are campuses located in Lagos, Kano with the main one situated in Abuja, the capital. The ITU is recognized as a centre of excellence and takes in students from all over Africa.
- **ICT Girls Empowerment Competition:** a Nigerian Ministry of Communications and Digital Economy to promote gender mainstreaming of ICT initiatives, and so especially at a young age. Gathering of girl only teams in Nigerian schools to solve pressing problems within their communities. Problems will cover inclusiveness and diversity within the digital economy, but also more gender general questions and how to best address them[199].

The Micro Small and Medium Enterprises sector in Nigeria has received considerable funding; it is recognized by the government, in the Economic Recovery and Growth Plan, as the gateway to the country's industrialization through inclusive economic development. The composition of the MSME Ecosystem is as follows:



[199] 'Digital Girls'. Federal Ministry of Communications & Digital Economy, 2020. Link: https://www.commtech.gov.ng/resources/digital-girls.html (consulted on September 08 2020)



The distribution of MSMES dedicated to information and communication is 0.3%, 1% and 3% respectively from Micro, Small and Medium enterprises. This is probably because what the ICT sector requires cannot be accommodated by a Micro or Small enterprise (not enough capital, qualification of few employees, infrastructure, etc.). Only 34% of Micro enterprises claimed they could find available and qualified labour immediately whereas small and medium enterprises said they could find it 77.1% of the time. When inspecting the MSME ecosystem in relation to digitalization, we must consider also the non-tech MSMEs who can use technology to expand their business either through online promotion, selling, buying, targeting, outreach etc.

Micro Enterprises – Highest Skills Shortage	SMEs – Highest Skills Shortage
Information & communication: 72.8%	Other Services Activities: 36.2%
Accommodation & Food Services : 71.1%	Agriculture: 35%
Wholesale/Retail Trade: 67.8%	Arts, Entertainment & Recreation: 33.3%
Other Services Activities: 67.3%	Water Supply, Sewerage, Waste Management: 33%
Manufacturing: 66.9%	Accommodation & Food Services: 32.6%

Furthermore, Microenterprises' highest skills shortage is in information and communication sector with 72.8% of Microenterprises saying these are the competences lacking to them. Based on these figures we can conclude that the first step to digitalizing the entrepreneurial sector in Nigeria, is to concentrate on increasing digital literacy and skills. Then, for the MSME ecosystem to thrive, and indeed be the catalyst for the country's industrialization, the policy framework must benefit and protect the small business owners[200].

***Challenges*:** Despite a number of supportive policies in place, challenges still arise when there is no accompanying or an ineffective implementation plan. The failures of the 2013-2018 Nigerian National Broadband Plan were also triggered by inefficient funding. The lack of infrastructure is one of the obvious challenges to digitization in Nigeria. As the Nigerian National Broadband Plan 2020-2025 states "most of the infrastructure available seems to be over-provisioned in choice areas, mainly due to overriding commercial considerations of operators in

[200] Kale, Y., (Dr) 'Micro, Small, And Medium Enterprises (MSME), National Survey 2017 Report' National Bureau of Statistics, 11 July 2019.

the industry". A solution to this would be to concentrate the focus on building infrastructure "integrated to counter-part funding based, sustainable and resilient"[201].

***Gender*:** Nigeria is facing a wide range of challenges relating to the Gender Equality Opportunities Bill. It was recently turned down in the 8th Assembly but is now being proposed again in the 9th Assembly. Nigeria is still largely a patriarchal society and there are many areas where women are left behind, such as land ownership. This Bill intended to address these constraints. One finding, dating back to when the Bill went through the 8th Assembly, was that at the time the Bill was developed, there was not enough consultation during its development. There is now a consultative group that also engages with civil society. Some critics of the Bill believe that it should be dissected across other existing laws but in practice this would be quite cumbersome in the Nigerian context. If this Bill is approved it could have a significant impact on women in Nigeria, providing appropriate resources are also availed to enable its implementation[16].

In parallel Nigeria has a National Gender Policy which was adopted in 2006, but it is weak and does not take into account a number of critical issues explicitly such as land rights, women's representation in government and decision making.

***Challenges*:** For many policies in Nigeria, a major challenge is the lack of resources ensuring its successful implementation and similarly guaranteeing that women and youth, in particular, are aware of the policies that exist and how their rights are impacted. Although the trend is changing, there is also a low rate of female political representation in parliament, one of the lowest in Africa and 181st out of 193 globally. Furthermore, policies state representation of women should be 35%, this is not the reality. For example, in forming the Presidential taskforce for the COVID-19 response, members proposed that the Ministry of Women Affairs (MOWA) should be part of the committee to ensure consideration of the gender perspective but this was refused. Currently, the Minister for Humanitarian efforts is the only female representative on the taskforce.

Given Nigeria's federal and state governance system, there is also the key issue of policy and law domestication at state level. States have a non-negligible freedom and a possibility of non-adherence and non-implementation, when it comes to enacting the federal policies resulting in a disparity in gender equality between states. The issue of gender equality in Nigeria is tightly linked to the economic powerlessness of women, they account for 70% of Nigerians living in extreme poverty[202] and 10% of land owners[203], and to the perpetuation of SGBV. Across Nigeria and especially in the North East were armed conflicts persists, 1 in 3 women has reported experiencing physical and/or sexual violence.

Section 2: Existing EU Programmes in Gender and Digital

[201] Nigerian Central Government, Nigerian National Broadband Plan 2020-2025.Link: https://www.ncc.gov.ng/accessible/documents/880-nigerian-national-broadband-plan-2020-2025/file (consulted on September 08 2020)

[202] 'Gender Equality: Nigeria must mind the wide gap', New African, 22 September 2019. Link: https://newafricanmagazine.com/19891/ (consulted on September 08 2020)

[203] Campbell, J., 'Ensuring Women's land rights in Nigeria can mitigate effects of climate change'. Council on Foreign Relations, 10 April 2019. Link: https://www.cfr.org/blog/ensuring-womens-land-rights-nigeria-can-mitigate-effects-climate-change (consulted on September 08 2020)

The EU currently has 5 active programmes in Nigeria that include digital components:

- **Organised Crime: West African Response On Cybersecurity and Fight against Cybercrime (OCWAR – C):** This programme is in its Inception phase but Nigeria is one of the focal countries. It seeks to deliver an assessment of national cybersecurity frameworks and audit of existing cybercrime infrastructures/entities. It will also provide capacity building and equipment for specialised entities in some pilot countries so that resilience and robustness of information infrastructure are improved and capacities of relevant stakeholders in charge of fighting against cybercrime are improved.

- **EU Support to Response, Recovery and Resilience in Borno State (3RBS):** This programme is targeting northern Nigeria and the development of a state level dashboard of recovery activities in Borno, to be interoperable as a component of the national dashboard. The outcome following the creation of said dashboard will be an improved delivery of financial management services, eventually reaching and benefiting women, especially victims/survivors of sexual trafficking. The digital and gender components do not interact with each other directly as the main objective of the proposed action is building the resilience of conflict affected people and public sector institutions in Borno State in an environment-friendly way.

- **The EU support to Democratic Governance in Nigeria (EU-SDGN) programme**: the ultimate goal is to participate in the capacity strengthening and the legitimization of the Nigerian democratic institution. To achieve this there is a need to include youth and women, to raise the number of registered voters, to advocate ideas through media channels, to educate on political identity, to inform on women and other marginalized populations on their political rights and duties and to ensure that when elections are held, the infrastructure will be sufficiently solid to accommodate voting. All of the above outcomes rely on the widespread use of information and communication technology, a cornerstone of the programme.

- **The EU funded rule of law and anti-corruption (ROLAC) programme**: this joint British Council and EU endeavour was launched in 2017 to ensure application of laws, skew corruption and ensure accountability of the government at the federal and state level. This is realised through supporting the reform of the criminal justice system, ensuring alienated populations including women, have access to justice, improving performances of agencies dedicated to anti-corruption and raising the voice of Nigerian anti-corruption advocates. An instrumental part of the criminal justice reform focus, is the development of a digital national sex offenders registry harmonized across the states, and available for the executive agencies such as the Women's Ministry, Security departments, Health agencies etc. In the case of the ROLAC programme, the digital and gender components have an obvious relationship in this programme, through the creation of the digital registry, women will ultimately be physical safer.

- **EU-UN Spotlight initiative:** this global EU-UN partnered initiative is implemented at the global scale; it implements a comprehensive and inter-sectional approach to gender equality. The Spotlight Initiative efforts in Nigeria follow the Innovating as One approach, it encourages partner collaboration across the Spotlight programme activities to scale-up and replicate effective solutions. One of spotlights' main operations in Nigeria is to support the government in stimulating the adoption of original and inclusive data sharing and collecting

methods. The data will cover SGBV, economic and social statistics and harmonize them under a digital tool to allow for better administration and allocation of aid and development.

Additionally, Spotlight is designed to strengthen strategic thinking, crowdsourcing and approach exploration to give the chance to those "furthest behind" to participate in the brainstorming of ideas. This has been the case of the UNICEF developed "U-Report", an SMS mobile system that allows youth to voice their concerns about issues concerning them. The programme attempts to cultivate social mobilization and engage with broader segments of the population to include them as agents of change, in problem-solving. Examples of this is having influencers demand services catered to survivors, ambassador and peer-to-peer promotion and including the private sector in voicing their "internal measures to prevent gender-based violence". The digital and gender components of the Spotlight initiative are directly linked, they sustain each other in a synergetic way, digitalization will expand through data collection on gender and the empowerment of women, and vice versa (women empowerment through technology).

Pictures from the inception workshop for the Spotlight Initiative in Nigeria[204]

Section 3: Best Practices of Digital for Women Initiatives

In Nigeria, women are custodians of the informal economy. They are decision-makers at the household level and so, are powerful influencers. Targeting women through digital technology, providing basic access and connectivity could lead to significant uptakes of products, goods and services, particularly if they have a benefit to the household. TechHer, Founder Chioma Agwuegbo also stated that "if we train women to have an appreciation of technology, when they have children they will pass on the knowledge"[205]." There are a number of promising examples of initiatives that are female led or that target females in Nigeria as highlighted below:

Women's Network: She Forum Africa

She Forum Africa, a registered Non-Governmental Organisation, is a home-grown Pan-Africa Women Development, Leadership & Lifestyle Organisation. The organisation's focus is the need to promote healthy conversations and solutions that will help address issues related to the health, safety, integrated development and economic advancement of women and girls. Founder, Inimfon Etuk found that there were limited options for women to meet, interact, draw

[204] European Union in Nigeria Facebook Page, 19 July 219. Accessed: https://www.facebook.com/EUinNigeria/posts/2235854809796248
[205] Interview with TechHer Founder, Chioma Agwuegbo. May 2020.

experiences from each other and build capacity in Abuja, especially on non-traditional topics. She Forum was born out of this gap, they organized the first event where 35 women came together in Abuja. Now SheForum holds monthly meeting for over three years in which they discuss different topics: health, mental health, entrepreneurship, leadership development, etc... They also hold Annual forums in both East and West Africa. SheForum has now also started the “He for She” platform to involve men and boys in recognizing that their support is crucial in generating greater equality.

***Achievements*:** Founder, Inimfon Etuk is a recent recipient of the Women

Economic Forum (WEF) 2019 Global Award for “Iconic Woman Creating a Better World” and a 2015 alumna of the International Visitors Leadership Program (IVLP) of the United States Government. She is also the UN Women Focal Person for the African Women Leaders Network (AWLN) Nigeria Chapter. She Forum Africa Conference brings together over 500 women and others to enable their entrepreneurial skills and empowerment and provides a platform for women to engage in meaningful discussions on topics that they may not feel comfortable discussing elsewhere due to the socio-cultural context.

Brave Tales: is focused on building and connecting a community of brave hearts across all digital platforms and provides an avenue for ordinary women to share real life experiences on what society considers tabooed subjects – sexual abuse, rape, miscarriage, imposter syndrome etc.

E-Health; Helium Health

Helium Health was founded in 2016 byTito Ovia, a woman entrepreneur, whose tool has supported hospitals, clinics and other health facilities to go digital using their flagship Electronic Medical Records/Hospital Management Information System (EMR/HMIS) product. Helium Health offers an intuitive and versatile suite of technologies that enables providers to utilize telemedicine and receive additional financing, encourages payers to validate beneficiaries and process claims quicker, and pushes patients to take control of their care. They can also capture data so that other partners can receive epidemiological insights and real-world evidence, all resulting in significantly better quality of care. Helium Health is one of the top healthcare technology providers in West Africa, facilitating hundreds of thousands of encounters each month across the region.

***Achievements*:** To date, Helium Health has supported over 300 facilities to go live, it has supported over 5,000 medical professionals and 165, 000 patient encounters across West Africa as of March 2020.

FinTech: PiggyVest

PiggyVest was founded by Oduanyo Eweniyi, a digital technology entrepreneur who has been establishing start-ups since 2016. PiggyVest was the first online “Savings & Investment” app in West Africa and provides an agnostic savings platform that is open to everyone. PiggyVest first launched as “Piggybank.ng” on the 7th of January 2016 as a savings-only platform. For 3 years, they offered only savings to their users but in April of 2019 Piggybank.ng rebranded to “PiggyVest” and then began to offer direct investments opportunities to users in addition to savings. Through this platform customers can save any amount, from as little as 100 naira per day. PiggyInvest has its own microfinance license and uses an interest and spread model to

generate revenues. Eweniyi believes that being female-led has helped them to know how to target women resulting in 52% of their customers being female.

***Achievements*:** PiggyVest now has over 1.2 million customers on its platform and ensures safety by using bank-level security measures to keep data safe. PiggyVest currently invests well over one billion naira every single month.

Community of Learning: TechHer

TechHer was founded by Chioma Agwuegbo. It provides a platform for technology knowledge exchange among women, providing real-time solutions to their techrelated problems and improving the quality of their lives and ease of doing business through a proper grasp of technology. TechHer believes that if women are exposed to the ways technology enhances their daily activities, they will become more productive and empowered to have a voice in their community. They provide the required training and support because they believe that tech savvy women are not only financially independent, but valuable to any field. Beginning in June 2019, TechHer holds a networking event for women every first Friday of the month with over 80 participants. The discussion at meetups spans topics relevant to women in technology such as careers available to women in technology besides programming and web-development. TechHer also has Continuous Learning Development Programme through which they develop a series of updated modules designed for members of their community to enrich themselves intellectually and economically. TechHer also focuses on Online Advocacy and has partnered with “Stand to End Rape” and “NewsWire NG” to raise awareness and invite experience-sharing in commemoration of the 16 Days of Activism for the International Day for the Elimination of Violence Against Women. TechHerNG also supports the online advocacy of the #NotTooYoungToRunBill.

***Achievements*:** Since the inception of the monthly event in June 2017, TechHer has reached over 500 women. They have hosted various training for the women on topics such as cyber-safety, cybersecurity, digital marketing, enterprise development, coding and web-development. They also organized a two week intensive training on coding and web development for women at Enspire Incubator and got Whogohost to gift 10 women with free hosting sites and domains.

Digital Skills training and workshops with TechHer[206]

[206] TechHer, 2020

Education: ScholarX

ScholarX is a social impact platform that focuses on democratizing Access to Education for African Youth, by connecting them with funding sources that enable them to get quality education. Co-founded by Damilola Emuze, SchoalrX raises funds from diaspora through crowd-funding campaigns and then disburse these to students to pursue education in Nigeria and even abroad.

***Achievements*:** To date ScholarX has raised and disbursed 10 million naira to over 100,000 students in Nigeria enabling access scholarships for education.

Section 4: Nigeria's Tech Ecosystem

Nigeria, with 85 active tech hubs has been labelled the most advanced ecosystem in Africa. A 2019 report by Briter Bridges and the GSMA Ecosystem Accelerator programme identified 618 active tech hubs in Africa, 85 of which were from Nigeria. According to the listing of the 15 main tech cities in Africa, Lagos, a top innovative city, fell into Tier 1 with about 20-40 active hubs, while Abuja was categorised in the second Tier with just over 15 hubs[207].

Growth in the adoption of digital services by government, businesses, and consumers is having a positive impact on daily life in Nigeria. Mobile broadband usage is increasing as the primary technology for accessing the internet. In 2017, the mobile ecosystem added an estimated 21 billion USD to GDP (5.5% at the time) and has created 500,000 jobs and contributed 16% of government tax revenue (1.8 billion).[208]

The country's tech entrepreneurship ecosystem has start-up density that suggests there is potential for new startups and for sustainability once they are well. Examples of successful startups in the Nigerian ecosystem include Andela, Konga, and Jumia which have all produced exits over 100 million USD. Jumia launched in 2012 and now has 3 million customers, 3,000 employees, and operates in 23 countries with over 1 billion USD in valuation in 2016[209].

According to a 2018 report on the Nigerian tech entrepreneur ecosystem commissioned by Google, SMEs are increasingly using Marketplace application to sell their goods & services, and these platforms are growing in popularity along with E-commerce[210]. Business to Business (B2B) tech entrepreneurship is still latent as it has higher demands in terms of sector expertise, market entry barriers and payment cycles as well as the public sector procurement requirements being prohibitive for start-ups to access[211][212].

In order to achieve its growth goals, the Nigerian government has committed to a number of initiatives and agencies to support the tech entrepreneurship ecosystem, but it should consider

[207] Onaleye, T., 'Nigeria Identified by GSMA Exosystem Accelerator…' Technext.ng. 11 July 2019. Link: https://technext.ng/2019/07/11/nigeria-identified-by-gsma-ecosystem-accelerator-programme-as-the-most-advancedtechnology-ecosystem-in-africa/ (consulted on September 08 2020)

[208] 'Spotlight on Nigeria, Delivering a Digital Future', GSMA. 2018 https://www.gsma.com/publicpolicy/wp-content/uploads/2019/02/GSMA-Spotlight-on-Nigeria-Report.pdf (consulted on September 08 2020)

[209] Ibid.

[210] 'Tech Entrepreneurship ecosystem in Nigeria'. OC&C Consultants; Google. 2018. Link: https://www.occstrategy.com/media/1307/tech-eship-in-nigeria.pdf (consulted on September 08 2020)

[211] Ibid.

[212] Ibid.

effective mechanisms for multi-disciplinary and cross-agency collaboration and input. The government further has aimed for job growth in to developing entrepreneurial, policies, and programmes that take into consideration each state's needs. Repatriated startup founders are leading Nigeria's increased focus on innovation by integrating knowledge acquired abroad into the local ecosystem.

The 2018 abovementioned report identified three areas for improvement for Nigeria's tech Ecosystem [22]:

- Gaps in Nigeria's infrastructure raise barriers to all tech entrepreneurs in the ecosystem which hinder their development by driving up the costs of doing business.
- The addressable market for Nigerian tech entrepreneurs is only a fraction of the potential that could be achieved through short and mid-term initiatives.
- Government policy and regulatory support have not been in sync with the development needs of the young digital enterprises.

Section 5: Opportunities

Nigeria is dominating the tech ecosystem in Africa and there is rapid growth in incubator and innovation hubs available to support young technology entrepreneurs. The focus tends however to be in urban centres and largely attracts youth who have some level of digital literacy. A major gap still exists between rural and urban populations, where rural connectivity and initiatives can specifically target poorer communities, especially women, so that they too can benefit from digital technologies.

- **Develop targeted programmes that improve the digital literacy skills of women** so that they can use their voices safely online to influence and advocate. The programmes should include modules on how to consult simple application and programmes dedicated to health and education services for themselves and their children. Including the well-being of children in the women's perception of the value of digitally literacy is likely to increase adoption of and competences in technology for women.

- **Look at non smartphone solutions** so that women in rural communities can benefit without having to assume the financial burden of a smartphone

- **Lobby for government policies and greater support to policy implementation as well as greater representation of women in policymaking** that will make digital more accessible for all by lowering internet and mobile service costs, prioritising public access programmes and enforcing greater gender equality

- **Build the capacity of government around gender sensitive policies** that uphold women's online rights, and protect citizens from bulk surveillance, Internet shutdowns and censorship.

- **Develop targeted and structured programmes** to encourage female entrepreneurship and support women to secure finance, receive mentoring and access other resources needed for success and sustainability. As seen in section 1 under Digital Challenges micro and small enterprises are unable to find available skillsets to thrive in the digital sphere. It could be

beneficial to develop a platform where such skillsets were advertised while MSMEs find competences they seek, as either short-term consultancies or long term jobs.

- **Engage with communities and especially men and boys** to shift negative perceptions of women accessing education and training, particularly relating to digital technologies.

8. RWANDA – CASE STUDY

Country Snapshot

Pop.(2020)	Total land area (Km2)	Pop.Density (pp/Km2) (2019)	Urban/Rural Pop. (2019)		Life Expect. (2020) / years			Adult Literacy Rate (2018)			Total fertility rate (live births/ women) (2020)	GDP/ capita (USD) (2018)
			Urban	Rural	Ave.	Men	Women	Ave.	Men	Women		
12,903,954	24,670	512	18% 2,281,330	82% 10,670,888	70.0 years	67.8 years	72.2 years	73.22	77.56	69.39	4.1	772.9

Digital: Rwanda's digital development journey to date has been spearheaded by a government deeply committed to leveraging ICT as a cross-cutting enabler of economic growth, innovation and service delivery. This commitment is reflected in the sheer number of related strategies and policy plans that the Government has adopted over the years, as well as sizable investments and ambitious initiatives launched that have sought to create an enabling environment for ICT adoption, expand digital infrastructure, digital platforms and services, promote further digital skills development, foster a national culture of innovation and position Rwanda as a regional digital hub[214]. Notable examples include the National Information Communications Infrastructure (NICI) Policy, 2020 SMART Rwanda Master Plan, the 2019-2024 ICT Hub Strategy and 2018-2024 ICT Sector Strategic Plan, and the National Broadband Policy.

Rwanda has set the bar regionally in terms of mobile network coverage, which provides last-mile access to broadband for a majority of existing users. 3G network coverage is now at 93.5 per cent, compared with a regional average of 76 per cent. Moreover, Rwanda has also achieved impressive 4G network coverage, by leveraging a public-private partnership (PPP) between the Government

[1] Rwanda Population (Live), Worldometer, Demographics, Rwanda, Link: https://www.worldometers.info/world-population/rwanda-population/
Rwanda, Education and Literacy. UNESCO, Link: http://uis.unesco.org/en/country/rw
GDP per capita (current US$) - Rwanda, The World Bank Data, Link: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=RW (consulted on September 08 2020)

[214] 'Rwanda Economic Review Update: Accelerating Digital Transformation in Rwanda', World Bank Group, January 2020. Link: http://documents.worldbank.org/curated/en/912581580156139783/pdf/Rwanda-Economic-Update-Accelerating-Digital-Transformation-in-Rwanda.pdf (consulted on September 08 2020)

of Rwanda and Korean Telecom to support the launch of a 4G wholesale network - resulting in the establishment of Korean Telecom Rwanda Networks (KTRN). Today, Rwanda's 4G coverage officially stands at 96.6 per cent – an unprecedented level of coverage for a country with Rwanda's level of socio-economic development[215].

Internet users in Rwanda[216]:

- There were 3.31 million internet users in Rwanda in January 2020.
- The number of internet users in Rwanda increased by 267 thousand (+8.8%) between 2019 and 2020.
- Internet penetration in Rwanda stood at 26% in January 2020.

Mobile connections in Rwanda[217]:

- There were 9.37 million mobile connections in Rwanda in January 2020.
- The number of mobile connections in Rwanda decreased by 153 thousand (-1.6%) between January 2019 and January 2020.
- The number of mobile connections in Rwanda in January 2020 was equivalent to 73% of the total population.

Affordability (and taxation):

The affordability of devices and broadband remains a key barrier. The present cost of handsets prevents some 37 per cent of households from owning a phone, which typically also stops them from accessing mobile and broadband services altogether. Moreover, weak access to smart phones and 4G compatible devices restricts access to basic 2G or slower 3G internet services, with some 74.3 per cent of current Rwandan mobile subscribers therefore continuing to rely predominately on 2G services that have limited practical application or use beyond voice and SMS based services. The Rwandan Government is committed to addressing the issue, through on-going discussions with mobile operators and manufacturers, including through the launch of new schemes. For example, the Ministry of ICT recently collaborated with MTN on the '#connect Rwanda Challenge', which has sought to supply the unconnected with smart phones. The connect Rwanda challenge aims to see every household in Rwanda have a smartphone by the end of 2020.

Affordability of broadband services is also a key factor that adversely affects internet consumption. While Rwanda has some of the lowest absolute prices in the region, broadband services remain expensive relative to average incomes and below global affordability target[218]. The average monthly price of 1GB of data was US$0.56 in 2018, equivalent to 5.1% of the median monthly income, and more than double the Alliance for Affordable Internet (A4AI) target of 2%.

Online security:

Rwanda already has a robust foundation of cyber security capacities however there is still also scope to expand these by increasing local capacity to prevent, detect, respond and mitigate emerging cyber threats, leveraging greater regional collaboration. A more robust yet measured data protection and privacy regime is also required, which protects users yet still enables data to be stored and shared across borders, enabling greater digital market integration. A new cyber security law was introduced in 2018, which followed the introduction of a National Computer Security and Incident Response Team (Rw-CSIRT) in 2014 the adoption of a National Cyber Security Policy, and establishment of a National Cyber Security Authority (NCSA) in 2017. Rwanda has also introduced a foundational legal and institutional framework related to cyber security and has begun to revise its framework for data protection.

[215] Ibid.

[216] Kemp, S., Digital 2020: Rwanda. February, 2020. Link: https://datareportal.com/reports/digital-2020-rwanda (consulted on September 08 2020)

[217] Ibid.

[218] 'UN Broadband Commission Adopts A4AI '1 for 2' Affordability Target', Alliance for Affordable Internet (AFAI). 2018. News, January 23, 2018. Link: https://a4ai.org/un-broadband-commission-adopts-a4ai-1-for-2-affordability-target/

Section 1: Policy and Regulation for Digital and Gender

Digital: Rwanda has a clear vision to transition to an information-rich, knowledge-based economy as was set out in the Vision 2020, developed in 2015. This Vision remains core to the new Vision 2050 with the Government of Rwanda putting huge faith and belief ICT enabling the country to leap-frog the key stages of industrialization.

Following the adoption of Vision 2020, national information and communications infrastructure plans were initiated to provide strategic frameworks for using ICT to achieve development. The first of these, the National ICT Strategy and Plan (NICI) 1 (2000-2005), focused on putting in place the foundational legal and regulatory framework to allow the liberalization of the telecommunication sector and attract private sector investments. The second, NICI II (2006-2010), focused on infrastructure and connecting people and on launching several flagship ICT initiatives such as the One Laptop per Child projects. The third, NICI III (2011 – 2015), focused on transforming services, for example e-government services as well as skills development, private sector development, community development and cyber security.

The fourth and most recent NICI Plan, the Smart Rwanda 2020 Master plan, which builds on the previous NICI Plans, has three goals: economic transformation, job creation and accountable governance. These in turn are supported by seven pillars ranging from education to finance and to women and youth empowerment in technology. The Master plan identifies 67 priority projects, with an estimated investment need of around $500 million, to implement between 2016 and 2020. However, to reach the ambitious goal of achieving a knowledge-based society, the Master plan recognizes that the country will need to make serious investments in education, ICT awareness and digital literacy and ensure that cooperation between academic institutions and the ICT industry is strengthened[219].

In addition to the Rwanda 2020 Master plan, Rwanda has also successfully implemented the 2019-2024 ICT Hub Strategy which sets out how the country aspires to be the leading ICT Hub in Africa, exhibiting a culture of innovation, supported by significant investment in R&D and undertaken by a highly educated and skilled workforce. It envisions having high usage and awareness of ICTs in the society and the ICTs contribute a significant portion of the economy[220]. The ICT Hub Strategy shows how Rwanda is advanced or “in a good place” in three areas considered to be factors of leading ICT hubs. These are: Proactive, stable Government, Competitive Business Environment, and Enviable lifestyle. The country is lagging however in the following three areas: advancing technological capability, culture of innovation and skilled and educated workforce. These three areas therefore form the basis of this ICT Hub Strategy[221]. Further ICT related strategies include the 2018-2024 ICT Sector Strategic Plan, the 2013 National Broadband, the 2015 National Cyber Security Policy and the 2017 National Digital Talent Policy.

In addition, the “National Strategy for Transformation” or NST1 emphasizes ICT as a catalyst for development. ICT-driven innovation is key to increasing efficiency across the still pre-dominant primary sector. Throughout the strategy report priority areas are discussed within 4 pillars, and given sub-key interventions, the first key strategic intervention of the first priority area of the first pillar “Economic Transformation”, mentions “knowledge based service” as one of the sub-sectors to be developed and supported. Priority 3 focuses entirely on establishing the country as a “globally competitive knowledge-based economy” while the

[219] Rich, R, Westerbeg, P, torner, J. ‘SMART CITY RWANDA MASTERPLAN: VERSION 2.0’. UN HABITAT. Link : https://unhabitat.org/sites/default/files/documents/2019-05/rwanda_smart_city-master_plan.pdf (consulted on September 08 2020)

[220] “ICT Hub Strategy 2024”, Ministry of Information, Technology and communications. Link: https://minict.gov.rw/fileadmin/Documents/Mitec2018/Policies___Publication/Strategy/ICT_HUB_STRATEGY_FINAL.pdf (consulted on September 08 2020)

[221] Ibid.

4th key intervention of priority area 4 announces a "big shift" in the country's export agenda[222]. Digitalization is explored several more times throughout the priority areas and pillars. Although it is not one of the 7 cross-cutting areas, like Gender and Family Promotion, it is clearly considered as the gateway to economic, social and individual growth.

Challenges: Despite an impressive number of robust policies, strategies and frameworks being in place in Rwanda, there remains a challenge with the basic digital skills gap, particularly in rural parts of the country and for women and girls with lower literacy levels. The 2018-2024 Digital Talent Policy cited that computer literacy in Rwanda is a mere 8.4%. Whilst a lot of things have been implemented using a top-down approach the challenge now is to raise the base level of mentality towards digital, the relevance of digital solutions and provide lower-levels of the population with the requisite skills and training. The nation's digital skill base has to be built through traditional and non-traditional approaches. The formal employment sector is an interesting area in which to invest as it pushes digital literacy beyond using a phone for recreational purposes, however the starting block should always be the basic education system to promote ubiquitous teaching. This in turn will support Rwanda's desire to transition to a knowledge economy.

Affordability also remains a major challenge both for devices themselves but also for data. In 2019 Mara Group earned the title of the first smartphone manufacturer in Africa with the release of two smart phones. Rwanda President Paul Kagame announced this initiative as the "first high tech smartphone factory," in Africa. While smartphones are assembled in other African nations[223], Algeria, and South Africa) have assembly plants, those companies all import the components. In Rwanda, Mara manufactures the phones from start to finish, from the motherboards to the packaging. The challenge however is these smart phones are more expensive than other imported models making the accessibility challenge greater[224].

Despite the significant public investment in digital infrastructure, digital public services delivery, the creation of innovative partnerships and the support of tech-based start-ups. The January 2020 World Bank Report "Accelerating Digital Transformation in Rwanda" identifies five key challenges surrounding the digitalization policies covered in the NST1. Firstly, the national demand for digital tools and services remains low and refrains the expansion of new ICT platforms. Like in a lot of African countries, the demand for mobile based services including financial applications, but the reality is that broadband is still expensive to average phone users and Rwanda "trails its peers in terms of broadband penetration and usage". This is also the case for foundational ICT services such as mobile money, under-used in comparison to amounts invested.

The third challenge is the adoption of technology within the 3rd economic "service" sector. As mentioned above, the push for digitalization is carried mostly by the government and public efforts. ICT uptake would be more consequential with broader cross-section of the population using ICT, use of ICT is for increasingly knowledge intensive activity, and the use of ICT is more frequent, if the private and entrepreneurial sector encouraged ICT use to a greater extent. Furthermore, Micro, Small, and Medium Sized Enterprises (MSMEs) are substantial in leading digitization because they also trigger and foster innovation. MSMEs in instrumental sectors like agriculture are yet to be digitized.

In Rwanda, the MSMES which focus on Information & Communication represent 0.45% if the MSME market's share[225]. It can be assumed that a large portion of the services industry

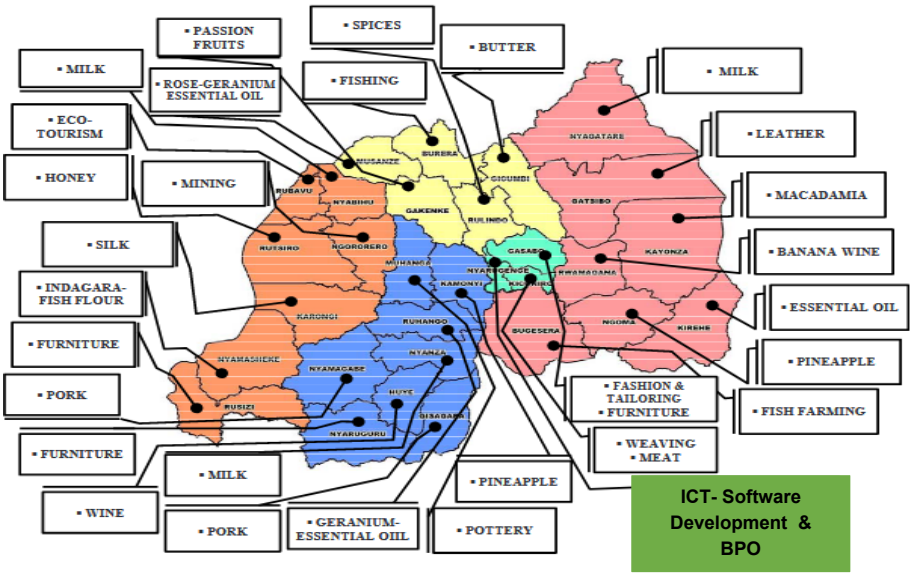
[222] "Rwanda Economic Review Update: Accelerating Digital Transformation in Rwanda", World Bank Group, January 2020, Link: http://documents.worldbank.org/curated/en/912581580156139783/pdf/Rwanda-Economic-Update-Accelerating-Digital-Transformation-in-Rwanda.pdf (consulted on September 08 2020)

[223] 'Egypt's first smartphone maker plans expansion in Africa'. Reuters, October 2018. Link: https://www.reuters.com/article/us-egypt-smartphone/egypts-first-smartphone-maker-plans-expansion-in-africa-idUSKCN1MJ1T4 (consulted on September 08 2020)

[224] 'Rwanda just released the first Smartphone made entirely in Africa', Fast Company, September 2019. Link: https://www.fastcompany.com/90414915/rwandas-mara-x-z-are-1st-smartphones-made-fully-in-africa (consulted on September 08 2020)

[225] 'Minicom SMES Product Clusters', Rwanda Government Report, Link/ http://www.minicom.gov.rw/fileadmin/minicom_publications/Reports/minicom_smes_product_clusters_booklet.pdf (consulted on September 08 2020)

(i.e. accommodation & food services, financial & insurance, etc.) have access and use technology regularly to carry out their business and sell their products however the small percentage may indicate as stated above, that the national demand, for information & communication products is low.



The above map[226] shows the highest selling sector by district in Rwanda, only one district's primary sector is that of ICT-Software Development & BPO, considering that above this, only 0,45% of the MSMEs are tech-focused, we can conclude that this sector is centred around the capital of Kigali and is not exported across regions.

The fifth and final challenge discussed by the World Bank in terms of digitalization, is cyber-security. As technology is increasingly ubiquitous in scope and scale, its use has to be increasingly secure as well, a more solid cyber-security system capable of defending digitally stocked information will be necessary. Online banking operations and transactions must be safe for those most economically vulnerable[227]. Finally it is crucial to protect individual data, anonymity and diligence in a country where political rights and civil liberties are noted 8 out of 40 and 14 out of 60 respectively by the Freedom House[228].

Gender: Both the Vision 2020 and the forthcoming Vision 2050 highlight Gender and Family Promotion as one of the crosscutting areas. Within these frameworks, a strong and solid stage for gender equality and women's empowerment was set for women and men of Rwanda to realize their rights, potentials, aspirations and be full partners and beneficiaries in the Country's development[229]. A conducive legal and policy environment in Rwanda has greatly contributed to the realization of gender equality and empowerment of women across different sectors and the following policies have played a significant role in this:

- **The Constitution of the Republic of Rwanda of 2003 revised in 2015:** Enshrines the principles of gender equality and women's rights and provides for the minimum 30% quota for women in all decision-making organs;
- **Rwanda Vision 2020:** Considers gender equality as a cross-cutting issue and commits to establish a gender friendly legal and policy framework. This further informed the cross-cutting nature of gender equality and family promotion in EDPRS II and Seven-

226 "Minicom SMES Product Clusters, *op. cit.*
227 Rwanda Economic Review Update: Accelerating Digital Transformation in Rwanda, *op. cit.*
228 Freedom House, Rwanda, 2020. Accessed : https://freedomhouse.org/country/rwanda/freedom-world/2020
229 'The State of Gender Equality in Rwanda: From Transition to Transformation'. Gender Monitoring Office. March 2019. Link: http://gmo.gov.rw/fileadmin/user_upload/Researches%20and%20Assessments/State%20of%20Gender%20Equality%20in%20Rwanda.pdf (consulted September 08 2020)

year Government Programme (2010-2017) and the current National Strategy for Transformation (2017- 2024);

- **National Gender Policy 2010:** The policy envisages to set the Rwandan society free from all forms of gender-based discrimination and create an environment where both men and women equally contribute to and benefit from the national development goals.
- **Sector Gender Mainstreaming Strategies:** In line with the aspirations of the National Gender Policy, different sectors including but not limited to Private Sector, Infrastructure, Agriculture, and Employment have developed gender mainstreaming strategies to guide their strategic interventions on the promotion of gender equality and empowerment of women;
- **Girls' Education Policy 2008:** The overall objective of the Girls' Education Policy is to guide and promote sustainable actions aimed at the progressive elimination of gender disparities in education and training as well as in management structures;
- **National Policy against Gender Based Violence 2011:** The overall objective of the policy is to progressively eliminate gender-based violence through the development of a preventive, protective, supportive and transformative environment;
- **National Decentralization Policy 2012:** The National Decentralization policy underlines the commitment of the Rwandan government to empower its people to determine their destiny. It further considers gender equality and social inclusiveness among the policy fundamental principles;
- **The Health Sector Policy 2015:** The policy envisages 'people-centred services' as one of its guiding principles and values, focusing on "the well-being of individuals and communities", with special attention to women and children;
- **Strategic Plan for Agriculture Transformation 2018 - 2024 (PSTA IV):** The plan provides that intensification and commercialization of Rwandan agricultural sector will be essential to reduce poverty and drive growth. Additionally, strategies to address key gender issues within the sector were outlined by the plan.
- **The National Skills Development and Employment Strategy 2019-2024** (NSDES): The strategy is the adaptation of the Vision 2020 strategy which laid the groundwork for the country's development towards a middle-income country, to set goals and objectives on Rwanda's course of becoming an upper-middle income country by 2035. Three pillars are identified in the NSDES: skills development through TVET & University, Employment Promotion across MSMEs, and matching the demand and supply of the labour market. All three pillars are detailed extensively throughout the report and each has a section dedicated to gender mainstreaming and digitalization.

Challenges: It is often argued that a difficult history has led Rwanda to be the African country with the highest gender representation in law-making. Indeed women make up more than 60% of parliament, 50% of the cabinet and supreme court[230]. However is this representation found in the tech sphere and in the digitization of the economy?

Whilst these policies are comprehensive, there is the need to ensure that regular rigorous reviews of existing gender strategies and the development of new strategies aligned with the 2030 Agenda for Sustainable Development, Rwanda's Vision 2050 and the New Strategy for Transformation. This is particularly important to ensure gender responsiveness in the implementation of planned targets. It is also thought that current skills gaps exist within both public and private institutions, particularly relating to the collection of sex-disaggregated data and gender analysis at various levels and across all sectors. Building the capacity of key individuals in these areas will help to inform and strengthen policy, strategy and programming for gender equality and women's empowerment.

Rwanda introduced the Women's Guarantee Fund and the Agricultural Guarantee Fund with the aim of strengthening the position of women in the labour market especially in the private

[230] Cascais, A., 'Rwanda – real gender parity or gender washing', DW. 7th of March 2019. Link: https://www.dw.com/en/rwanda-real-equality-or-gender-washing/a-47804771 (consulted September 08 2020)

sector and ensuring improvement of technical skills but these funds remain underutilised and greater efforts are needed to increase access.

Section 2: Existing EU Programmes in Gender and Digital

The EU has one active programme in Rwanda as well as one past project that have components related to Gender and Digital:

Improved Child Rights Governance in Rwanda: The specific objective of this project is to promote the proactive and positive dialogue between citizens and the state to improve the responsiveness, targeting and equity of public investments especially for children, women and people with disabilities. A component of this programme aims to develop an open budget digital portal with the Government of Rwanda. The open budget portal will display public budget information in a citizen friendly format that is established through a consultative CSO led process and adopted by the government of Rwanda. A core focus will be on strengthening the capacity of CSOs, children's groups and citizens to hold the Government of Rwanda (GoR) to account for public financial investments, especially those related to the realisation of children's rights. In addition to the digital portal, the project will also: raise public awareness of the system and ensuring that children, male and female citizens and CSOs, including those without internet access, are able to access and analyse the data and support children, male and female citizens and CSOs to actively engage the GoR through advocacy and public dialogue in relation to public investments at national and local levels.

The digital and gender components interact considerably in this project. The women's participation in the political sphere is promoted and they are listed among the 1st Key Stakeholder. The issue is now to harmonize the perception of rural and urban women while appealing to both as being a part of the same demographic. Urban women may be more interested in budget information regarding efforts concerning retail and service-oriented jobs.

The Sector Reform Contract (SRC) aims to promote climate-proof investments by farmers through improved land administration and land use monitoring capacities at central and local government level programme. This project, which ended in 2017, shows Rwanda's advance in the integration of digital components in projects targeting more traditional sectors such as agriculture and land reform.

Pictures from a EUD visit to the district office of Rwamagana, Eastern Province to see the experience of local administrators without or with early digitalization[231]

[231] EUD Rwanda Facebook Page, 23 November 2015. Accessed: https://tinyurl.com/yxkqke6q

It included identifying variable tranche indicators directly related to the registrations of parcels in the IT systems. The wider development/adoption across the country and the development of a phone App allows individuals to check the status of parcels. The overall objective is to create an improved environment for sustainable investments in land through increased capacities at central and local government level for land administration and land use planning & monitoring. This project is all the more relevant when considering the Rwandan Land Tenure Administration has been relatively successful in holding women at the same status as men. The majority of arable land titles in the country are held by both genders in household. This is in part due to a robust policy and law framework which protects women in the inheritance of land processes.

There is a programme in the pipeline due to launch soon (likely post-COVID) that will focus on **"The Digital economy and digitalization".**

The project, "Support to private sector development and job creation in Rwanda" will have two distinct projects: Skills4Tourism and Tech Innovation Hubs. Their respective focuses are improving market-oriented skills of youth for the Tourism and hospitality sector in Rwanda (through TVET capacity building) and increasing digital-based opportunities in high economic potential sectors through innovation/incubation hubs in four of the six secondary cities of Rwanda. The hubs will offer support in areas such as marketing, customer and product development and access to financing mechanisms.

Section 3: Best Practices of Digital for Women Initiatives

Rwanda's impressive progress in advancing digital technologies and transitioning towards becoming a knowledge economy has had positive benefits for both men and women. One of the reasons that women are particularly supported in Rwanda is as a result of the higher number of women being represented within politics and within government institutions. This translates to strong gender considerations throughout policy and programme design and is also embedded in the wider ecosystem.

Agriculture

Spiderbit, a Kigali-based IT services provider, developed .eHaho, an e-commerce platform built to empower agriculture business operations and foster end-to-end information dissemination. The platform core services are a "Food market place", which enables the farmer to sell their produce using the platform and also providing flexibility to buyers to locate crops on market and the ability to "bring service providers (seeds, fertilizers, and pesticides, vet services) closer to the farmers." The platform enables Farmers and countryside agro-dealers to order for inputs from the main city and have them purchased and shipped to their area pickup points. They

Achievements: Spiderbit won the Rwandan edition of the Innov8Agric Challenge in 2018 and was picked based on its innovation, originality, and the viability of its ideas. According to self-reported figures, the platform is currently connecting 80 cooperatives and 25,000 farmers and is targeting to reach up to 2 million farmers to become a major agricultural online trading platform in the country.

Health

Kasha is a mobile store built specifically for women in Africa, offering health and personal care products such as facial creams, sanitary pads and contraceptives. Using Kasha, a woman can confidentially order products using any type of mobile phone and receive direct delivery. Kasha is a social business, working to serve women at all socioeconomic levels sustainably.

The platform www.kasha.rwalso goes beyond the ordinary website and web application to have a dedicated hotline (9111), USSD application (*911#) and WhatsApp interactions for clients without access to the internet and smart phones. Most of the traffic for the 5,000 sales they have made so far has been through USSD applications. So far, Kasha has been able to mobilise about $1.5 million in terms of capital enabling them to set up presence in Rwanda with a staff size of 20.

Achievements:
From their sales to date, roughly 30 per cent are in rural areas with low wages, 50 per cent are average income earners while about 20 per cent are professionals. Kasha has worked around the challenge of needing to apply high mark-ups as is commonly done by e-commerce platforms by forming strategic partnerships with suppliers and distributors whereby they get volume pricing. That way, they sell the products at the same price as retailers with the convenience of delivery and confidentiality.

Digital Literacy:

The Rwanda-Digital Ambassadors programme (R-DAP) or Intore mu Ikoranabujanga, launched in 2017**,** is considered one the best practices in improving digital literacy for women and especially those of rural areas. Its first programme was led by the Rwanda Ministry of ICT and Innovation (MINICT). It is an ambitious national program aimed at mobilizing 5,000 young women and men as Digital Ambassadors to increase digital inclusion, youth employability and social innovation and connections to socioeconomic impact for millions of citizens. Its outcomes range from digital accessibility, adoption of e-services, bridging gender digital divide, to utilization of digital services and economy, and increased employment, entrepreneurship.

Achievements:
Since the beginning of the implementation of the project several workshops, job fairs and seminars have been organized across Rwanda in addition to the constant advocacy from the Ambassadors. So far 27 thousand people have benefited from the programme by receiving training on digital and technology skills and how to promote themselves on the job market[231].

Financial inclusion

Exuus is a Fintech software development company that works with vulnerable communities with the aim of improving financial inclusion through tech. Their core product is called SAVE which is a digital savings group that enables clients to

[231] 'Digital Ambassadors Program (DAP)'. Republic of Rwanda Ministry of ICT & Innovation Link: https://minict.gov.rw/projects/digital-ambassadors-programdap/(consulted on September 08 2020)

access digital and virtual wallets through a decentralized ledger. A key feature of the SAVE platform is the dashboard function that allows administrators to oversee all account activity. It also provides data on number of transactions, types of transaction and value. Exuus have found a niche opportunity to work with NGOs who subscribe to their product and then roll it out through existing savings groups with the provision of digital literacy training. The benefit for NGOs is that they have access to a large range of data for monitoring and evaluation purposes.

Achievements: To date Exuus have on boarded 1,202 savings groups with a total of 24,731 members. Approximately 80% of members are women and this is due to the higher number of women that form savings groups and cooperatives – Exuus directly targets these groups by working through NGO partners to recruit members. In 2018, they won the Women and Youth Focus Prize for Rwanda at the Data Hack 4FI and whilst other competitors exist in the market Exuus believe there niche is around the dashboard feature and that they were first to market in Rwanda. They provide a financial management solution that is adapted to the credit and savings groups that are applicable to the financial reality of a majority of Rwandan women[232].

Rural Connectivity

The #ConnectRwanda challenge is a campaign through which any individual and/or organization makes a voluntary pledge to put a smartphone in the hands of the unconnected in Rwanda. MTN Rwanda initiated this challenge as part of a campaign focused on promoting and accelerating digital adoption in Rwanda. Beneficiaries are identified in conjunction with the Ministry of ICT and Innovation and the focus will be households who are not currently connected, with aim of enabling them to access digital services. A special consideration will be given to people with disabilities and other voluntary service providers at community level.

Achievements:

So far 40,626 phones have been pledged by members of the public and numbers grow daily. COVID-19 has also had a significant impact with increasing numbers of donations to support young children to access e-learning platforms.

E-government services

The new official web portal of the Government of Rwanda, 'IREMBO' went live in April 2020, although the platform itself exists since 2014, the revised version hosts over 40 e-services from six government agencies on a user friendly web format that welcomes over 90,000 users per month. It is a one-stop portal providing information on all that people need to know about the government and different services offered though government agencies. The new Gov.rw was designed with an aim to harmonize the Government's presence online with user-friendly, responsive and citizen-centred websites. From the portal, clients can access all the services offered by government institutions and visit the specific institutions for detailed information. However, a 2017 study found that only 11.8% of potential users had knowledge of the e-government services platform, Irembo[233].

[232] Hunter, R., 'Exuus: Using data to demystify savings groups' black boxes'. Case Study. Insight 2Impact. August 2018.
[233] Citizen Report Card. RGB. (2017), Link: http://rgb.rw/fileadmin/Citizen_Report_Cardall/CRC_2017_Kinyarwanda.pdf

Achievements: Whilst no official data is available, feedback from stakeholders including the Private Sector Federation (PSF) and Rwanda Development Board cited very positive feedback and notable improvements in efficiency and uptake of e-government services. However, qualitative research conducted in among services providers noted that service access was often impeded by digital literacy of users and lack of electricity.[234]

E- Commerce services:

DMM HeHe is a Rwandan e-commerce platform with programmes to develop digital and technological services in the country. Originally known for selling "Made in Rwanda Brands" (i.e. coffee, tea, handcrafts etc.) online, they have diverged towards broader and more encompassing focuses with the objective to "Digitize Africa's Trade Ecosystem". Thus, on top of the E-commerce branch in partnership with the delivering actor "Shypt", DMM HeHe has a Smart Logistics branch, were they develop and sell digital services, and the HeHe Academy (HAc), where they grant fellowships to incubation participants. They "groom the next generation of dynamic, passionate & skilled problem solvers". This "Rwanda e-commerce Ecosystem Incubation Programme" is an initiative led by women with female client focuses.

Achievements: E-commerce wise, DM HeHe successfully delivers over 10 thousand products a year with more than five thousand subscribed members. HeHe Academy, has for its part, 430 graduates with a 69% female enrolment rate.[235]

Section 4: Rwanda's Tech Ecosystem

The creation and implementation of so many robust policies, frameworks and strategies have resulted in a number of practical on-the-ground initiatives. The most notable Kigali's Silicon Valley or Innovation city known as the Kigali Innovation City – formed from a public-private partnership between the Government of Rwanda and Africa50, an infrastructure investment platform founded by the African Development Bank (AfDB). The concept behind the Innovation City is to address fragmentation across the sector and develop an ecosystem that groups innovators and major players and links them with technology hubs and access to STEM related knowledge, innovation and research. As part of this plan they have also developed the Digital Ambassadors programme which supports digital literacy training through Digital Ambassadors, many of whom are young university graduates who provide training within their community. The Rwanda Information Society Authority (RISA) is the main implementer who coordinates these interventions and manages over 20 technology and innovation hubs across Kigali[236].

The real difficulty is that the demand nationally is not prevalent enough for investments to be cost-effective and self-sustaining. A short term solution

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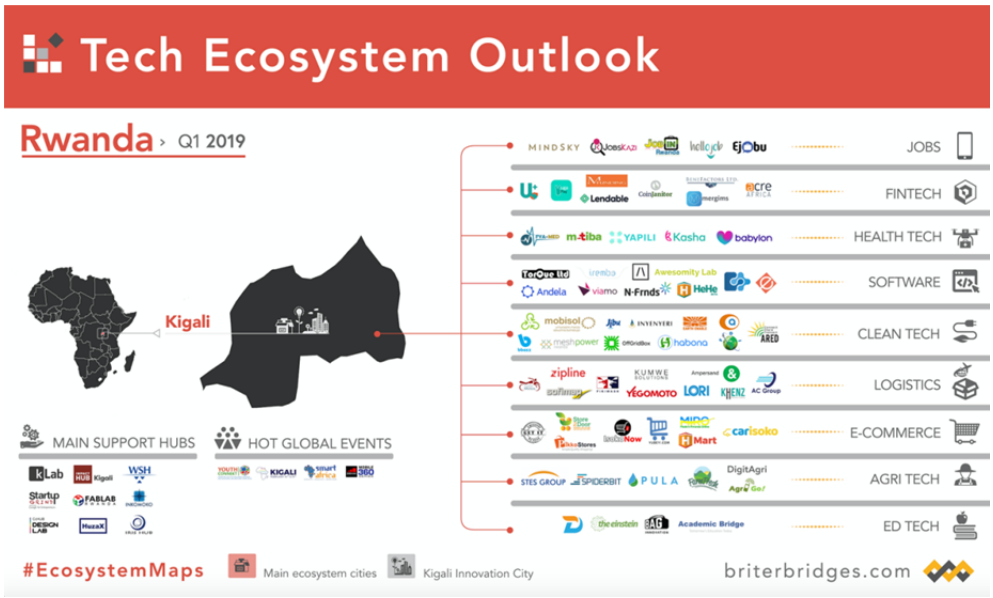
[234] Mukamureni, S., Gronlund, A., Islam, S. 'Improving qualities of e-government services in Rwanda: A service provider perspective'. The Electronic Journal of Information Systems in Developing Countries, 85: 5. 2019.
[235] DMM HeHe, 2020. Link: https://dmmhehe.com/#landing
[236] Interview with EUD Gender and Digital Counterparts Rwanda

would be to satisfy the regional demand. This would also entail harmonizing legislations, exporting and transporting technology between East African countries, a sizeable ambition considering the current political climate of some nations[237].

An interview with the Head of Digitization for the PSF, Rwanda also highlighted how private sector companies are readily adopting digital services both to support the operations of their own businesses (such as through tax payments or customer relationship management) but also to digitalise their own product or service offering. PSF also spoke about key industries such as manufacturing and garments and how they are adopting new technologies to increase productivity and quality. Within the ICT Chamber in Rwanda there is also an incubation centre that supports developers to identify digital solutions for key industries and private sector companies. Companies pay a fee for this service but it is heavily subsidised by the government with the core aim being to increase efficiency and support growth.

Kigali remains the only major hub for the tech ecosystem across the country, where global events are hosted annual and a large number of tech firms and entrepreneurs are based, developing and providing services across multiple sectors, as demonstrated in the Tech Ecosystem Outlook captured by Briterbridges below. The interviews with stakeholders in the sector indicated that there were still not enough initiatives to create a tech environment that was inclusive to female entrepreneurs and that this should become a focus going forward.



As of today the 250 Startup, an initiative of the ICT Chamber can be added to the “main support hubs”, it is a six-month incubation programme design to support businesses in their development, and so far has delivered services to 30 Tech Companies of various sectors.

[237] ‘Rwanda Economic Review Update : Accelerating Digital Transformation in Rwanda’, World Bank Group, January 2020. http://documents.worldbank.org/curated/en/912581580156139783/pdf/Rwanda-Economic-Update-Accelerating-Digital-Transformation-in-Rwanda.pdf

Section 5: Opportunities

Rwanda is incredibly advanced when it comes to digital technologies. There are an abundance of start-ups and the Innovation City provides a perfect platform for which more can grow. Whether improving efficiencies within the public sector through the new e-government platform or looking at increasing efficiency within the private sector through digitalization of services or initiatives such as the incubation centre within the ICT Chamber, Rwanda is very much ahead of the game. There is still the need to improve on access and connectivity across the country through initiatives such as #ConnectallRwanda and to ensure that women are not left behind through focusing on supporting women to improve their basic education and digital literacy skills.

Based on the research as well as interviews with various stakeholders, the opportunities to create more impact when it comes to digital and gender in Rwanda are as suggested below:

- **Create a more inclusive environment for women** to enter the digital start-up space by working with incubators and innovation hubs to encourage more female-led applicants and identify funding for women-led businesses specifically;
- **Increase coordination across stakeholders.** Whilst Rwanda is advanced in terms of its structure and the number of different stakeholder groups across government, public and private sector there is scope to improve coordination as currently there are a large number of actors and it can become unclear who is responsible for what;
- **Breakdown socio-cultural norms and change perceptions of parents to educate girls** as currently many poor households, particularly in rural areas will chose to educate boys over girls and until this is addressed women will lag behind in basic education but also digital literacy;
- **Leverage mobile phone penetration** to promote more e-health and access to information campaigns with a particular focus on reaching rural communities;
- **Develop e-learning solutions to support remote access to learning.** Particularly relevant during the COVID-19 crisis but also beyond to encourage access to learning for those who are not able to attend school;
- **Leverage high number of women owned SMEs** to develop tailored programmes that support women entrepreneurs and collate data and information on key challenges and constraints that women business owners face;
- **Develop targeted and structured programmes** to use digitals to help female entrepreneurs secure finance, receive mentoring and access other resources needed for success and sustainability;

- **Identify income generation and job creation opportunities** that are inclusive of women, require lower digital literacy and are accommodating of existing unpaid care work;
- **Provide funding or similar incentives** via innovative financing mechanisms such as Innovation Funds, Public Private Development Partnerships or direct support to tech hubs / innovation hubs and female and young innovators;
- **Post-incubation support** to small businesses about what services are available to them and how they can access them. A one-stop-shop model for growing enterprises.

9. SIERRA LEONE – CASE STUDY

Country Snapshot[238]

Pop.(2020)	Total land area (Km2)	Pop.Density (pp/Km2) (2019)	Urban/Rural Pop. (2019)		Life Expect. (2020) / years			Adult Literacy Rate (2018)			Total fertility rate (live births/ women) (2020)	GDP/ capita (USD) (2018)
			Urban	Rural	Ave.	Men	Women	Ave.	Men	Women		
7,952,703	72,180	108	43% 3,453,971	57% 4,523,012	55.9 years	55.0 years	56.8 years	43.21	51.65	34.85	4.3	534.0

[238] 'Sierra Leone Population (LIVE)', Worldmeter, Link : https://www.worldometers.info/world-population/sierra-leone-population/ (consulted on September 08 2020)
'Education and Literacy', Sierra Leone, Unesco, Link : http://uis.unesco.org/en/country/sl (consulted on September 08 2020)
'GDP per capita (current US$) - Sierra Leone', The World Bank, Link : https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=SL (consulted on September 08 2020)

***Digital*:** Between the years 2014 and 2018, Sierra Leone was amongst the countries with the most mobile internet penetration improvements. Yet despite it still lags behind many other countries in Sub-Saharan Africa. Much of the country, particularly rural areas, remains unconnected; connectivity continues to be unaffordable to many. When internet is available the quality is often poor with intermittent coverage. There are a few organisations focusing on technology and innovation in Sierra Leone therefore their promotion has increasingly become a priority for the government in recent years. With the introduction in 2019 of the 10year National Innovation and Digital Strategy (NIDS), there has been widespread speculation that digital technologies could be the vehicle of the next economic boom for Sierra Leone.

Internet users in Sierra Leone[239]:

- There were 1.99 million internet users in Sierra Leone in January 2020.
- The number of internet users in Sierra Leone increased by 149 thousand (+8.1%) between 2019 and 2020.
- Internet penetration in Sierra Leone stood at 25% in January 2020.

Mobile connections in Sierra Leone[240]:

- There were 6.90 million mobile connections in Sierra Leone in January 2020.
- The number of mobile connections in Sierra Leone increased by 486 thousand (+7.6%) between January 2019 and January 2020.
- There were 6 655 500 mobile connections in Sierra Leone in January 2020, this is roughly equivalent to of 87% of the country's population was connected on a mobile phone.

***Gender*:** Sierra Leone experiences high rates of gender-based violence and sexual harassment. Accounts of rapes in schools and education spheres are also frequent. Girls suffer from a lack of education and low literacy levels. In urban centres, resorting to prostitution to generate income is common among women and girls. Whilst the country has adopted a Sexual Offences Act in 2019 to reinforce the legal framework and protection of victims of sexual and gender based violence, and gender equity is mainstreamed within policies in Sierra Leone, there are challenges in their implementation and this has led to continued insecurity and violence towards women and girls in the country[241].

Affordability (and taxation): For many, internet and digital devices remain unaffordable in Sierra Leone. University students are unable to afford their own devices and so rely on the resources of their institution to complete their studies.

Online security: Currently, Sierra Leone does not have a national cybersecurity strategy document, however, a draft cybersecurity policy is in the process of being adopted. A Cyber Task Force was established by the Ministry of Information and Communications (MIC), with representation from different sectors of government, such as representatives from the armed forces, law enforcement, the Office of National Security (ONS), and others. There is no national computer security incident response team (CSIRT) or command and control centre structure, which poses a challenge to effective and coordinated incident response and management. Regulation that requires incidents to be reported is not currently in place; Sierra Leone lacks a mandated authority or protocol to handle such a process. There is no specific cyber defence policy or strategy. While cybersecurity threats are starting to be recognised in the security architecture, the strategic coordination or command and control structure for cyber Defence lack and operational capacity has not yet been developed[242]. Nevertheless, as part of ECOWAS, Sierra Leone, follows the Cybersecurity programme of the economic community.

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239 Kemp, Simon, 'Digital 2020: Sierra Leone', DataReportal, 18 February 2020, Link : https://datareportal.com/reports/digital-2020-sierra-leone?rq=sierra%20leone%20 (consulted on September 08 2020)

240 Ibid.

241 Interview with Innovation SL Founder, Francis George

242 Pace, L., Von Solms, B, et al., 'Cybersecurity capacity review, Republic of Sierra Leone', Global Cyber Security Capacity Centre & Oxford University, Link : https://gcscc.ox.ac.uk/files/cmmsierraleonereportfinal0pdf (consulted on September 08 2020)

Section 1: Policy and Regulation for Digital and Gender

***Digital*:** The Government of Sierra Leone (GoSL) developed a 10-year National Innovation and Digital Strategy (NIDS) in 2019. It aims to guide Sierra Leone's investments, policies, and governance frameworks along the country's present and future developments. NIDS situates Sierra Leone among regional and global leaders in the field of digital agile governance by focusing on effective service delivery, citizen engagement, and the digital economy driven by innovation and entrepreneurship[243].

The first Sierra Leone National Telecommunications Act was developed in 2006. This Act provided the mandate for establishing the institutions to implement the ICT transformation of Sierra Leone under the supervision of the Ministry of Information and Communication. The 2006 Telecommunications Act was followed by an ICT Policy developed in 2009. A 2017 update to that Policy added to it Cybersecurity and e-Government frameworks.

In 2018, the Directorate of Science, Technology and Innovation (DSTI) in the Office of the President was established. Moreover, Sierra Leone's first-ever Chief Innovation Officer was appointed. Their vision is to use science, technology and innovation to help the government deliver on its Medium Term National Development Plan (MTNDP) and to establish Sierra Leone as an 'Innovation Nation'[244]. They define this as "a nation where agile, exploratory and research-driven start-ups and initiatives led by people of all ages can problem solve at the appropriate scale and within the right economic, policy and regulatory frameworks"[245].

***Challenges*:** These policies and strategies are still relatively new and so their effectiveness is yet to be seen. Many people are concerned that the shift in focus to digital technologies will leave significant portions of the population behind and as such there is much cynicism over the overall likely success of such a Strategy.

Another key barrier in Sierra Leone has been the lack of Digital ID. In 2019, the President launched a National ID project. Registers of vital statistics (Birth, adoption, divorce and death) are being digitized with EU support. In the subsequent phase, every person will be issued a unique, non-reusable national identity number. The project, intended to be fully functional in 2020, is a partnership between Sierra Leone and the UN and is being implemented

[243] 'Sierra Leone National Innovation & Digital Strategy 2019-2029', Directorate of Science & Technology & Innovation, 2019, Link: https://tinyurl.com/v8u5kd3 (consulted on September 08 2020)
[244] 'Sierra Leone National Innovation & Digital Strategy 2019-2029', op.cit.
[245] Ibid.

by the Fintech firm Kiva with a financial inclusion component[246]. Credit history will be recorded on the digital ID, allowing people to access credit instantly. 75% of the population in Sierra Leone is unbanked but this could be a game changer for the population of Sierra Leone. The president has acknowledged the need to raise awareness on the benefits of digital ID and to mitigate concerns people have over confidentiality. In the absence of a solid legislative and regulatory framework, citizen's private data cannot be fully secured or confidential. There is a substantial risk of private data being stolen, leaked or hacked, partly caused by the misguided practices and a weak methodological approach un-constrained by policies or laws.

Kiva demonstrating their digital ID protocol in Sierra Leone[247]

***Gender*:** Out of 189 countries on the Gender Inequality Index, Sierra Leone ranks 150th, and has the highest maternal mortality rate of non-conflict countries[248]. Sierra Leone is heavily burdened with several gender-based violence issues. They manifest under various forms including sexual and domestic violence, sexual assault, rape of adults and minors, marital rape, school-related sexual abuse, as well as harmful traditional practices such as child marriages and female genital mutilation (FGM). 88% of economically active women (15 – 49 years old) have undergone FGM[249]. SGBV is prevalent the country, in 2017; 10 544 cases of were reported, however it is well cited that many cases of SGBV go unreported. It is estimated that half of Sierra Leonian women who experience physical violence when they are aged between 15 and 19. In 2018, 96% of women who endured physical violence and reported their case were minors[250].

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246 'Kiva, Sierra Leone and U.N. agencies partner to implement 'credit bureau of the future', KIVA, Link : https://www.kiva.org/blog/kiva-sierra-leone-and-un-agencies-partner-to-implement-credit-bureau-of-the-future (consulted on September 08 2020)

247 Davie , M.,'How Kiva Is Working Towards a World with Universal Identity and Universal Opportunity', Citizen Thruth, April 8, 2019, Link : https://citizentruth.org/how-kiva-is-working-towards-a-world-with-universal-identity-and-universal-opportunity/ (consulted on September 08 2020)

248 'Gender Inequality Index', UNDP, Link : http://hdr.undp.org/en/composite/GII (consulted on September 08 2020)

249 'Statistical Profile on Female Genital Mutilation/Cuttin', Unicef Report, 2016, Link : https://www.ecoi.net/en/file/local/1436712/5228_1530174637_fgmc-sle.pdf (consulted on September 08 2020)

250 'The EU Delegation and UN Women marks the International day for the Elimination of Violence against Women', EUD to Sierra Leone, 27 November 2018, Link : https://tinyurl.com/y65zcpjr (consulted on September 08 2020)

With no access to economic assets, credit-loans, employment outside the unofficial and subsistence sector, Sierra Leonean women are ignored in the debate and decisions relating to all aspects of societies, including issues such as their own sexual and reproductive health (SRH). Often, resistance by conservative religious groups and reluctant government officials takes precedence in SRH decision making and discourse.

There is progress in Sierra Leone in terms of establishing legal and institutional frameworks enabling gender equality and promoting women and girls' empowerment. The government's commitment to international accords and treaties like that of the Convention on the Elimination of All forms of Discrimination against women have been legislated in certain areas and carried out. In 2007 the Domestic Violence Act, the Devolution of Estates Act were signed. They were followed by the 2009 Customary Marriage and Divorce Act and the Sexual Offences Act of 2012. In October 2019 the Government repealed and adopted of a modern Sexual Offences Act which introduced life imprisonment as maximum sentence for rape, and the discriminatory policy prohibiting pregnant girls from attending school was lifted in 2020

The government's encouragement towards bridging the gender gap is also translated in the functioning of the national committee focused on gender-based violence and formed by partner organizations and the introduction of the standalone pillar convening the importance of women's empowerment and gender equality for prosperity[251]. Considerable challenges however remain, and policy and legal framework do not sufficiently focus on addressing root causes of SGBV, teenage pregnancies and gender inequalities. Enforcement of laws remains also very low.

***Challenges*:** The disparity between men and women is still prevalent in Sierra Leone, and proliferates at all levels of the society. Alienation and injustices are still a reality in education, the labour market, decision making, political participatory processes and social circles. Their lack of economic independence, high illiteracy, entrenched customs and traditions and lack of confidence to vie for public positions are among the principal challenges they encounter.

Due to the negative sexual and physical GBV indicators, the government "declared emergency over rape and sexual assault". Despite this and authorities' introduction of the modern Sexual Offences Act, values remain entrenched and grass-root efforts remain low and acts of GBV high[252].

Women are largely excluded from the land tenure rights and often find themselves evicted off their properties due to customary laws. . Similarly excluded from higher education, women suffer from high rates of very early

[251] 'Gender Equality', UNFPA Sierra Leone, Link : https://sierraleone.unfpa.org/en/node/6135 (consulted on September 08 2020)

[252] 'Sierra Leone declares emergency over rape and sexual assault', BBC News, 8 February 2019, Link : https://www.bbc.com/news/world-africa-47169729 (consulted on September 08 2020)

marriages, teen pregnancies. Within school spheres they face risks of extra fees and sexual exploitation – this is especially the case in rural areas. Women account for close to 52 per cent of the total population in Sierra Leone yet occupy less than 20 percent of elected positions. Therefore, women continue to have their voices hampered and do not have equal representation, visibility or participation in public decision making spheres. Their voice and vote on elected and appointed positions remain very low compared to those of men. There is no statute requiring political parties to establish female parity quotas. Furthermore, there are no financial assistance systems to aid female candidates in running effective election campaigns. [253]

Section 2: Existing EU Programmes in Gender and Digital

There are currently no EU programmes targeting gender or digitalization as principal objectives. Nevertheless, in line with EU key policy priorities gender equality and women empowerment is a key area of action of the EU in Sierra Leone and there are multiple projects and programmes targeting gender equity and women political, economic, and social empowerment as substantial objectives.

Supporting Women against Gender Based Violence[254]

The authorities' declared emergency on sexual violence led to the launch in April 2019 of a dedicated call for proposal under the Thematic Instrument in support to CSOs to 'Prevent Sexual and Gender Based Violence against Women and Girls in Sierra Leone'. Four actions, for an overall EU contribution of EUR 2.2 million, were awarded to coalitions of national and international NGOs to promote the rights of women strengthen prevention, response and access to justice to women and girls victims of sexual violence across the country:

1. The action implemented by AdvocAid (SL), jointly with Legal Access through Women Yearning for Equality Rights and Social Justice (L.A.W.Y.E.R.S.) and Trocaire (IE) will aim at enhancing access to justice for sexual and gender-based violence (SGBV) survivors and promoting the rights of women and girls in Freetown, Bombali, Kenema.

[253] 'Country Report by Sierra Leone: Implementation of the Beijing Platform for Action (1995) and the Outcome of the Twenty-Third Special Session of the General Assembly (200)', Ministry of Social Welfare, Gender and Children's Affairs, June 2014, Link : https://tinyurl.com/y6qtk7ae (consulted on September 08 2020)

[254] 'EU announces new grant funding to four local civil society organizations', EUD Sierra Leone, 14 October 2019, Link : https://eeas.europa.eu/delegations/sierra-leone/68807/node/68807_tk (consulted on September 08 2020)

2. The action implemented by Rainbo Initiative (SL) jointly with the Association Federation Handicap International (FR) and Stichting Care Nederland (NL) will seek to strengthen GBV prevention and inclusive response services in Western Area District, Bombali and Kenema

3. The action implemented by Development Initiative Programme (DIP) and Childfund International will contribute to community empowerment for prevention of SGBV in Portloko and Kambia District

4. The action implemented by Movement towards Peace and Development Agency Sierra Leone (MOPADA-SL), jointly with the Agency for Integrated Development (SL) and Street Sports Hope supports advocacy and prevention of GBV amongst rural communities of Kailhun and Bonthe, in the East and Southern Region.

Women political participation and inclusive decision making

Political participation of women, youth and persons with disabilities is a critical priority the European Union promotes through different instruments. Under the EDF Governance Support Programme dedicated technical and financial assistance is provided to the National Electoral Commission to formulate, disseminate and implement a "Inclusion of Gender and Disability in elections" policy. The policy was launched in last quarter 2019 and its implementation led to the hiring of women in key positions in the NEC, to the establishment of gender units at local level and to the collaboration with CSO and political parties to enhance Women participation in politics

In line with 2018 EU EOM recommendations legal expertise is provided to introduce electoral reforms susceptible to increase inclusiveness of women, youth and PWD at all level - notably through the revision of the Political Parties Registration Commission Act and the review of Political Parties Constitutions to incorporate an in-party quota system. Capacity building and advisory services are also provided to the Women Caucus in Parliament – the multi-party platform of female MPs to support elected women participation in decision-making and in the legislator process.

Under the European Initiative for Democracy and Human Rights (EIDHR) instrument a complementary grant has been awarded in 2019 to the Sierra Leonean national NGO 50/50 – a non-partisan organisation promoting women participation in political process. The 3 year action targets 75 elected women per district in Kenema, Kambia and Tonkolili, giving them the much needed tools to be effective participants in political and public life. Part of the project foresees a mentorship network for women with members of political parties, women wings of political parties, women associations etc.

The overall objective of the proposed action is to ‘enhance the effective participation of women in public and political life’ complemented by two specific objectives:

1. The capacity and confidence improvement of women in order to actively participate in public and political spheres
2. The creation of and enablement of an environment that will increase participation and leadership of female members of as decision-makers within their political parties

Launch of the project "beyond politics of men: empowering women to be effective political actors in Sierra Leone" in October 2019

Source: European Union in Sierra Leone, Facebook Page (https://tinyurl.com/y2mj65py)

The EU continues to support a number of actions to promote civic engagement and inclusive decision making in development and gender-responsive local participatory process. This is a specific objective of the three action grants awarded in 2018 to CSOs coalitions across the country for an overall amount of 3M EUR. These include the following:

1. "Civil society strengthened to support rural women's agency, empowerment and influence in local governance and agricultural development processes in northern Sierra Leone" (1.5M EUR) implemented by Trocaire (IE) in partnership with Action for Advocacy and Development (SL), Association for the Well-Being of Rural Communities and Development, the Centre for Democracy and Human Rights, the Community Action to Restore Lives, the Kambia District Development and Rehabilitation Organisation, the Women's Forum for Human Rights and Democracy.

2. "Civic engagement Inclusive of the Voice of girls and women in Community ownership of health and education (CIVIC)" (0.6M EUR) implemented by Health Poverty Limited, in partnership with Health for All Coalition, TIMAP for Justice

3. "Building an active civil society for improved gender responsive public service delivery especially for women & girls to attain sustainable development in Sierra Leone" (1,3 M EUR) implemented by Action Aid International, in partnership with Campaign for Good Governance and centre for coordination of youth activities

Supporting Economic Empowerment

Promoting gender equality and economic empowerment of women and girls is a specific objective of EU bilateral cooperation, overseen and implemented by the EUD in Sierra Leone. The two major programmes are funded under the 11th EDF:

1. Jobs and Growth Programme (60 M EUR) adopted in November 2019 and to be launched in early 2020 will contribute to sustainable and inclusive economic development and job creation, in particular in the agricultural sector. This program will address the investment-education-employment problem nexus by improving investment climate and business environment and by promoting a human capital that better matches the labour market. The programme includes specific affirmative

actions to strengthen women economic empowerment (access to finance and promotions of agribusiness) and education (access to training and vocational education opportunities)[255].

2. Civil Society and Local Authorities Support Programme (27 M EUR) which aims at strengthening Local Councils and CSOs capacity to implement local development plans. Over the period seven grants of an overall amount of 8 M EUR have been awarded to CSOs led platforms to implement gender-sensitive social and economic initiatives in partnership with the Municipalities and Local Councils of Makeni, Bomabali, Kambia, Kenema and Pujuhen Districts. The actions shall contribute to inclusive development, improved access to sustainably managed micro-finance, and economic opportunities in the agricultural and waste management and sanitation sectors.

There are three sub-projects, being implemented by the EUD in Sierra Leone under the same encompassing programme "EU Support to Governance", all of which focus on governance and Civil Service Reform as highlighted below:

- **Technical assistance in Sierra Leone in the areas of Civil Service Reform, Parliament and the electoral cycle:** This programme supports the implementation and roll out of Personnel Data Records Management System and policies on: recruitment; promotion; selection; health; safety and security of civil servants; leaves; compensation/equal payment for equal job and benefits and retirement. A key objective is to improve the institutional capacity of Civil Society and of human and financial resources of the civil service to enhance public service delivery;
- **Technical assistance in support of the governance sector in Sierra Leone in the area of civil registration:** This programme seeks to ensure the transition into database as well as adequate archiving of paper-based birth and death records. A key objective is that Civil Registration system is improved, in synergy with EU support to education, elections and public sector reform fields and for the population of SL to possess an official and legal identity, and the dependable recording, storing and retrieval of vital events;
- **Support to the governance sector in Sierra Leone:** This programme only started at the end of 2019 but looks at enhancing the legislative process, institutional relevance and effectiveness of Parliament. A key objective is that the Civil Registration system is improved, in synergy with EU support to education, elections and public sector reform fields.

There are no EU programmes at the moment promoting digitalization as principal objective. However some programmes include substantial support to digital solutions. This is the case for instance of the EU Programme to Support Good Governance, which, in part, aims at contributing to the establishment of a modern and permanent civil registration through the digitalization of all past registrars of vital statistics. More than 16.000 paper registers of birth, adoption, marriage, separation, and death are being digitized in order to establish an electronic integrated Civil Registry of Vital Statistics. The EU programme shall also promote the establishment of

[255] 'The EU invests 60 Million € on job creation, skills development and enabling investments in Sierra Leone ', The National Authorising Office Sierra Leone, 17 April 2020, Link : https://tinyurl.com/y5hjfpgf (consulted on September 08 2020)

sustainable ITC solutions for the National Civil Registration Authority and the local offices in the 190 Chiefdoms.

These are major undertakings which shall contribute to the establishment of sound data systems which in turn would enable the issuance of the digital National ID. The Governance Support programme, also aims at supporting the establishment of an efficient public sector. A key feature of this is the maintenance of an efficient electronic human resources management and payroll system.

Under the 11th EDF Programme in Support of Local Authorities and Civil Society Organisation, support will be provided towards the provision of ITC solutions for the pilot Local Councils and notably the utilization of the digital applications in force to ensure improved Public Financial Management at local level

The digital components of these projects vary, however digital is used to support more effective and transparent government processes through digitized data management for both civil service reform and civil registration. The first project benefit women through creating greater equality in terms of recruitment processes and job benefits and salaries that will increase access to the job market for women as well as other disadvantaged populations. The second project will benefit populations as they will have more direct and easier access to civil and vital records, which can be used for access and registration to education and public services, etc.

Section 3: Best Practices of Digital for Women Initiatives

Whilst female participation in the digital ecosystem is growing, there are still few examples of tech start-ups that have reached a significant scale in Sierra Leone. This is the same for both men and women, but especially women. However, some startups have recognized this gap and launched initiatives to address the digital gender divide in Sierra Leone.

Innovation Sierra Leone (SL)

Recognising that women and girls were rapidly being left behind in the Sierra Leone tech ecosystem, Innovation Sierra Leone (SL) has paved the way in terms of identifying ways to incorporate women within their programmes. SL suggests that young female-led start-ups have a better chance of success and longevity and are more likely to develop solutions that tackle social problems and that address critical constraints within value-chains. To prove this concept, Innovation SL launched the “Dare 2 Aspire” women in entrepreneurship programme which includes a pitch programme only for women and girls. They work on the basis that it is important to capture girls at a young age and provide digital skills early on. Innovation SL uses a role model approach to encourage young girls to attend the programme. Due to the societal context, parts of the approach’s resources are dedicated to

engaging with reluctant parents to convince them of the opportunities created for their daughters. Innovation SL partnered with EcoBank to develop a tailored programme for women. They provide advice on how to open a bank account, basic accounting training and coaching on record keeping and required paperwork documentation when operating a small business. This programmes has been successful in inspiring women to be more open to accepting loans. By the end of the programme almost all participants opened a bank account in order to do so.

***Achievements*:** At the end of 2019, Innovation SL had 12 start ups under incubation in various stages of development. One of four start-ups under incubation has generated revenues of 90 million Leones with anticipated growth in 2020 at 350million Leones. Five of the start-ups are at the validation phase, this process will continue for another six months into 2020. In 2019 Innovation SL's start-ups breakdown was as follows:

- 50% students (each of these start-ups had at least two women as co-founders),
- 40% women founders,
- 20 % non-students,
- The age group range from 22 years to 35 years old.

In 2019, Innovation SL won the Sierra Leone Central Bank and UNCDF Fintech Challenge. They will be funded to build an MVP. Should the MVP be validated, they will receive the sum of $150,000 to roll out the innovation fund. Winning the Fintech challenge has offered Innovation SL the opportunity to enter the Fintech space, which holds huge opportunities for young women and girls in Sierra Leone.

Code4Salone: Women and Tech

Code4Salone is an all-inclusive, citizen-led grassroots movement that is leveraging the power of open source technologies to bring innovations in the public sector. Through the creation of open source technologies to address civic needs, they aim to transform civic life by increasing civic engagement via the following focus areas that have real human impact: health services, economic development, transparency and accountability and communication and engagement. Under Code4Salone there is the Women and Tech programme. The aim of this program is to encourage greater women participation in the civic technology community in Sierra Leone. Code4Salone provides training to women via the following initiatives: Workshops; hackathons; conferences and talks encouraging women to learn techbased skills; regular training sessions through which women are mentored towards building their coding skills.

***Achievements*:** Code4Salone is the most notable developer community in Sierra Leone, the developer talent pool in Sierra Leone is crucially lacking. Code4Salone was able to fill the vacuum and partner with Sierra Leonean organisations and development agencies to improve the services delivered[12].

Software Company: FIX Solution

Fix Solution is a female-led software company that provides innovative technologies for a broad range of markets to improve productivity. Their products cover areas such as digital on-boarding, case management, document management and digital workforce. Founder Salwa Campbell was featured at the TechWomen Sierra Leone day in 2019 as an example of a women founder who had exemplified listening and learning from the customer base.

Achievements: Large scale programmes of secured digitalized system implementations have been carried out by FIX Solutions for the count of governments or international agents on subjects like Healthcare, social protection, Telecoms, Banks, Universities, Police and Prisons and judiciary systems, to the point where the beneficiaries of this company are in the millions. The CrimeSync product was delivered to police, prisons and courts to encourage them to go paperless. FIX Solutions can guarantee the automatizing of the justice processes from inception to adjudication while the identity and biometrics of the subject are successfully kept anonymous[256].

Section 4: Sierra Leone's Tech Ecosystem

The tech ecosystem in Sierra Leone is almost non-existent. There are just two innovation hubs (presented below) and very few support services that target startups. Whilst there have been a number of innovation funds in recent years implemented by NGOs and donors, these have used a somewhat generic format of pitch competitions followed by a grant and very limited support for scaling up. This resulted in a number of people coming forward with good ideas but struggling to get them to reach profitable size. **Startup Sierra Leone** is part of Innovation SL and was created to address the frustration of the entrepreneurial ecosystem in Sierra Leone being fairly weak.

Founder, Franics George wanted to support entrepreneurship, in particular startups and their supporting ecosystem. Startup Sierra Leone was established as part this wider effort to map and build said ecosystem. The website offers vital links, resources and knowledge for startups in Sierra Leone from the initial conception stage to development and maturity. The company's vision is to build an entrepreneurial ecosystem that is mapped out, visualized and actively connecting ecosystem's, activities, services and applications from research, events, innovation services, advisory networks, funding instruments and talent pools all oriented towards development phases. They have, to date, successfully ran the Freetown Pitch Night, established relationships with academic institutions (Limkokwing University of Creative Technologies) and sponsorships with private sector

[256] Fix Solution. Link: https://fixsolution.sl

multinationals (Heineken).[257]" This demonstrates the initially building of cross sectorial partnerships around digital initiatives and the drive to build a stronger tech ecosystem in Sierra Leone.

Sensi Tech Innovation Hub claims to be the first Hub of its kind to be established in Sierra Leone back in 2014. Its objective is to build a technology innovation community in Sierra Leone that will drive economic and social development. This can be achieved through the provision of an open and stimulating community hub for technologists, entrepreneurs and creators to come together, develop their ideas, and access cutting-edge tech, grants funding, events, incubation and acceleration programmes, networking, training and jobs opportunities. The organisation provided an SMS service, as an emergency technology response to Ebola. It allowed healthcare organisations to disperse life-saving information to people affected by the disease in Sierra Leone where access to the internet is an ongoing problem. Since its incubation as a limited company and CBO it has impacted the lives of over 15,000 Sierra Leoneans who are contributing to building the business and tech ecosystem in Sierra Leone and beyond. Sensi Tech Innovation Hub has, so far, given over 20 businesses incubation and acceleration capital through their Fire Starter fund. These include Welbodi Gari, Abie's Fashion and Gill & Co, with many more bright change-makers on their way up. Their services for local people are partly funded by their software creation, ICT consultancy and expert tech services for national and international companies. The team has worked on health and innovation projects across West Africa, data programmes for international NGOs, websites and apps. Their clients include organisations as Deutsche Gessellschaft fur Internationale Zusammernarbeit (GIZ), the World Bank and the UN Population Council[258].

Training and networking event at Sensi[259]

[257] Startup Sierra Leone. Link : https://startupsierraleone.com/about/
[258] Sensi , Link : https://sensi-sl.org/
[259] Sensi , Link : https://sensi-sl.org/

Ecosystem building event at Sensi[260]

Beyond these two hubs there are very little initiatives on their way to the Sierra Leonean tech ecosystem. It is critical to focus on building this ecosystem and opening discussions with potential partner organisations that may gain a better understanding and insight into how supporting start-ups and helping the tech ecosystem grow is possible. In doing this, particular attention should be given to supporting the development of skills and knowledge of women and girls in the tech sector through capacity building and opportunity financing.

Section 5: Opportunities

Sierra Leone is at the start of its technological journey. Although there are positive signs of growth in this area and some promising programmes supporting digital access for women and girls, the ecosystem is still quite nascent and requires strong support if significant development is to been seen in the near future. Leveraging existing resources is an interesting way to reach scale while learning from the early experiences of start-up hubs. Other areas of opportunity include:

- **Develop targeted programmes that improve the digital literacy skills of women** so that they can use their voices safely online for influence and advocacy;
- **Work with universities to increase their capacity in digital technologies and digital learning. Improve teaching facilities** so that students have

  greater access to technologies and learning in these spaces;
- **Support the effective implementation of recent policies and strategies relating to digital technologies** so that they are carried out fully and have a higher likelihood of success;
- **Support existing programmes, hubs and incubators that encourage female entrepreneurship** through funding, technical assistance and infrastructural support;
- **Support the development of the tech ecosystem and in particular the services** such as business development, access to finance and regulatory environment;

[260] Ibid

- **Encourage the opening of more incubators and innovations hubs in order to create a more competitive landscape for start-up entrepreneurs;**
- **Engage with communities including men and boys** to shift negative perceptions of women accessing education and training, particularly within digital technologies fields hence reducing counts of GBV and sexual harassment.

10. SUDAN – CASE STUDY

Country Snapshot

Pop.(2020)[261]	Total land area (Km2)	Pop. Density (pp/Km2) (2019)	Urban/Rural Pop. (2019)		Life Expect. (2020) / years			Adult Literacy Rate (2018)			Total fertility rate (live births/ women) (2020)	GDP/ capita (USD) (2018)
			Urban	Rural	Ave.	Men	Women	Ave.	Men	Women		
43,695,487	1,765,048	24	35% 15,349,424	65% 28,499,836	66.1 years	64.2 years	68.0 years	60.7	65.44	56.06	4.4	977.3

Digital: The many years of instability in the country has affected the telecommunication sector as well as the internet in the sense that most outlets are owned externally and therefore dependent upon foreign investment. **Nonetheless, Sudan's telecommunication infrastructure is equipped and comparable to other countries in the region. The country has most of the needed services such as a national fibre optical backbone, wireless fixed-line networks, but very limited fibre-to-home connections.** IOS and Apple products were unavailable in Sudan for several years because of the US embargo on the country. Since easing of the sanctions in 2018, IOS has increased as a Mobile Operating System. 68% use Android while 26% use IOS. Furthermore, only 24% of Sudanese households have a personal computer or laptop[262].

Internet users in Sudan in 2020[263]

- There were 13.38 million internet users.
- The number of internet users in Sudan increased by 316 thousand (+2.4%) between 2019 and 2020.

[261] 'Sudan Population (Live)', Worldometer, Demographics, Sudan, Link : https://www.worldometers.info/world-population/sudan-population/ (consulted on September 08 2020)
'Education and Literacy', Sudan, UNESCO, Link : http://uis.unesco.org/en/country/sd (consulted on September 08 2020)
GDP per capita (current US$) - Sudan, World Bank Data, Link : https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=SD (consulted on September 08 2020)

[262] 'PORTFOLIO : The State of Sudan DigitaL 2019', Sudan Digital, June 4, 2020, Link : https://sudandigital.com/portfolio/sudan-report-2019-the-state-of-sudan-digital/ (consulted on September 08 2020)

[3] Kemp, Simon, 'Digital 2020: Sudan', Data Reportal, 18 February 2020, Link : https://datareportal.com/reports/digital-2020-sudan (consulted on September 08 2020

- Internet penetration in Sudan stood at 31%.
- In 2018, less than 1% of the population had a fixed broadband connection[264].

Mobile connections in Sudan in 2020[265]

- There were 32.83 million mobile connections.
- The number of mobile connections in Sudan increased by 2.3 million (+7.4%) between January 2019 and January 2020.
- The number of mobile connections in Sudan in January 2020 was equivalent to 76% of the total population.

Gender: Sudan's legal system during the previous government headed by ex-president Omar al-Bashir was based on a strict form of Sharia Law, which does not guarantee women many of the same rights as men. The nature of such laws permeates Sudanese culture, thus affecting the situation for women and girls in the society with no support from the laws and policies.

Affordability (and taxation): According to Freedom House, telecom cost remains a significant issue: a month of fixed-line internet service (assessed in 2019) can cost nearly half of the average monthly income in Sudan[266].

Online security (and Internet shutdown): In relation to freedom of expression and the media, the previous regime's policies and laws were undemocratic, contradicting Sudan's constitution, which respects freedom of expression and opinions. The military regime, headed by ex-president Omar al-Bashir, who ruled Sudan for thirty years before he was deposed by a massive peaceful revolution in 2019, deployed the tactics of shutting down or throttling access to the internet as a tool to silence and oppress protestors. During the 2019 uprising, the government completely shut down the internet for 24 hours as a measure against the spreading of peaceful protests following the regime's decision to lift state subsidies from basic food items and fuel[267]. The 2019 freedom on the net Sudan report from Freedom House gives Sudan an overall score of 25/100, which is 10 points lower than 2018. Three factors are taken into account: Obstacles to Access, where Sudan received a grade of 5/25, Limits on Content where the score received was of 12/35 and Violations of User Rights with an overall grade of 8/40[268]. These are addressed in the digital challenges section below.

Section 1: Policy and Regulation for Digital and Gender

Digital: Despite many years of political restrictions, Sudan went from less than 1% internet use by individuals in 2000 to 76% in 2020. With over 32 million mobile phone subscriptions in a population of 37 million, digital access by ordinary people has grown exponentially.

One of the biggest challenges that Sudan faces in its transition to democracy is to create economic opportunities for women and men in the new representative country. With regards to the digital economy, the country still suffers from high costs of access to bandwidth, lack of e-payment systems, weak purchasing power, limited financial inclusion and inadequate digital literacy that undermines the development of e-commerce in the country.

[264] 'Freedom in the World 2019, Sudan', Freedom House, Link : https://freedomhouse.org/country/sudan/freedom-world/2019 (consulted on September 08 2020)
[5] Ibid.
[266] Ibid.
[7] 'Sudan: End Network Shutdown Immediately', Human Rights Watch, 12 June 2019, Link : https://www.hrw.org/news/2019/06/12/sudan-end-network-shutdown-immediately (consulted on September 08 2020)
[268] 'Freedom in the World 2019, Sudan', op.cit.

The Sudanese digital sector is embedded in global and local politics. It is subject to surveillance from the Sudanese government and constrained by a US-embargo on the import and export of goods to and from Sudan since 1997, due to an alleged connection with so-called terrorist activity. US sanctions directed at the Sudanese government inadvertently reinforces Sudan's oppressive and controlled media policy of its own people. Until 2014, residents in Sudan could not download or update American software for personal use, leaving operating systems unprotected and vulnerable. These sanctions were partially lifted in 2014, and further in 2018. In March 2020, the Sudan Central Bank announced that 157 Sudanese firms had their US sanctions lifted, these firms can now realise international transactions.

The country experienced two major Internet shutdowns in the past year, indicating that the laws seem contradictory and _inconsistent with regard to freedom of expression and information online, and the right to access communication networks. Some laws support these rights, even under the ousted regime of al-Bashir. For example, both the Sudanese Access to Information Act and the 2005 Sudan Interim Constitution — which was repealed after the uprising in 2019 — preserved the right to receive and disseminate information. On the other hand, the 2018 Telecommunication and Post Regulation Act gives Authorities the right to disrupt any communication and telecommunication or broadcasting station if it violates the law. This allows the authorities to restrict access to services when arranging. Since the establishment of the transitional government in August 2019, acts and amendments have been introduced, but none involving the ICT-sector directly. Between April and July 2020 the Miscellaneous Amendments Act (MAA) was passed to address and repeal some of the more extreme conservative laws that were still in place from the Al-Bashir era. This concerned the "Information Law", amended under the MAA. The law severely punished the dissemination of "false" information, allegations or news, presently, the penalties are reduced. The Information Law allowed for easy and rapid censorship of media under "fake news" pretexts.[269]

Economic challenges have intensified as inflation increased, resulting in higher prices for internet access and declining quality of service during the reporting period. There were multiple social media blocks during mass protests preceding al-Bashir's removal, one of which lasted for two months. Censorship of digital content is rampant in Sudan. Authorities hide behind "Muslim" values to condone heavy filtering and blocking of "immoral" and "blasphemous" content. The use of VPNs, especially during the protests was widespread, leading the authorities to shut down internet access completely[270].

[269] 'Khartoum, 'Sudan Justice Minister clarifies repeal of strict laws', Dabanga, 13 July 2020, Link : https://www.dabangasudan.org/en/all-news/article/sudan-justice-minister-clarifies-repeal-of-islamic-laws (consulted on September 08 2020)

[10] 'Freedom in the World 2019, Sudan' op.cit.

Before the ousting of Al-Bashir, the ICT and digital sector was regulated by the National Telecommunication Corporation (NTC)[271]. On June 10th 2018, the new "Cybercrimes Law", loosely based on its 2007 predecessor the Cybercrimes Act, was submitted by the Ministry of Telecommunications. Full legislative papers are not available to the public, but some articles were published in a national newspaper. The law claimed that publishing content on different internet platforms can be considered as "spreading fake news". An alarming law among journalists who believe it was a loophole to restrict freedom of speech and press. Article 23 of the Cybercrime Law establishes "imprisonment for less than one year, flogging, or paying a fine" for "anyone who uses the internet, or any means of communications, information or applications to disseminate any news, rumour or report, knowing it's fake, to cause public fear or panic, threaten public safety and offence the reputation of the state". Hiding behind the struggle against fake news, which admittedly can be dangerous, the legislative system drafts a law that is vague and leaves room for interpretation, an authoritarian tool for oppression. The legislative framework in Sudan has redundancies between policies of different sectors, from previous years, and has clear cut punishments for every offence. It is a legislative framework only by name as there is no real wish to regulate the orderly expansion of the ICT sector; its only purpose is to constrain it[272].

The Media Law, approved on June 21st of that same year, had similar motives. Its goal was to restrict the use of social media in disseminating political views. The legislation itself was chaotic and contained several redundancies from certain laws over two decades old (e.g. Media and Publication law of 2009 the Cybercrime Act of 2007, the National Security Act of 2010, the Criminal Act of 1991 etc.).

The military junta government is currently, and for the next two years, power-sharing with a civilian council. A time during which elections will be organised and a new constitution will be drafted. The laws above are therefore "officially" not enforced, but they give an idea of the state of ICTs and digital spaces in the country. Moreover, the dismantling of Al-Bashir's political and economic network will be slow and intricate. The country is still under state of emergency policies overseen by the military, it can be expected that laws like that of Media and Cybercrimes will not disappear in the near future. In terms of censorship online, it is still prevalent; advocates face arrest because of their social media posts[273].

E-government, under the form of the Sudan government portal, was launched in 2015. It offers a range of administrative services, presents the current government, the transitional council, the secretaries and the council of ministers. The current website faces frequent malfunctions caused by faulty ICT infrastructure, lack of skilled personnel for maintenance, inadequate leadership and management and issues concerning policy and

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11 El-Abubkr, Liemia , 'Sudan',Global Information Society Watch, 2014, Link : https://www.giswatch.org/en/country-report/communications-surveillance/sudan consulted on September 08 2020)

272 Ibid

13 Ibid

regulation. These are issues that are ubiquitous to digital spaces whether public or private.

Challenges:

The first obstacle to accessing technology is affordability, the recent strife and subsequent power transfer resulted in an intensified inflation and economic challenge impacting buying power and driving internet prices up. In the months following the ousting of Al-Bashir, telecommunication providers were raising internet fees by 15% of their cost. The economic activity limbo created by the political crisis resulted in a declining ICT service delivery which, adding to the several social media blocks and the disrupted electrical power supply, culminated in a difficult if not non-existent access to technology and internet.

Across the country including in major cities and Khartoum, electricity has been rationed, supply is very limited and blackouts are regular. In comparison to the challenges other countries in Sub-Saharan Africa face in accessing digital spaces, Sudan's issues remain at the very-foundation level of technology – electricity.

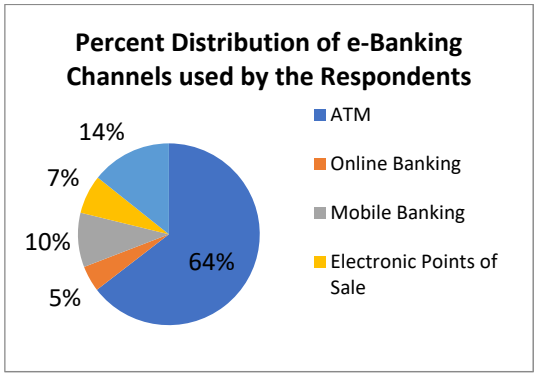
Regarding ICT regulation the government operates without accountability, given there is no effective regulatory framework, the authorities act to their benefit without considering broader consumer impact. This was the case of the restriction on service providers. There are currently four licensed operators: Canar, MTN, Zain and Sudatel. The Bank of Khartoum purchases shares of these companies and blocks international and national efforts to acquire them. This obstructs market competitiveness which ultimately brings prices down. There is also widespread consensus that this will eventually have negative impact on internet freedom. The agencies and departments that oversee market dynamism and equal operator opportunity are interwoven within the government, they are not independent. The private sphere, which has the capacity to provide digital access, is actively refrained from doing so by the government. The public sphere does not have the means to be a quality service provider and does not necessarily seek to be.

Appropriate leadership is lacking in the digital data sector, where the NTC is the sole actors in producing statistics, regulating internet, introducing innovations, information, and managing access. The previous NTC director, Dr. Yahia Abdallah Hamad, was allegedly dismissed by the National Security Service during the mass protests because he refused to shut down the internet. He was then replaced by a figure head director.

E-banking, or access to online banking and finance services, was first introduced by the Khartoum Central Bank in 1999. Since then there has been several efforts by commercial banks to develop online services hosted on innovative technology. The first ATM was installed in 2003 following the launching of credit cards. In 2016 there were over 1.4 million credit card users. Today, however, e-banking in Sudan is cripplingly low. There are many reasons behind this and they all reveal underlining issues that are general to the Sudanese digital space: lack of legislative protection and security, faulty infrastructure, low computer and digital literacy, inadequate service provision and connectivity, lack of confidentiality and online privacy.

Additionally, traditional banking services are not widespread and remain available for wealthier segments of populations[274].

A survey investigating the e-Banking services in Sudan revealed:



This survey suggests that Sudan is far behind other Sub-Saharan African Countries in e-banking service provision, considering the use of ATMs for e-banking has 64% of the market share. The fixed physical location of ATMs limits the inclusivity of their use by rural populations and those not physically able to reach ATMs. Moreover, mobile and phone banking systems, which were to some countries (Kenya, Rwanda, Nigeria) liberating in terms of access to finance, economic participation and entrepreneurship opportunities, lags behind in Sudan. It is also indicative of how the internet penetration, which stands around 30%, is not being used to access services such as E-Banking[275].

Dina Ghandour, in her paper “E-Banking in Sudanese Banking Sector: Between New Opportunities and Challenges”, presents some of the ways e-banking can overcome the aforementioned barriers. She explains that Sudan is still in the Technology Acceptance Model (developed by Fred Davis in 1989) and that the Sudanese with access to traditional banking services are reluctant to use E-banking services because their behavioural intentions are dictated by their perception of the usefulness, ease of use, trust and risk of E-Banking. Some of these perceptions can be altered in the short term: the banks must demonstrate proper and regular system maintenance and preparedness in times of power outages; the E-banking services should be more user-friendly and interactive to accommodate those with lower digital literacy (simple, clean layouts with diagrams, colours, arrows etc.). Banks should then promote more extensively their efforts in simplifying and securing their service delivery. There are however long-term changes to shift perceptions: regulating online security and improving internet connectivity. These are solutions that have to be spearheaded and sustained by the government[276]. While it is important to note that the lack of ICT infrastructure and technology adoption in Sudan is widespread and shouldered by the

[274] Ghandour, Dina A. M., ’E- Banking in Sudanese banking Sector: Between New Opportunities and Challenges’, International Journal of Multidisciplinary Education – IJMER, Volume 3, Issue 1, 18 April 2016, Link : https://www.researchgate.net/publication/320558692_E_-_Banking_in_Sudanese_Banking_Sector_Between_New_Opportunities_and_Challenge (consulted on September 08 2020)

[275] Mohamed, A. Ismail , ‘Factors Influencing the Adoption of E-banking in Sudan: Perceptions of Retail Banking Clinets’, Jounral of Internet Banking and Commerce, Link : https://tinyurl.com/y23wfqs6

[276] Ghandour, Dina A. M., ’E- Banking in Sudanese banking Sector: Between New Opportunities and Challenges’, op.cit

entire population, women, as they are already over-represented in poverty and low standards of living rates, have high barriers to surmount.

Gender: Compared to other countries in the Horn of Africa, Sudan has had a long and remarkable history of a women's movement that emerged with anti-colonialism sentiments dating back to the mid-1940s. However, for three decades, ex-president al-Bashir enforced a raft of oppressive laws aimed at subduing women, with the objective of satisfying the country's ultra-conservative Islamic forces, which propped up his regime. Child marriage, marital rape and the practice of female genital mutilation were allowed or at least tolerated[277]. There are no laws explicitly condoning these traditions, but there are none prohibiting them. The 2010 Child Act "does not mention marriage in this context". Nonetheless, Article 40 of the 1991 Muslim Personal Law cites that "once a party is 10 years old, they may be married with the consent of their parent or guardian". This same Act allows for polygamy and obedience to the men of the household. These laws are culturally maintained by familial and communal customs. "Girls Not Brides" reports on the different commitments of the Sudanese government regarding ending child marriage: the 5.3 target of the Sustainable Development Goals to end early and forced marriage by 2030, The Sudanese co-sponsorship of the 2017 Human Rights Council resolution recognising the need to address child, early and forced marriage in humanitarian contexts, and in 2014, agreement to solve child marriage in a joint state to the Human Rights Council.

According to a research done by Overseas Development Institute in 2019 in collaboration with the Sudanese women's movement, to address discriminatory laws, Sudanese gender equality advocates and legal reform initiatives should leverage international policy commitments to justice and equality under the law[278]. Similarly, the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), while controversial in the Sudanese political context, should be leveraged as a platform for promoting Sudanese alignment with global standards on gender equality law.

While Islamist women's groups in Sudan have rejected the CEDAW, an international bill of rights for women sets basic standards to be implemented to promote gender equality, in principle. There has been a perceived tension between the convention and Sharia law; they have embraced some policy positions to empower women politically and economically. . Without the ratification of CEDAW, the country is not formally prioritising gender equality. Thus, enhancing women's voices across all levels of society and government in Sudan requires a comprehensive, cross-sectoral and purposeful effort that engages with the political realities of the transitional period. It is therefore important the legal system in Sudan be reformed to make it more gender-equal, both in the letter of the law as well as in

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[14] Walsh, Declan, 'In a Victory for Women in Sudan, Female Genital Mutilation is Outlawed', The New York Times, 30 April 2020, Link : https://tinyurl.com/y7zlvogb (consulted on September 08 2020)

[15] George, R., Saeed, M., Abdgalil, S. , 'Women at the forefront of Sudan's political transformation: recommendations from a workshop on women's rights, representation and resilience in a new Sudan', ODI. November 2019, Link : https://tinyurl.com/y5kbqxsm (consulted on September 08 2020)

practice. Some more gender equal laws in Sudan are not effectively implemented, and there are other laws that are discriminatory to women.

There are some positive things happening during the transition period. For example, in May 2020, Sudan's new government has outlawed the practice of female genital mutilation, in a country where the practice is widespread. Although the entrenched traditions and the current justice system's incapacity may result in the non-enforcement of the law, the move was hailed as a major victory by women's rights campaigners. Under the transitional government's leadership, women ministers lead five government ministries and the government has repealed the unpopular Bashir-era laws that dictated what women could wear or study, or even where they could congregate in public[279]. The introduction and amendment of more gender friendly policies should occur prior to the change in government leadership during the 2022 elections.

Challenges:

According to the 2018 UNICEF Sudan Gender Programmatic Review, the major barriers to gender equality and the emancipation of women and girls in Sudan can be categorized in the following broad lines: a lack of knowledge and limited access to information, a limited access to services by women and girls, harmful and dangerous masculine and feminine ideas of gender roles and expectations, the dual responsibilities experienced by women, and lack of participation in the decision making.

Bottlenecks and barriers	Example (UNICEF Sudan, 2017)
Women's and girls' lack of knowledge and limited access to information	• Only 35.2% of mothers of unregistered children know how to register a child's birth. • Only 8.9% of women know both primary ways of preventing HIV/AIDS transmission (having only one faithful uninfected partner and using a condom every time).
Women's and girls' limited access to services	• 50.1% of women have fewer than four antenatal care visits (by any provider). • 5.2% of women have been tested for HIV/AIDS.
Detrimental masculine and feminine ideals and expectations	• In considerable number of localities, women are less valued than men. • Low estimation for girls' education as she will get married before 15-18 and do not need to go to secondary school. • Girls are perceived to better support the family when a husband pays a bride price for her marriage. • In six out of the 17 states, more than 60% of households depend on the women and girls to collect water.
Dual responsibilities experienced by women	• Females have an inordinate burden of work both in terms of domestic duties and earning a livelihood for their families. • It is usually women who must fetch for water (for long distance in many cases) while having other household responsibilities.
Women's and girls' lack of participation and decision making	• Girls and women, in a considerable number of states, do not exercise their choices in marriage. • Lack of women's involvement in resource management (water management, operation and maintenance).

[16] Declan Walsh, 'In a Victory for Women in Sudan, Female Genital Mutilation is Outlawed', op.cit.

In 2005, the Interim National Constitution of the Republic of Sudan (INIC) established with Article 32 that “women and men have equal entitlement to all civil, political, economic, social and cultural rights”. After the INIC, a few more policies established gender parity within legal bounds. Values are still deeply enrooted in patriarchal communal systems, the laws are not enforced and there is no gender specific strategy in Sudan. The lack of real gender mainstreaming in national policies or efforts create a difficult environment for gender and digitalization to be integrated together[280].

Section 2: Existing EU Programmes in Gender and Digital

Based on the resources DEVCO as well as stakeholder interviews, there have been no Digital for Women programmes funded by the EC identified in Sudan. The stakeholders at the EC delegation recognize the current opportunity to work on policy as well as economic growth to ensure that women are part of the building of a new inclusive Sudan. It was expressed since the fall of the ex-president; women are taking a larger role in the society with more access to technologies which means that digitals can be used as an enabler in the majority of the EC initiatives in Sudan.

An online job matching application accessible to entrepreneurs and job seekers has been developed with EUD technical and financial support, it is in testing phase. The role of this platform will be to support both individuals and MSMEs in finding appropriate and available skill-sets, networking, partnering and practicing outreach.

Section 3: Best Practices of Digital for Women Initiatives

The rise of social media (1.3 million users in 2020) – and the use of smartphones – has enabled women to transcend traditional gender norms and challenge the boundaries between different spaces. This was evident during the 2019 uprising where women were on the frontline protests[281]. The availability of Facebook and WhatsApp has allowed women in Sudan to create spaces where they can socially interact exclusively with other women and contribute to broader political debates, like discussions around the recent uprising. Below are some initiatives using digitals in several sectors however, they are not necessarily focused only on women and girls. Due to the lack of vibrant tech ecosystem, there are limited good practices in this section.

Agriculture

SAP – Smart Agriculture Pilot: ‘Flying robot farmers’ drones plant Acacia trees whose roots stop the movement of sand – with Artificial Intelligence for remote

[280] Khartoum, ‘Unicef Sudan: Gender Programmatic Review’, Unicef, 7 July 2017, Link : https://www.unicef.org/evaldatabase/files/Gender_Review_in_Sudan_2018_Final_Quality_Edited_Report.pdf (consulted on September 08 2020)

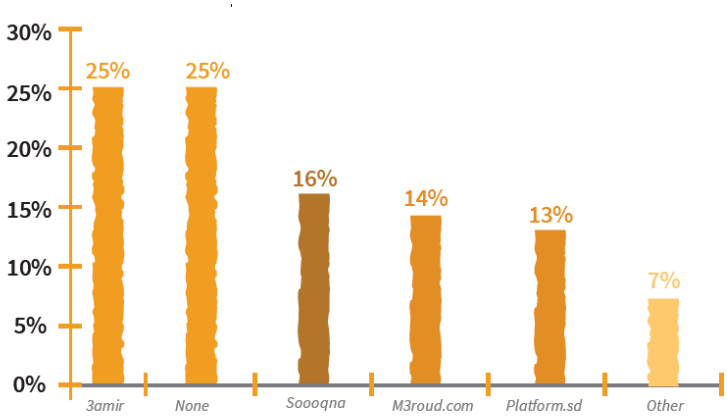
[17] Bhalla, Nita, 'The revolution isn't over' say Sudan's frontline female protesters, Reuters, 20 September 2019, Link : https://tinyurl.com/yxvgojf7 (consulted on September 08 2020)

sensing of plant health, improving farming yields, reducing crop damage, protecting forests, producing aerial maps, and measuring irrigation and humidity levels.

e-Commerce

Facebook Traders: Facebook is used by women to access, from their smartphones, trade goods such as cosmetics, garments, traditional Sudanese dresses, fashion accessories and perfumes from their homes. The platform is free and hosts sales and trades.

The Sudanese e-commerce options are widely unknown to the general public, and to a certain extent, to the digital community. 84% and 25% of those communities respectively have never heard of ecommerce brands[282].



The figure above shows the Sudan Digital Report respondents' awareness of the Sudanese ecommerce brands.

The figure above demonstrates what the main barrier to the respondents using the Sudanese ecommerce platforms are.

The Sudatel and Zain phone operators, with over 17 million customers between the two of them, have recently entered into the ecommerce market space with each their online platform: "3amir.com" and "soooqna.com". This is expected to revolutionize the digital business in Sudan and allow Sudanese MSMEs to expand through them. Indeed the current "most traditional paid methods of customer acquisition (Facebook, Twitter and Google ads) are still blocked an unavailable to Sudanese Businesses. Such advancements are encouraging, however to avoid digging the gender digital divide further, MSMEs managed and owned by and for women, ought to not be left behind and should be supported throughout the digitalization of their business.

Technology Accelerator

[282] 'PORTFOLIO : The State of Sudan DigitaL 2019', op.cit.

Mashrouy, which means 'My Project', is a competition that aims to spread the idea of entrepreneurship among young people and to shed light on the vast opportunities that entrepreneurship can provide to the youth of Sudan. Mashrouy is run in partnership with the British Embassy and the Sudanese Young Businessmen's Association. The competition is televised to advertise the entrepreneurship mind-set. Women make up a quarter of the participants and beneficiaries of the competition. The Smart Agriculture Pilot's creators participated in the Mashrouy. Samah Algadi, a woman, won the first season of Mashrouy, she decided to tackle the Water Hyacinth problem on the White Nile. With help from a crew, she collects the Water Hyacinth and transforms them into decorative pieces, bags, furniture etc.

Sharing Economy / Ride Sharing

Mishwar is the Sudanese version of Uber, an on-demand car service application. US sanctions prevented the use of the well-known Uber service, which triggered the invention of its own application in Sudan. The company was established in 2015 and has more than 8000 users and 150 drivers to date. The service grew quickly by attracting customers in places where taxis and other local forms of transportation are sought. Aggregated user profile data has demonstrated that the majority of users are young professionals, especially woman[283]. The service provides a level of safety from street harassment; when a female client is picked up directly from her initial location/home to her destination. Additionally security is provided through the tracking of drivers for both the client and driver. Finally, clients do not have to bargain on the prices as the fares are pre-calculated.

The Sudanese Business Women Development Centre:

This organization was established in 2009 seeks to economically empower SMES ran and owned by women, by building their capacities and facilitating access to local, regional and international markets. There are currently 1500 registered members, the SBWDC functions like a business incubation hub and accompanies women through the "innovative methods". Although digitalization is not an end sought out, "incubees" receive training and are granted capital for tech development[284]. Bridging the digital gender gap in Sudan entails enhancing and strengthening already existing institutions such as the SBWDC.

[18] Mojapelo, L. Mishwar, 'Mishwar : Sudan's Uber' This is Africa, September 23, 2016, Link : https://thisisafrica.me/lifestyle/mishwar-sudans-uber/ (consulted on September 08 2020)

[284] Sudanese Business Women Development Centre. Link : http://www.sbwdc.net/

Section 4: Sudan's Tech Ecosystem

Sudan is a country marked by civil war, conflict, poverty, restrictive political and economic sanctions, poor infrastructure, power shortages and an inflated commodity market. Additionally, there is, amongst the working population, a lack of entrepreneurial culture and finance skills. The Sudanese economy depends primarily on subsistent agriculture and oil extraction. That does not leave too much space for local high-tech entrepreneurs to grow their businesses. Restrictive regulatory and legal environments, outdated infrastructure, low fixed Internet penetration rate and mostly poor rural population put additional restraints on local start-ups. At the same time, increasing numbers of smart-phone users creates niche opportunities in e-commerce, FinTech and mobile entertainments. However, shortage of qualified personnel and absence of seed and venture financing, further undermine the future of start-up ecosystem in Sudan[285].

Nevertheless, over the last few years Sudan has seen a significant boost in the number of start-ups, incubators, start-up events and resources available. Although the community has yet to produce a big Sudanese success story, there are various leading examples and inspiring stories of Sudanese entrepreneurs and start-ups that are trying scale their businesses regionally. But the biggest problem by far is the sanctions, which cut almost all avenues to funding and support for local entrepreneurs. Sudan's "total isolation" prevents not only foreign Venture Capitalists (VCs) and companies from investing in the country, but also entrepreneurs in Khartoum from getting grants and loans from abroad.

After the fall of the ex-president, foreign investors such as Qatar, Russia, Saudi Arabia, Turkey, and the UAE have all reached out to Sudan in one form or another with the hope that the main issues related to cash-flow problem will improve with the new political transition.

Section 5: Opportunities

Sudan is definitely a promising emerging market in all fields, despite all of the logistical, regulatory and political issues it faces, because it provides a unique opportunity for visionary entrepreneurs to come up with home-grown solutions to fill in the various gaps that currently exist in the fields of technology, financial services, logistics, agro-business, governance, and other important economic sectors. Because of its diverse population of more than 40 million comprised of both Africans and Arabs, Sudan offer an interesting product beta-testing (user testing) potential. Firms would introduce technology and digital products and services to Sudanese people at reduced prices in exchange for beta-testing of the product. Sudanese solutions also have the advantage of being able to scale to other neighbouring markets for which it shares both an African identity and an Arab identity with its North African and Middle Eastern neighbours (Libya and Egypt).

Many young Sudanese entrepreneurs are focusing on founding start-ups with easily scalable business models that do not require a lot of capital or consume a lot of resources. Based on the research as well as conversations with various

[19] 'PORTFOLIO : The State of Sudan DigitaL 2019', op.cit.

stakeholders, the following opportunities are proposed to create more impact when it comes to addressing the digital gender divide in Sudan:

- **Tech ecosystems and the rise of new entrepreneurs:** Sudanese society is still not very open to the idea of “risky investments” or starting a “risky tech” business due to the nature of the country’s unstable economy. Therefore, there is a need for business skills and need for establishing the basis for an innovative business ecosystem. As seen in section 1 under Digital Challenges, the idea is to encourage the use of mobile internet to access services such as e-banking. Access to these services will build the capacity of individuals and businesses in digital skills to in turn decrease the risk of investment.

- **Prioritising gender sensitive digital policies with decision makers:** to bridge the digital gender divide to access and lobby to promote more inclusive public policy for women. As mentioned in section 1 under Gender Challenges, women are expected to hold dual responsibility of managing the household and bringing income to the family. Using this expectation to digitalize women should be considered by decision makers. Developing digital national services (e-health, e-banking, e-government) that are seen by both the woman and the man as “prioritizing “ the familial well-being could be a solution into getting gender integrated into digital strategies.

- **Internet freedom and cyber security:** The transition government offers an opportunity to reviewing the gender sensitive digital institutional and legislative framework to be in accordance with international human rights standards; reforming the repressive Press and Publication Act of 2009 and the 2007 IT Crime Act; and lifting restrictions on freedom of expression and censorship;

- **Financial mobility and access to credit:** In spite of the challenges that Sudan is experiencing in the financial services sector, the country presents numerous investment opportunities, several in the financial services sector, however, lacking financial funding. Some of the opportunities can be difficult to tap into given the lack of liquidity, and the challenges in the political sphere are an additional prevention to investors as well. In order to bridge the funding gap, long-term funding provided by commercial banks and the private sector through public-private partnerships (PPP) can be explored. The expansion of e-banking services can offer short term and long term solutions to mitigating financial immobility and credit inaccessibility. The short term solutions should be handled by commercial banks: maintaining internal systems to show preparedness in cases of power outages and online insecurity and creating user-friendly platforms for consumers with lower digital literacy rates. The longer term solutions namely, producing a legislative framework and improving internet connectivity, can be handled by national efforts. Separating work as such can encourage both parties into action as they are mutually accountable.

- **The potential of e-Agriculture:** With the Nile River running through it, Sudan has more than 150 million hectares of arable land. The climate is suitable for all types of crops, and water irrigation is readily available and/or natural. This can be an opportunity in using digital as an enabler, which can give an opportunity for many women already informally working in the sector to formalize their contribution;

- **Digital infrastructure support:** The consequences of many years of economic and political blockade has caused tremendous economic losses which has resulted in limited digital infrastructure, power shortages, and many other problems that do not allow tech sector to flourish, less likely access for women. The above recommendations are only feasible if technology is physically able to work. There will be a self-feeding point where the demand for access to digital spaces will drive infrastructure construction. The first step should be to invest in the minimum infrastructure to foster said demand.

11. UGANDA CASE STUDY PROFILE

Country Snapshot

Population (2020)	Total land area (Km2)	Population Density (pp/Km2) (2019)	Urban/Rural Population (2019)		Life Expectancy (2020)			Adult Literacty Rate (2018)			Total fertility rate (live births/ women) (2020)	GDP/ capita (current US$) (2018)
			Urban	Rural	Average	Men	Women	Average	Men	Women		
45,741,007	199,810	222	26% 11,775,012	74% 33,965,995	64.4 years	62.0 years	66.7 years	76.53	82.66	70.84	5.0	642.8

Digital: Uganda has one of the most advanced digital and innovation capacities in in Africa[286]. However, the country faces large challenges to developing widespread infrastructure access, due to its sizeable large rural population (76%) and low disposable income. Digital transformation is underway in Uganda, as shown by the growing number of people accessing digital content and services. Although infrastructure coverage has improved over the last three years, consumer-related barriers of affordability, locally relevant content, and lack of digital skills continue to limit mobile Internet adoption.

Gender: Uganda has made tremendous progress in adopting a pro-gender approach and in increasing opportunities for women, engineered by inclusive centred policies and laws. However, an analysis of other sectors, by level and region, reveals discrepancies, indicating that there are gender disparities at the level of implementation in almost all areas of development. In Uganda, there are a number of cultural practices that perpetuate inequality between men and women yet continue to be practiced today, more specifically around gender-based violence, asset ownership and employment status report[287].

Affordability (and taxation)*:* Although infrastructure coverage has improved over the last three years, consumer-related barriers of affordability, locally relevant content, and lack of digital skills continue to limit mobile internet adoption. In July 2018, a report by the UN Broadband Commission for Sustainable Development found that in least developed countries, including Uganda, the rate of

[286] 'Uganda top in advanced innovation technology', Newvision, 5th July 2012, Link: https://www.newvision.co.ug/news/1303465/uganda-advanced-innovation-technology (consulted on September 08 2020)

[287] Uganda For Her. Link : https://uganda4her.org/culture-gender-inequality-uganda/

broadband adoption is slowing even in areas with infrastructure coverage. Affordability represents a significant barrier to the uptake of mobile services in Uganda, particularly for consumers at the bottom of the income pyramid. The total cost of mobile ownership (TCMO), determined by the cost of service usage (voice, data, SMS), activation and handset, in Uganda is one of the highest in Sub-Saharan Africa. Entry-level mobile broadband service (500 MB per month) costs around 19% of the average Ugandan's monthly income, well above the 5% threshold recommended by the UN Broadband Commission. This is without accounting for charging costs, which may be high and/or involve travel to access power in off-grid communities[288].

Online security: The Parliament of Uganda called for submissions on the Draft Data Protection and Privacy Bill, 2015 and this has given an opportunity for stakeholders to provide input to ensure that the law, when enacted, measures up to internationally acceptable standards of data protection. Uganda has no official document on Uganda national cybersecurity strategy. Instead, Uganda has a National Information Security Policy and a National Information Security Strategy. NITA-U brought together different stakeholders for consultation to develop both documents[289].

Section 1: Policy and Regulation for Digital and Gender

Digital services and gender inclusivity have been identified by the Government of Uganda as being crucial to transforming its economy and people's lives through job creation, accelerated economic growth and increased productivity, however, some critical policy interventions and lack of government policy coordination between different arms of the government appear to have had unintended outcomes[290]. Existing digital policy as well as policies or regulation related to gender in Uganda are presented below.

Digital:

The National ICT Policy was established in 2014 with the aim to transform Uganda into a Knowledge Society[291] in 2025, with digital at the centre of all aspects of life. The 2014 policy builds on key elements of the National ICT Policy Framework (2003) and the E-government Framework Policy 2010 as well as the Telecom Policy (2011), aimed at increasing access to and use of digital services.

In 2015 Uganda launched a second five-year **National Development Plan (NDP II)** 2015/16 – 2019/20 with five priority areas – agriculture, human capital development, infrastructure, tourism, and minerals, oil and gas – as part of a broader goal to transform the country from a low-income economy to a competitive and market-driven, lower middle-income economy by 2020, in line with the long-term vision of reaching upper middle-income status by 2040.

This year, planning is underway in 2020 for the **Third National Development Plan (NDP III)**, which is due to commence by the end of 2021. In line with the SDGs, the Government of Uganda has committed the country to developing a **Digital Vision**

[288] K, Paul, 'Cybercrime in Uganda', Institute of Fornesis & ICT Security, Linl : https://www.forensicsinstitute.org/cybercrime-in-uganda/ (consulted on September 08 2020)
[289] Ibid.
[290] Gillwald A., Mothobi O., Ndiwalana A., Tusubira T., 'The state of ICT in Uganda', Research ICT Africa, May 2019, Link : https://researchictafrica.net/wp/wp-content/uploads/2019/05/2019_After-Access-The-State-of-ICT-in-Uganda.pdf (consulted on September 08 2020)
[291] Ibid.

for Uganda (DVU). This vision was launched in 2013 and it aims to build a digitally-enabled society that is "... secure, sustainable, innovative, transformative ...to create a positive social and economic impact through technology-based empowerment". The DVU provides an overarching framework that responds to the national Vision 2040 by providing a unified digital policy direction[292].

On a regional level Uganda has also shown commitment to several regional development goals, which, along with the SDGs, feature in national development plans. These include the East Africa Community (EAC) Vision 2050 and the Africa Agenda 2063. Key focus areas of these two plans include: infrastructure and industrial development, poverty eradication and human capital development, gender and women empowerment, and good governance[293].

Challenges: While freedom to access the Internet is generally unregulated, access is mainly restricted by infrastructural, economic and policy measures, Uganda has one of the lowest (14%) Internet penetration rates in the region[294] and After Access Survey[295] shows that the Internet use, mobile penetration and the Internet use divides between the genders as well as urban dwellers are correlated with Gross National Income (GNI) per capita[296]. Despite the enthusiasm for connectivity in the capital, the rural regions of Uganda remain completely underserved (see Uganda Coverage Map[297]). The majority of Ugandan women in rural areas, particularly the northern region, do not have consistent access to electricity or telecommunication services, including limited Internet access.

Notwithstanding the digital policy ambitions a number of contradictory policy and fiscal interventions have compounded this problem undermining efforts to realise the DVU. In 2018, Uganda implemented a new daily tax on the use of social media and messaging platforms, on the grounds that social media is a **"luxury good".** According to a response research conducted by the Alliance for Affordable Internet (A4AI) this tax will unquestionably widen the digital divide for all Ugandans of lesser means. But the results may be worst for women, who already face high barriers in accessing and using the Internet[298]. The most recent development in this regard, the Uganda Revenue Authority's (or URA) Commissioner General, on 14th January 2020, reportedly proposed that the **"over-the-top" (OTT)** tax be transformed into a full-fledged tax on Internet data to be paid by users. Additional tax related to **Mobile Money (MM)** usage approved at the same time has led to growing discontent from politicians, pressure groups and community organisations.

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[293] Okeleke, Kenechi, 'Uganda: Driving inclusive socio-economic progress through mobile-enabled digital transformation', GSMA, 2019, Link : https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2019/03/GSMA_Connected_Society_Uganda_Overview.pdf (consulted on September 08 2020)

[294] The reasons given for these poor indicators in the 2017–2018 After Access Survey conducted by RIA in 10 African countries show that Uganda (14%) has the third lowest Internet use in the region, after Rwanda (9%) and Mozambique (10%).

[295] Research ICT Africa. Link : https://researchictafrica.net/data/after-access-surveys/

[296] 'The state of ICT in Uganda', op. cit.

[297] https Mobile Coverage Maps. Link: https://www.mobilecoveragemaps.com/

[298] Nyamishana, Prudence, "Uganda's tax on social media will widen the digital gender gap", Advox, 9 July 2018, Link: https://advox.globalvoices.org/2018/07/09/ugandas-tax-on-social-media-will-widen-the-digital-gender-gap/(consulted on September 08 2020)

Charges still levied include a 1 per cent fee on receiving a mobile money transfer, withdrawing funds or making a payment[299]. Article 19, a human rights organisation with a specific mandate and focus on the defense and promotion of freedom of expression and freedom of information warns taxing Internet data at the source will disproportionately and negatively impact the ability of users in Uganda to gain affordable access to the digital services. This will further restrict the right to freedom of expression and access to information and will stifle the dynamism latent in Uganda's nascent digital economy[300].

Finally, for Vision 2040 to achieve its desired outcomes, **Research ICT Africa** pinpoints in a recent report that some policy interventions and lack of government coordination that threaten the effective implementation of the vision. According to the report, these include:

- regressive social networking and mobile money taxes which broaden the income and digital inequality;
- low internet and mobile penetration due to poor ICT infrastructure, poverty, and digital literacy,;
- lack of affordability of data and devices for the majority of Ugandans;
- telecommunication market concentration particularly outside Urban areas where there is duopoly;
- demand stimulation to encourage people to shift from passive consumption to productive use of ICT;
- lack of cost-effective strategies to support mobile money for the unbacked;
- lower cost access and use models to promote dynamic spectrum use in rural areas[301].

Gender:

Equality is upheld in local frameworks such as the 1995 Constitution, DVU 2040, the National Development Plan, the Equal Opportunities Commission Act (2007) and the National Youth Policy (2001), to mention but a few. Uganda has also ratified international instruments such as Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), the Maputo Declaration on Gender Mainstreaming (2003), the African Youth Charter (2006) and the Sustainable Development Goals, among others[302].

Uganda has a Gender Equality Strategy (2014-2017). The agenda has been aligned to the second National Development Plan (NDP II, 2015/16-2019/20), a

[299] Donkin, Chris, 'Uganda blunts controversial mobile money tax', Mobile World Live, 4 July 2018, Link: https://www.mobileworldlive.com/money/news-money/uganda-blunts-controversial-mobile-money-tax/ (consulted on September 08 2020)

[300] Kiai, Mugambi , 'Expression and access to information', Article 19, January 31, 2020, Link: https://www.article19.org/resources/ugandas-proposed-tax-on-internet-data-threatens-the-rights-to-freedom-of-expression-and-access-to-information/?mc_cid=5ccd20a602&mc_eid=b4c7911e80

[301] 'The state of ICT in Uganda', op.cit.

[302] 'Uganda's tax on social media will widen the digital gender gap', op.cit.

landmark achievement for Uganda. The outcomes of this effort set a national framework for financing and monitoring women's economic empowerment within agriculture, tourism and mineral development. Through a partnership with the Private Sector Foundation (PSFU), Uganda became the first country in Africa to endorse the Gender Equality Seal for private enterprises. The pledge by PSFU to make business adopt the Gender Equality Seal, is an innovation for closing gender gaps in corporate environments. Uganda Women Entrepreneurs Association (UWEAL) actively promotes increased participation by businesswomen[303].

Challenges:

Despite this progress, according to the Women Business and Law Index[304], Uganda has a score of 73.1 (over 100) with good results in workplace and pay conditions, but less so in terms of ensuring marriage equal rights (80% attainment), mobility, pension and entrepreneurship (75% for the three), while on assets ownership it has the lowest score et only 40%. These together with high incidences of gender-based violence, are important areas penalizing women, and the government needs to improve if it wishes to unleash women's tech entrepreneurship. A priority is to reduce gender gaps in the private sector. The mismatch between Uganda's pro-gender equality legal and policy framework, on one hand, and the persistence of gender-based inequalities, on the other, calls for a deeper evaluation of the effectiveness of existing frameworks to establish what is working, why and how the gaps can be addressed.

Section 2: Existing EU Programmes in Gender and Digital

Based on the resources DEVCO shared with the CS, the consultants have identified several (approx. 10 multi-country initiatives) with a digital component being implemented in Uganda. Most of the initiatives being implemented are the areas of **energy, agribusiness, nutrition and bio-farming** using technology as an **enabler** for **learning / education and information dissemination**.

The majority of the initiatives are part of multi-country / regional initiatives. Based on the information available, it can be concluded that the initiatives are not necessary designed exclusively for women and girls apart from the **EU-UN Spotlight Initiative** that promote legal literacy of young girls and women on available services on SGBV, HP and HIV though social media. Furthermore, the **Justice and Accountability Reform (JAR)** Programme aims to improve the governance of public funds, including the strategic allocation and efficient use of public resources, for improved service delivery through digitalisation in the justice sector especially for women's access to legal rights.

[303] 'Gender Equality & Women Empowerment', UNDP, Link : https://www.ug.undp.org/content/uganda/en/home/ourwork/womenempowerment/overview.html(consulted on September 08 2020)

[304] 'Women, Business and the Law', The World Bank, Link : https://wbl.worldbank.org/ (consulted on September 08 2020)

Section 3: Best Practices of Digital for Women Initiatives

Women and girls in Uganda, are an underserved demographic due to barriers related to affordability and access. In response to this context, a range of stakeholders are aiming to improve women's usage and access to digital technology. With a significant number of mobile subscribers across the country, and strong growth in 3G and 4G connectivity, Uganda presents an exciting opportunity for many start-up and development agencies that are tapping into the potential of digitals and launching similar structures to other East African markets and use technology-driven products to solve existing challenges while unlocking income and job opportunities for the underserved. Below is a presentation of examples of different sectors such as agriculture, health, humanitarian response, among others that have utilized digital technology and the impact it has had on women and girls.

Agriculture

TechnoServe and the Mastercard Foundation partnered in 2018 to scale women and youth innovations in the agri-food sector, increasing food security and farmer earnings. As part of this initative, an app called EzyAgric launched in 2018 provides Ugandan farmers with up-to-date information about best practices in agriculture through their mobile phones[306]. The five-year partnership is aiming to generate increased income and economic opportunities for 48,000 young people in rural Uganda.

***Achievements*:** EzyAgric has provided production, marketing and financial services to 62,000 farmers through 510 youth village agents under 40 farmers cooperatives in 3 years. As the youth provide services to the farmers, EzyAgric automatically captures farmer production details, seasonal transaction, and agricultural income data.

Lawyers 4 Farmers (L4F) launched in 2017 an SMS service that provides female farmers with better access to legal information, by offering guidance in response to any legal problem they encounter via SMS. The digital platform eliminates the need for farmers to travel to access legal services and improves farmers' knowledge of their rights for less than €1 (the cost of sending an SMS)[307].

Achievements: Legal advice has reached 3,000 farmers in their local language in central and northern Uganda via an SMS service, launched in 2017.

Health

[306] Nyamolo, A., Randrianasolo, D., 'Youth Use Tech to Farm Uganda's Future', Mastercard Foundation, 29 July 2019, Link : https://mastercardfdn.org/youth-use-tech-to-farm-ugandas-future/(consulted on September 08 2020)

[307] Bafana, Busani, 'Uganda: Lawyers go digital to reach women farmers', SPORE, 21 February 2019, Link: https://spore.cta.int/en/dossiers/article/uganda-lawyers-go-digital-to-reach-women-farmers-sid021beb42e-a69c-46a8-a0c7-06ba540dd573 (consulted on September 08 2020)

FamilyConnect in partnership with UNICEF Uganda has created a platform in 2017 where they send messages via SMS to pregnant women and new

mothers on actions, they should take to ensure the good health of both themselves and their babies.

***Achievements*:** By the end of 2018, more than 150,000 pregnant women and heads of households in nine districts are expected to be enrolled in FamilyConnect, with a strategy in place to reach national scale by 2020[308].

Living Goods Uganda, a US founded NGO based in Uganda deploys a network of door-to-door Community Health Workers (CHWs), 92% of whom are women, who are responsible for guiding families towards improved health and wellbeing. Living Goods uses mobile platforms to improve health service and information delivery by offering a digital channel for frontline workers in the form of mHealth apps embedded on the smartphones of CHWs and

a free SMS information service targeting end users[309].

Achievements: As of January 2018, Living Goods Uganda has more than 2,300 CHWs providing services to over 400,000 families. To date (2019), efforts have been focused largely in Central and Eastern Uganda both in rural and peri-urban communities[310].

Good Governance

United Nations Population Fund (UNFPA) UNFPA supports the following; the SafePal App launched in 2017, which helps young people report sexual and gender-based violence in and around schools and other public places, as well as the GetIn App launched in 2015, which helps midwives and other Community Health Extension Workers to identify, record and follow-up on pregnant girls in rural areas[311].

***Achievements*:** More than 1000 women and girls have used the SafePal App to report sexual and gender-based violence. The GetINApp was implemented in one district and through the support of UNFPA 78 health workers were trained and 250 pregnant girls were mapped.

Ministry of Gender, Labour and Social Development (MGLSD) The MGLSD uses mobile technology to provide support to victims of child abuse and gender-

[308] 'FamilyConnect : Connecting women and children to health care services', UNICEF, Link : https://www.unicef.org/uganda/what-we-do/familyconnect (consulted on September 08 2020)
[309] 'Our 2019 Results', Living Goods, Link : https://livinggoods.org/what-we-do/results-evidence-and-research/our-results/ (consulted on September 08 2020)
[310] Viljoen, K., Ngumi , W., 'Living Goods Uganda A community health service leveraging mobile technology', GSMA mHealth, April 2018, Link : https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2018/04/Living-Goods-Uganda-A-community-health-service-leveraging-mobile-technology.pdf (consulted on September 08 2020)
[311] Wamai, Mark, 'GetIN App Launched', Mark News, November 16, 2017, Link : https://news.mak.ac.ug/2017/11/getin-app-launched/ (consulted on September 08 2020)

based violence through the toll-free Sauti[312] helpline. This program also helps to provide a minimum level of income security to the elderly and vulnerable people through the Social Assistance Grants for Empowerment (SAGE) programme through mobile money.

***Achievements*:** The SAGE programme has reached roughly 131 districts but the total value of funds received by beneficiaries over the past ten years remains unclear. Data shows that the number of SAGE beneficiaries stood at 190,466 people by the end of March 2018[313]. The Sauti helpline is one of the most well-known platforms in Uganda which shows how important it is for the government to support the helpline to create a safe haven for children.

Humanitarian Response

BarefootLaw, which provides the public with free legal information and assistance using innovative approaches. They use technology in addition to traditional methods to offer free legal advice. Due to several factors, many vulnerable Ugandans, including women and youth, have very limited access to legal services – particularly in rural areas. For this reason, BarefootLaw has been creatively utilizing digital solutions to provide these services while overcoming barriers of geography, courts' coverage, knowledge and cost[314].

Achievements: As of 2019 Barefootlaw has reached over 600,000 (30% women) and handle over 400 unique legal cased and enquires on a monthly basis.

Airtel and Mercy Corps started in 2018 to deliver unconditional humanitarian cash transfers in Bidi Bidi settlement, as part of an eight-month project funded by the European Civil Protection and Humanitarian Aid Operations (ECHO). The programme is part of a consortium, led by DanChurchAid, and supported by UNCDF, distributing cash, with Mercy Corps as an implementing partner[315].

***Achievements*:** The numbers of beneficiaries are 4,750 in total 4,550 South Sudanese refugees 200 host community members.

Responsible Data and Security

The Action Insights Data Platform (AIDA) in Uganda, which was developed in partnership with the United Nations Capital Development Fund (UNCDF) works to accelerate the use of private and public data sources and to create an entire data ecosystem for the country, while complying to regulations and ensuring privacy.

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[312] The Uganda Child helpline service : Annual report 2016, Link : https://www.unicef.org/uganda/media/901/file/UCHL%20Service%202016%20Annual%20Report.pdf%20.pdf (consulted on September 08 2020)

[313] Asiimwe, Icta, 'Elderly cash pay outs cut extreme poverty', Daily Monitor, February 28 2019, Link : https://www.monitor.co.ug/Business/Finance/Elderly-cash-pay-outs-cut-extreme-poverty/688608-5002366-5w7x67/index.html (consulted on September 08 2020)

[314] https://www.ict4dconference.org/digital-trends-innovations-uganda/

[315] Casswell, J., Frydrych, J.,'Humanitarian Payment Digitisation: Focus On Uganda's Bidi Bidi Refugee Settlement', GSMA, 217, Link : https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/11/Humanitarian-Payment-Digitisation.pdf (consulted on September 08 2020)

***Achievements*:** In Partnership with Dalberg the AIDA initiative have been developing various tools with different end-users around key industries/sectors, e.g. (i) smart cities with KCCA; (ii) food security with DIAL and FAO; (iii) financial inclusion with UNCDF; (iv) gender gap with Data2X[316].

Rural Connectivity

The GSMA and DFID in 2019, announced the winners of the Connected Society (SC) Innovation Fund for Rural Connectivity. Fairwaves Inc., iSat Africa and NuRAN, were awarded grants to test and evaluate new innovative mobile Internet connectivity solutions for unconnected rural communities (specific focus on women and girls) in Uganda. The fund will be allocated in partnership with Vodafone Ghana and MTN Uganda. A total number of 17 new greenfield sites will pilot innovative solutions to deploy mobile broadband networks in rural areas, that will provide low-cost mobile Internet coverage through commercially sustainable models, that can be scaled and replicated in similar environments across the region[317].

***Achievements*:** The CS Innovation Fund launched by the end of 2019 and the impact of the investments are to be seen. Moreover, as part of this partnership the GSMA Connected Society has created 'Mobile Coverage Maps' platform that shows Reliable population mobile coverage in Uganda with the aim to:

- Identify who is covered and who is not;
- Plan and finance network deployment;
- Determine where mobile technologies can be leveraged to deliver services.

Section 4: Uganda's Tech Ecosystem

Uganda is experiencing the development of a competitive private sector led by a convergence of established and emerging players, especially the telecom industry, technology giants, and several locally-born companies tapping into the gig economy and offering the large informal sector additional sources of income. The public sector seems to be lacking a long-term, unified vision when it comes to facilitating business creation, but the vibrancy of the ecosystem shows a positive direction.[318]

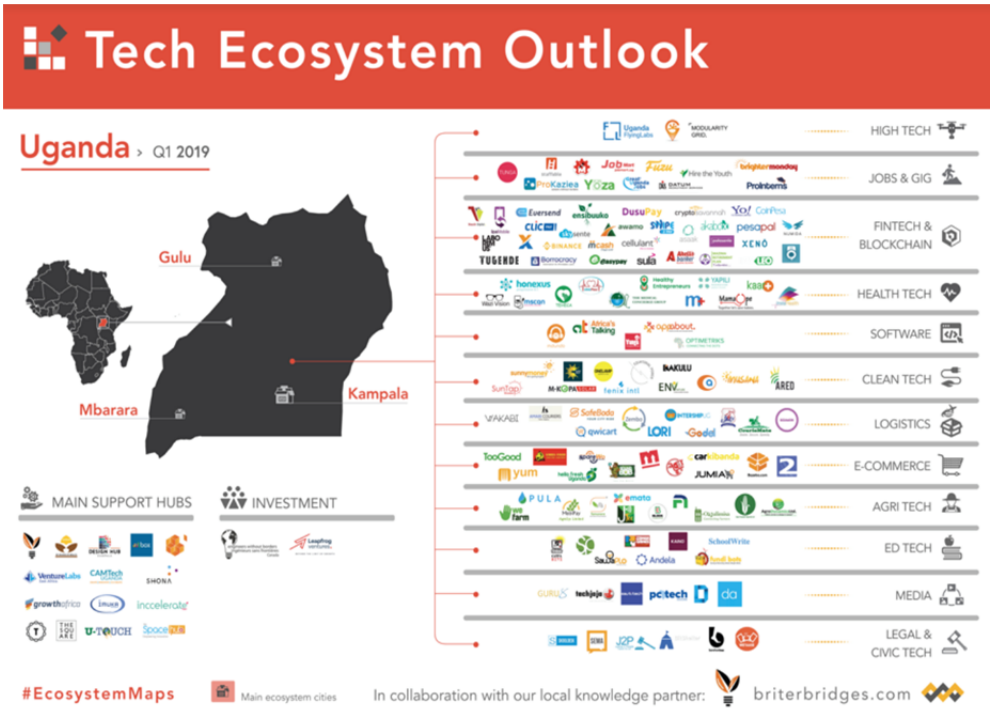
The growth of this industry across fast-growing markets characterised by the quick adoption of new technology and the bypass of traditional frameworks is a worldwide phenomenon that has begun to attract huge players. The e-commerce

[316] 'AIDA, the action insights data as a service platform, launches in 3 continents', Dalberg, June 27, 2018, Link : https://dalberg.com/our-ideas/aida-action-insights-data-service-platform-launches-3-continents/ (consulted on September 08 2020)
[317] 'GSMA Connected Society Innovation Fund Announces Winners', GSMA, 13 November, 2019, Link : https://www.gsma.com/newsroom/press-release/gsma-connected-society-innovation-fund-announces-winners/ (consulted on September 08 2020)
[318] 'Uganda's unexplored, yet thriving private sector', BRITER, Link : https://briterbridges.com/

clash of titans in Southeast Asia, for instance, is now between companies of the like of **Google, Baidu, Alibaba, and Tencent**.

Further, the launch in spring 2017 of **Zuckerberg-backed Andela**, who decided to make Uganda its third market after Nigeria and Kenya last year, is one of Africa's most-valued tech companies, is the typical "success story" laden with tales of positive impact, for the most parts. Andela was created to improve the talent pool of African developers and help them secure jobs and experiences with tech companies across Rwanda, Nigeria, Kenya and Uganda. The company invites people with interests in technology and trains them intensively for six months. However, in 2019 Andela, layed off more than 400 employees across three countries as the company changes its business model away from developer training[319].

There are a number of hubs and organisations such as **WitU (Women in Technology Uganda), Hive Colab**, as well as several NGOs like **Innovation for Poverty in Action,** emerging in Uganda. The map below illustrates the thriving tech start-ups in a wide range of sectors[320]:



Section 5: Opportunities

From innovations in agriculture and health to humanitarian response and infrastructure, there are lots of exciting things going on in Uganda. Many initiatives however are NGO or donor led, rather than private sector demand-driven solutions. The majority of initiatives that specifically target women focus on increasing access to information and basic services, rather than supporting actual income generation or job creation. Whilst access to information

[319] Henryu, N., Maina, S.,'Exclusive: Andela Still Haunted By Familiar Ghosts As It Struggles To Find Jobs For Mid-Level Developers', WeeTracker, February 12, 2020, Link : https://weetracker.com/2020/02/12/andela-struggle-to-place-mid-level-devs/ (consulted on September 08 2020)
[320] 'Uganda's unexplored, yet thriving private sector', op.cit.

and basic services is much needed, it is also costly, and often reliant on further external infrastructure or other services (E.g. medical or legal services to respond to challenges faced by women). Furthermore, conducting more rigorous studies with women to understand what services they are willing to pay for could help distinguish between solutions that will always be reliant on aid funding, and those that could be privatized and in turn create employment opportunities.

Based on the research as well as conversations with various stakeholders, we propose that the opportunities to create more impact when it comes to digital and gender in Uganda are as below:

- **Create a more inclusive environment** for women to enter the digital start-up space by working with incubators and innovation hubs to encourage more female-led applicants;
- **Develop targeted and structured programmes** to use digitals to help female entrepreneurs secure finance, receive mentoring and access other resources needed for success and sustainability;
- **Identify income generation and job creation opportunities** that are inclusive of women, require lower digital literacy and are accommodating of existing unpaid care work;
- **Provide funding or similar incentives** via innovative financing mechanisms[321] such as Innovation Funds, Public Private Development Partnerships or direct support to tech hubs / innovation hubs and female and young innovators;
- **Work with regulators** to simplify the legal and procedural processes of business creation to nurture entrepreneurship;
- **Lobby for government policies** that will make digital more accessible for all by lowering Internet and mobile service costs, and prioritising public access programmes.
- **Lobby for laws** to be passed that uphold women's online rights, and protect citizens from bulk surveillance, Internet shutdowns and censorship;
- **Implement projects** to strengthen the police and judiciary's ability to address online gender-based violence needs to be strengthened through training and capacity building;
- **Ensure that relevant stakeholders** work to understand the needs of different consumer segments of women so they can design and deliver relevant, safe and secure products and services to help close the digital gender gap;
- **Initiate digital solutions** to provide support and services to vulnerable individuals and communities around the country (rural and urban).

[321] http://www.npa.go.ug/development-plans/national-development-plan-ndp/

12. ZAMBIA – CASE STUDY

Country Snapshot

Pop.(2020)[322]	Total land area (Km2)	Pop. Density (pp/Km2) (2019)	Urban/Rural Pop. (2019)		Life Expect. (2020) / years			Adult Literacy Rate (2018)			Total fertility rate (live births/ women) (2020)	GDP/ capita (USD) (2018)
			Urban	Rural	Ave.	Men	Women	Ave.	Men	Women		
18,306,254	743,390	24	45% 8,336,381	55% 10,047,574	64.7 years	61.7 years	67.7 years	86.75	90.6	83.08	4.7	1,539.9

Digital: The landing of submarine fibre optics cable from 2012 and the flood of competitively priced international bandwidth has resulted in a considerable reduction in fixed-line and mobile wholesale pricing. To protect the licensed mobile telecommunication operators from unregulated competition, the Zambian Government approved a tax on calls made over social media platforms, such as WhatsApp, Facebook Messenger and Viber. However, this tax has not been affected yet and there is currently no appetite for its enforcement. Research shows that affordability is the main inhibitor to Internet access and use in Zambia[323].

Internet users in Zambia 2020[324]

- There were 4.43 million internet users in Zambia.
- The number of internet users in Zambia increased by 595 thousand (+16%) between 2019 and 2020.
- Internet penetration in Zambia stood at 24%.

Mobile connections in Zambia 2020[325]

[322] 'Education and Literacy', Zambia, UNESCO, Link : http://uis.unesco.org/en/country/zm (consulted on September 08 2020)
GDP per capita (current US$) - Zambia, World Bank Data, Link : https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=ZM (consulted on September 08 2020)
'Zambia Population (Live)', Worldometer, Demographics, Zambia, Link : https://www.worldometers.info/world-population/zambia-population/ (consulted on September 08 2020)

[323] Mothobi, Onkokame, 'Uzi's failed attempt to enter Zambian market leads to more than 70% fall in data prices', Research ICT Africa, November 2019, Link : https://tinyurl.com/y6awsqbv (consulted on September 08 2020)

[324] Kemp, Simon, 'Digital 2020: Zambia', DataReportal. 18 February 2020, Link : https://datareportal.com/reports/digital-2020-zambia (consulted on September 08 2020)

[325] Ibid.

- There were 16.00 million mobile connections in Zambia.
- The number of new mobile connections between January 2019 and January 2020 in Zambia was 861 thousand.
- The number of new mobile connections in Zambia in January 2020 was equivalent to the increase of total population.

Zambians Age 10 and Older

		That used a mobile phone in the past three months	That own a mobile phone	That own a smartphone	Use of over the top applications		
					Messaging	Video calling	Voice calling
ZAMBIA		53.5	44.6	13.2	11.5	5.9	9.7
PROVINCE	Central	50.6	40.7	9.7	8.7	2.9	8.6
	Copperbelt	69.1	56.0	19.2	16.5	8.8	14.2
	Eastern	43.9	35.2	5.2	4.3	1.9	3.6
	Luapula	44.0	32.0	8.8	8.0	3.6	5.5
	Lusaka	72.7	66.7	28.3	24.7	15.6	22.0
	Muchinga	40.9	34.8	7.3	6.6	3.6	5.7
	Northern	34.4	28.7	4.0	3.0	1.0	2.4
	North Western	36.7	32.1	7.9	6.1	2.3	4.6
	Southern	60.6	52.4	16.8	15.2	6.2	10.9
	Western	45.1	30.3	3.9	3.5	1.1	2.6
REGION	Rural	42.1	33.0	4.7	3.9	1.3	3.0
	Urban	71.0	62.5	26.3	23.2	12.9	19.9
SEX	Male	56.9	49.2	14.3	12.8	6.3	10.5
	Female	50.9	41.1	12.4	10.6	5.6	9.0

Zambians Age 10 and Older

		That ever used the internet	That use the internet at least once a day	That have an email address	That have any social media account
ZAMBIA		14.3	6.9	7.3	11.2
PROVINCE	Central	10.2	3.4	4.3	8.3
	Copperbelt	19.4	9.2	11.3	16.5
	Eastern	6.2	3.0	2.6	4.7
	Luapula	10.0	4.8	7.0	8.3
	Lusaka	30.3	17.6	14.8	25.2
	Muchinga	10.2	3.8	5.1	8.1
	Northern	4.0	1.6	2.0	3.3
	North Western	9.3	4.1	4.2	5.8
	Southern	17.7	7.1	8.7	10.7
	Western	5.0	2.7	3.5	4.2
REGION	Rural	5.2	1.8	2.4	3.7
	Urban	28.1	14.8	14.8	22.7
SEX	Male	17.3	8.3	9.1	13.1
	Female	12.0	5.9	5.9	9.7

This 2018 Survey realised by the Zambian ICT Agency (ZITCA) shows the gender and geographic disparities in accessing internet. Although mobile and internet usage has considerably increased in the last two years, it is indicative of the type of gaps experienced in Zambia[326]. The largest gender gaps are in smartphone ownership (49.1% of male respondents versus 41.2% of female respondents), in the regular use of mobile phones (56.9% of male respondents versus 50.6% of female respondents), and in "has used internet at least once" (17.3% of male versus 12.0% of female respondents)[327].

***Gender**:* Zambian women have less access to resources such as credit, technology, energy, land and

[326] 'Accelerating Digital transformation in Zambia'. Digital economy Diagnostic Report, The Government of Zambia & The World Bank. 2020, Link : https://openknowledge.worldbank.org/handle/10986/33806 (consulted on September 08 2020)

[327] Ibid

extension services, which affects their ability to effectively engage in economic activities. There is also limited participation of women in the decision making and leadership sphere. In the general election of 11 August 2016, only 26 out of a total of 156 parliamentary seats were won by women[328]. The effects of poor education (an estimated 35 per cent of Zambians ages 15 to 24 are illiterate[329]) and women being uninformed on their rights regarding topics such as gender-based violence are keeping many women in the dark. Negative cultural and social norms play a significant role in prohibiting the advancement of women in Zambia.

Affordability (and taxation): Despite the attempts of introducing of less expensive social bundles (data for social media) and free Facebook, affordability remains a concern for many Zambians, nonetheless for women and girls. According to the Inclusive Internet Index 2019 report, Zambia ranks 83 out of 100 countries surveyed in affordability (cost of access relative to income and the level of competition in the internet marketplace) and 70 out of 100 in readiness, which includes various aspects of capacity to access the internet[330].

Online security: Internet freedom in Zambia has improved yet persistent government pressure on free expression in recent years has resulted in self-censorship online. The draft Cybersecurity and Cybercrimes Bill was introduced in April 2018 and approved for review in August 2018. The concern is that the bill, which had not been passed by the end of the coverage period, may be used to curtail internet freedoms[331].

Section 1: Policy and Regulation for Digital and Gender

Digital: Zambia's government began to develop a national ICT Policy in 2001, through an extensive consultation process including academics and civil society organisations. This policy was finalised in 2005 and adopted by the government in 2006. The policy establishes a framework for the future direction of ICTs and ICT4D within Zambia.

The policy establishes a framework for the future direction of ICTs and ICT4D within Zambia. The policy establishes 13 pillars of ICT activity, each with its own goals, implementation strategies and stakeholder commitments and one of these pillars is specifically focused on access to women and youth. According to the stakeholders consulted during this study, there is a lack of awareness and sensitization in the country about the importance of gender and digitals.

Given the low level of fixed broadband penetration in Zambia, increasing access to internet-enabled mobile services could be expected to be a policy priority for the Government. Facilitating the growth of the mobile sector also aligns with the Government's longer-term digitalisation objectives for the Zambian economy, which are set out in the Smart Zambia eGovernment Master Plan 2018-2030 which was approved in 2019. The SMART Zambia eGovernment Master Plan and eight (8) Public Service ICT Standards submitted to the Cabinet for adoption. The e-Government Master Plan ensures an integrated approach to the development of electronic government and related digital services. There are 6 guiding principles to the implementation of the e-Government Master Plan, which is supported by a roadmap including Policy, legal, regulatory frameworks, ICT Infrastructure, and E-

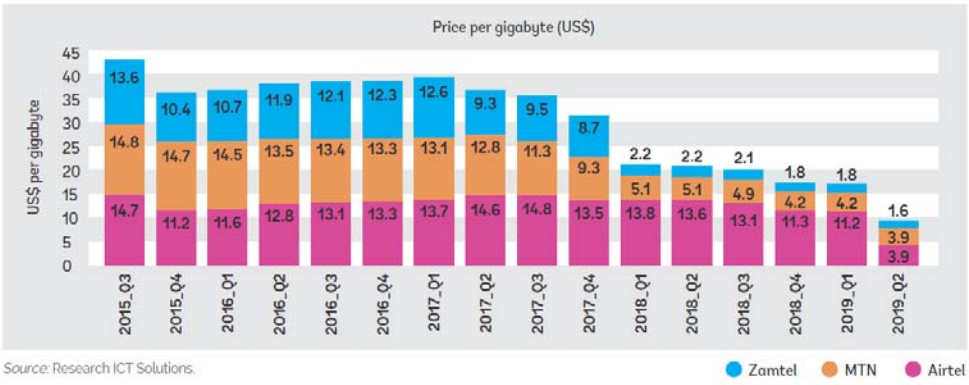
[328] 'Zambia National Women's Lobby - A Gender Analysis Report' 2016. Pp. 29.
[329] Phiri, Prudence, 'To Improve Literacy Rates, Schools in Zambia Turn Away From Teaching in English', Global Press Journal. 4 May 2018, Link: https://tinyurl.com/y6sefqym (consulted on September 08 2020)
[330] 'Freedom on the net 2019', Freedom House, Link: https://freedomhouse.org/country/zambia/freedom-net/2019 (consulted on September 08 2020)
[331] Ibid.

services[332]. Despite the noted efforts of the E-government master plan to set targets that encompass all societal areas, there is a lack of gender mainstreaming in the objectives.

According to the SMART Zambia Institute, achievements beyond the targeted 180 government services has been reached, today 212 government services are available online. Zambia is only outperformed by Ghana, Kenya and Rwanda in this field. Room for improvement can especially be made in Open Data Implementation; it was placed, by the 2016/2017 Global Open Data Index, at 19% of its capacity[333].

The need for greater economic diversification is recognised by the Zambian Government, and is included within the 7th National Development Plan, 2017-2021 (7NDP). It sets out the strategy for economic and social development in Zambia, and seeks to promote economic diversification, job creation and a more inclusive society. The 7NDP also outlines the Government's focus on increasing investments in ICT infrastructure, and its commitment to "undertake policy, legal and institutional reforms to facilitate universal access to ICT and promote the use of ICT in business (e-Commerce); networking of services and applications across the public sector and online access to government services"[334].

The 2020 "Accelerating Digital Transformation" Progress Report is a comprehensive and clear synthesis of the achievements of the Zambian government reached through its recent policies in the ICT sector. One of them was the lowering of the mobile phone data prices for consumers by increasing market competition. In 2018 a new phone operator UZI Zambia was offered a licence by ZITCA, and led the MTN and Zamtel to lower their prices. Overall Zamtel offers the cheapest data prices but does not have a network as extensive as MTN or Airtel. The figure below shows the USD price per gigabyte:



The lowering of the prices places Zambia in an optimal position compared to some of its African country counterparts. The low uptake and internet penetration rates may have more to do with the affordability of smartphones and other devices and digital literacy.

Challenges:

[332] 'E-government master Plan2018-2030', Government of Zambia & ZITCA, 2018, Link : https://www.szi.gov.zm/?wpfb_dl=55 (consulted on September 08 2020)

[333] 'Accelerating Digital transformation in Zambia' op. cit.

[334] Mwila, M., Ngoyi, L. The use of ict by sme's in Zambia to access business information services and investments: barriers and drivers. J Glob Entrepr Res 9, 15, 2019, Link : https://doi.org/10.1186/s40497-019-0145-7 (consulted on September 08 2020)

Overall, that the main challenges with the national ICT policy has been the length of time and lack of clarity of the process, this is partly due to a lack of policy monitoring and implementation from the Zambian Information and Communications Technology Authority (ZICTA). ZICTA sets out laws, regulations, guidelines, and policies and also runs public services such as licencing, data collection and statistics, consumer protection, online system installations and guides ICT enterprises. They function through five programmes which are currently carried out: "SMART Zambia, Computers for Ministry of Education, the Computer Plant Assembly, Standards Laboratory and Computer Plant at the LMFEZ and the National Addressing Project. Each of these have several sub-projects (e.g. SMART Zambia project phase 1 focuses on the establishment of an ICT Talent Training Centre in Ndola). Yet the lack of monitoring and enforcement has resulted in the potential for ICTs in development remaining largely unfulfilled in Zambia[335].

Zambia's laws have not kept up with innovative ICT industries. Tax code does not address digital businesses or intangible goods and incentives such as tax breaks exist only for established industries such as mining and political agenda ignores ICT adoption. The recent tax system exacerbates the competitive pressures on the industry, thereby limiting the growth potential of the mobile sector in Zambia. Furthermore, reforming mobile sector taxation could allow the Zambian Government to achieve the broad economic and social objectives in the 7NDP. Specifically, reduced consumer taxes would improve the affordability of mobile ownership, facilitating greater access to mobile broadband services for individuals and businesses.

Gender:

At the policy level, steady improvements towards gender equality have been made. The signing of 2011 Anti-Gender Base Violence (GBV) Act signalled the wish to move away from discrimination towards women in a country were HIV/AIDS prevalence affect women at double the rate of men, where child marriages are still common and 45.9% of women have endured at least once physical and/or sexual violence by their lifetime or intimate partners. The seven part Act covers in detail all forms of gender-based violence, institutes legislative protection of victims and women in general and establishes committees and funds in response to GBV.

In 2012, the Gender Office as part of the Cabinet Office became the independent Ministry of Gender. The enacted 2015 Gender Equity and Equality Act (GEEA) is a progressive piece of legislation, which seeks to domesticate some of the women's rights and gender provisions in regional, continental and international instruments to which Zambia is party to. The National Gender Policy has a clear objective that states: To increase the participation of women in decision making at all levels of development in the public and private sectors. However, political parties still need to take up affirmative action measures to ensure that more women are incorporated at all levels of political party decision making levels and adopted in various disciplines.

It is designed to achieve full participation of both women and men in the development process. The Patriotic Front, the currently ruling party, has appointed a female vice president which makes Inonge Wina is the first woman to hold this high office.

[335] 'ICTs and development in Zambia: challenges and opportunities', Panos London Illuminating Voices, Link : https://tinyurl.com/y2wta36u (consulted on September 08 2020)

The government has spelled out several healthy ambitions. It wants to see 50 % of the land allocated to women. It intends to have girls readmitted to schools if they dropped out because of pregnancy. The government aspires to improve education opportunities and health-care services. It has committed (in coordination with other regional governments) not only to quality sex education, but also to ending forced marriages as well as child marriages. Moreover, it wants to boost women's labour market participation rate, including in well-paid, high-skills positions.

The Seventh National Development Plan in action from 2017 to 2021 is part of the country's Vision 2030 plan and has successfully mainstreamed Gender into all 5 of its pillars: economic diversification and job creation, poverty and vulnerability reduction, reducing developmental inequalities, enhancing human development and creating a conducive governance environment for a diversified inclusive economy. Each pillar lays out outcomes and the strategies to reach them and several of them are dedicated to enhancing opportunities for the poor and marginalized, including women[336].

Challenges:

With high ambitions the challenges of policy enforcement remain a barrier to achieve gender equality and gender mainstreaming. The Anti-SGBV Act has a number of requirements such as a SGBV Fund for Survivors that have yet to be established. Thus, the Act has not yet been fully implemented and the likelihood of this implementation is low due to negative social cultural norms that prohibit implementation and lack of awareness of policies and regulations.

The creation of a monitoring system at the Ministry of Gender and other ministries has not yet been established. The biggest challenges are therefore, improvement of the knowledge of the new constitution among the public, especially people in rural areas, and sensitization of harmful customs which ignore women's rights and are still perpetuated. Often, policies exist at the national level, but local community members, including women, are not aware of them and therefore cannot support them. While policies that exist nationally might aim to address gender inequality; without commitment from all stakeholder levels, there is no guarantee that policies created will be sustained or implemented.

Section 2: Existing EU Programmes in Gender and Digital

Several (approx. 4) in-country EU-initiatives have been identified with a digital component being implemented in Zambia. The initiatives being implemented target **health, agriculture and governance** using technology as an **enabler**. The overall objectives digitalization and technology development linked to these sectors are respectively:

- Enhance functionality to optimize data quality and data use based on end-user needs, ensure adequate ICT equipment in maternal, neonatal and child morbidity and mortality reduction in Zambia;

[336] 'Seventh National development Plan 2017-2021', Ministry of National Development Planning, 2017, Link : http://extwprlegs1.fao.org/docs/pdf/zam170109.pdf (consulted on September 08 2020)

- Development of a Farmer Input Voucher Management system (FIVMS) integrated Agriculture Information Management System (ZIAMIS) for management enhanced e-voucher modality;
- Enhancing tax collection from mining through effective regulation and monitoring of mineral production;
- Enhancement of ICT Governance and enabling environment.

There are two ongoing EUD programmes in Zambia with significant digital and gender components:

MDGi: Accelerating Progress Towards MDGs 1c, 4 and 5 in Zambia, Maternal, Neonatal and Child Morbidity and Mortality Reduction in Zambia: This project's objective is to improve the availability and quality of health and nutrition services in 10 selected districts of the country. The goal is to strengthen service delivery and management at all governmental levels to increase supply of health services to women in health facilities but also within communities and households in the rural districts of Lusaka and the Copperbelt Provinces where 30% of the population resides. The digital activity integrated in the project is to enhance the District Health Information System 2 functionality. This will optimize data collection and use and allow adequate interventions by health workers. ICT equipment from all the districts' facilities are also to be verified to ensure adequacy. The gender component is quite obvious in this project; women and their young children are the primary targets and beneficiaries of the outcomes. However, the relationship between the two components remains indirect; the ICT material is not strengthened for the women's use but for data organization. They will ultimately may benefit from the digitalization but are not taking active part in it.

Pictures of the EU Head of Unit for Southern Africa and the Indian Ocean, the EU Ambassador and other representatives from the MDGi EU-UN project, visiting the George clinic in Lusaka Province

Source: European Union Facebook's page (https://tinyurl.com/y2omfu5e)

Conservation Agriculture Scaling UP Project (CASU): The overall objective of this CASU project is to contribute to reduced hunger, improved food security, nutrition and income while promoting sustainable use of natural resources. This will be done through various actions namely training, improving access to the value chain, improving resilience, increasing availability of resources. The idea is to offer these services in return for the practice of Conservation Agriculture (CA). This project is due to last four years and a half and cost over 10 million EUR. One of the key innovations is precisely integrated in digitalization: the e-voucher system to distribute subsidies. The Farmer Input Voucher Management System (FIVMS) and the Zambian Integrated Agriculture Information Management System (ZIAMIS) are to be developed to build the capacity of the e-voucher modality. Women farmers are common among the small-holder producers; they are one of the primary stakeholder groups of the project. The Gender component is included in the ToRs of the project under "risks". Women perceive practicing CA as increasing workload, something they cannot afford as the household managers. They are hence more reluctant than their male partners to participate in CA and are less interested in accessing technology to obtain e-vouchers. They miss out on both digitalization

and increased output productivity on their farms. Here the digital and gender components are indirect; women are not part of the digitalization of the farming subsidies (vouchers) however they will eventually benefit from their introduction to small-holder farmers.

Increasing the interaction of the gender and digital components can be done. Women will perceive the risk of adopting CA as less daunting if they do not first have to reach owning technology. The risk could be mitigated if technology was distributed to women.

Section 3: Best Practices of Digital for Women Initiatives

Although internet and mobile penetration in Zambia is improving, there are a range of individuals who are less well-served by mobile services, in particular, women and those living in rural areas. Men are more likely to be active mobile users than women due to several factors such as women's lack of disposable income and lower rates of digital ownership.

It was noted by stakeholders that there is a need for better conditions for the country's small-scale farmers, since agriculture is the sector that employs most people, especially women in remote areas, digital solutions and services should target enabling the formalizing of economic exchanges through marketplace platforms.

Furthermore, there are quite a few platforms to support women in gaining digital literacy as having initial knowledge in digital can also allow for accessing platforms that support academic success and open up opportunities for advanced learning and job options. However, for those women in tech who decide to start their own businesses, the issue around access financing was raised and that many foreign investors/donors do not understand the underlying contexts to be able to help female tech entrepreneurs to sustain their initiatives. International institutions and bilateral agencies are relatively active in Zambia in sectors touching digital and gender. The UNDP spearheads several initiatives in Zambia of which the Programme for Advancements of Gender Equity and Equality. One of the driving activities is the support of girls in familiarising themselves with ICT. Within that project and generally throughout operations, the UN connects all their digital and gender activities. They differ from the EU's viewpoint in how digitalization drives women empowerment. For them the two components mutually reinforce each other rather than one being a vehicle for the others. Moreover, their approach is more "marginalized group" centric. On another hand, UNCDF in Zambia has supported the development and implementation of platforms to improve reporting to include sex disaggregated data from the provider side.

The table below assesses the three main Zambian hubs whose activity is to support the capacity development of other digital enterprises[337].

[337] 'Accelerating Digital transformation in Zambia' op. cit.

	BongoHive	Jacaranda Hub	WeCreate
Vision	BongoHive was started in 2011 by four entrepreneurs. The original vision was to create a community for like-minded technology entrepreneurs, where they could meet to exchange knowledge. Over time, the offer has evolved to assisting scalable start-ups by enhancing skills, accelerating growth, strengthening networks, increasing collaboration, providing a forum for ideas exchange, and reducing barriers to entrepreneurship.	Jacaranda Hub was started in 2017 by an entrepreneur who also has corporate experience. Her vision for Jacaranda Hub is to "play a leading role in connecting entrepreneurs to global markets, collaborative opportunities, skills development, financing, latest technologies and exposure."	WeCreate was started in 2015 by a Public Enterprise Development Specialist with support from the US Department of State and in collaboration with Caterpillar Foundation, GriffinWorx, and the African Women Entrepreneurship Program. WeCreate is specifically designed to advance gender equality in entrepreneurship and to address barriers faced by women seeking to start and grow a business.
Target beneficiary	Idea and start-up stage entrepreneurs.	Idea and start-up stage entrepreneurs, particularly youth.	Idea, start-up, and early-stage, pre- and post-revenue.
Current offer to digital entrepreneurs	BongoHive provides three offers to digital entrepreneurs: a three-month program targeting idea-stage entrepreneurs that supports them with testing their idea, a three-month program targeting start-ups to accelerate their growth, and a scale-up program targeting the most promising start-ups. Additionally, a range of master classes are offered to teach specific skills on app development, social media, and so forth.	Jacaranda Hub provides two offers to digital entrepreneurs: one includes a network of tech hubs and accelerators that can support start-ups with design, development, and market access, and the other focuses in particular on supporting entrepreneurs who aim to solve major social or environmental problems through innovation. About 600 young people benefited from these programs in 2018.	WeCreate offers trained and certified mentors to support women entrepreneurs with business model development, go-to market strategies, technology and innovation, as well as social training (life skills), and a safe and positive environment to develop a business.
Funding model	The start-up of BongoHive was supported in-kind by VVOB, the former employer of the founders. Today, 5 percent of operating expenditures are covered by fees charged to the entrepreneurs. Cooperating partners have provided in-kind support, and the US Embassy and Comic Relief have provided funding.	Jacaranda Hub is largely self funded. Some 20 percent of the operating expenditures are covered by revenues from the start-up journal published by Jacaranda Hub. Partners have also provided in-kind support.	WeCreate has received funds from cooperating partners, the US Department of State, Citi Foundation, and Atlas Mara. It also raises funds from fees covering 22 percent of the budget.

WeCreate's vision is specifically geared towards increasing Gender Equality within digital entrepreneurship. Jacaranda Hub was kick-started by female entrepreneur Mara Zhanet Michelo who has since become an advocate for digitalization and gender empowerment within the tech communities in southern Africa and Zambia.

The following examples demonstrate successful initiatives that have rolled out in Zambia:

Agriculture

Lima Links, launched in August 2016, connects smallholder farmers to the wider agricultural market place via mobile technology. Farmers can register for the service via SMS, and thereby gain access to suppliers, consumers and bulk buyers, and advertise the crops they produce. The service also allows users to follow the real time market prices of agricultural crops, enabling better harvesting decisions. Previously, Zambian farmers had limited access to information regarding consumer demand and the market prices for crops. To date, Lima Links has helped 1.3 million Zambian farmers gain greater access to the agricultural marketplace via mobile technology.

Health

Human Network International (HNI) partnered with Airtel in 2010 to create the 3-2-1 Service — an innovative information service which assists those on low

incomes to take action to improve their own health and well-being. The service provides individuals with information on an array of topics (e.g. healthcare, microfinance) in any moment of need. Callers dial a toll-free number, 3-2-1, and are able to select their local language and choose a topic they seek specific information about. Trusted and actionable information is then provided by local experts, on topics ranging from family planning to rice planting. According to a survey conducted by HNI, the service resulted in a reported 67% increase in health knowledge among users.

Zambia's Social Cash Transfer (SCT) Programme is implemented by the Ministry of Community Development, Mother and Child Health and has been operating in Zambia since 2003. The main objective of the SCT is to reduce extreme poverty and to prevent its transmission across generations. Results from the impact evaluation carried out by FAO, the United Nations Children's Fund (UNICEF) and the American Institutes for Research show that the programme is having positive impacts: increased food security, improved child wellbeing, improved living conditions and increased productivity and ownership of productive assets.

Solar

The Beyond the Grid Fund for Africa (BGFA) is a programme that extends over five years. The concept evolves around procurement. Energy service companies submit tenders presenting their business models, how many people they want to reach and the end price for the consumer. The goal of electrifying 1 million people is expected to be exceeded by far. So far, 450,000 people have gained access to electricity, which is twice as many as planned at this point in time. When the project ends in 2021, 1.6 million Zambians are expected to have gained access to affordable and sustainable electricity for the first time.

BGFA aims to help businesses overcome these challenges with the goal to contribute to inclusive and sustainable development in its focus countries, to further climate change mitigation and adaptation, energy access, gender equality and other relevant Sustainable Development Goals. Women are not targeted specifically through these operations, they are included in the total 806,624 beneficiaries, and will reap the advantages of the 1,664 jobs created, and affordable and sustainable electricity provided[338]. However, targeted activities towards ensuring women and girl's access should be thought-through.

Pictures from the BGFA beneficiaries in Zambia (Top)[339]

[338] Beyond the Grid Fund for Africa. Link : https://beyondthegrid.africa/impact/

[339] Ibid.

Vitalite is a Zambian solar company aiming to increase rural electrification and combat the poverty tax affecting low-income, energy-poor households across Zambia. Its stated mission is to make quality products and services accessible and affordable to all Zambian households. Vitalite is proud to be the first to pioneer a fully integrated pay-as-you-go (PAYGO) service in Zambia.

Financial Services

Sprint4Women in Zambia is an accelerator implemented by UNCDF. Using a competition model, UNCDF has received expressions of interest from 16 financial service providers and supported three finalists to test models in the field that are increasing the number of women customers. The Sprint4Women Design Sprint Competition was inspired by research conducted in 2018 on financial services of Zambian mothers, who are more than 75% of Zambian women. Already, this competition has inspired companies to turn inward and focus more on this segment, and how to successfully activate women customers in Zambia.

Digital Skills

Girls Can Code! Technology Camp was born in deep rural Luapula Province, Zambia, with a handful of girls who were hungry to learn. This project ultimately seeks to bring equity to girls by empowering them with knowledge, self-confidence, and a network of like-minded peers across the land.

Section 4: Zambia's Tech Ecosystem

The government with the private sector is engaged in attempts to increase access to everyone in Zambia. In 2017, the second phase of a project to construct communications towers across the country was launched, involving the construction of 808 new communications towers and over 1,000 2G, 3G, and 4G wireless stations. The project is a component of the Smart Zambia Project developed by the Chinese technology company Huawei, and the towers aim to increase mobile voice coverage. Meanwhile, the government's Universal Access Fund has helped pay for more than 1,000 base stations countrywide, increasing mobile coverage to 92 per cent of the population by 2017. Other initiatives by technology companies, internet service providers (ISPs), and mobile providers are expected to increase mobile broadband penetration, including the deployment of WiMax (worldwide interoperability for microwave access) wireless broadband, LTE, 5G, and fibre to the premises (FTTP).

In 2018, the International Development community conducted a national ICT4D survey that showed connectivity as the top trend and data security as the top concern[340]. This is also the case when looking at the costs of digital ownership and access to internet services remain a major barrier to access for the majority of Zambian citizens, especially for women in rural areas. In a positive step, the country's three mobile service providers—MTN Zambia, Airtel Zambia, and the state-owned Zambia Telecommunications Company Limited (Zamtel)—all reported reducing the cost of data bundles by 70 per cent in response to growing competition in 2018.

[10] 'Innovate. Connect. Transform. Development Community Perceptions of ICT 4D', Devex, Link: https://tinyurl.com/yxhj49cj (consulted on September 08 2020)

When it comes to private investors, players such as AHL Venture Partners and Kukula Capital have entered the marked to provide follow-on funding to early stage businesses. This is not as major as in other tech savvy markets; however, since the country is lacking references of tech success stories, local investors are a great catalyst to pave the way forward for future investors. This is the case of Bongo Hive, one of Zambia's major hubs currently building a venture fund that will provide financial support to promising early stage start-ups before passing them on to commercial investors with larger ticket sizes[341].

Section 5: Opportunities

In summary, digital technology plays a critical role in delivering social impact through commercially sustainable businesses across multiple sectors in Zambia, and there are some success stories that have shown that it is possible. However, women still remain marginalised and a gender balanced society where women are provided with the same opportunities and resources to excel as their male counterparts is far from the norm in Zambia. More specifically, the need for a wholesome support system connecting not only women in tech, but also a wider 'Women in STEM' network of professionals is crucial for the government as well as the private sector to facilitate; as well as the need for more mentorship and networking capabilities.

Based on research as well as interviews with various stakeholders, the following opportunities are proposed to create more impact when it comes to addressing the digital gender divide in Zambia:

- **Better implementation of the National Broadband Policy** that specifically addresses the needs of women and girls as enhanced broadband will promote digital and tech growth and poverty reduction; **Upgrade existing infrastructure** in rural areas to allow for more affordable access to women and girls;
- **Develop targeted and structured programmes** including private sector support to use digitals to help female entrepreneurs secure finance/funding, receive mentoring and access other resources needed for success and sustainability;

  Identify income generation and job creation opportunities that are inclusive of women, require lower digital literacy and are accommodating of existing unpaid care work; **Work with regulators** to simplify the legal and procedural processes of business creation to nurture entrepreneurship;
- **Lobby for laws** to be passed that uphold women's online rights and protect citizens from bulk surveillance and censorship to ensure the safety and security of users;
- **Ensure that relevant stakeholders both public and private** work to understand the needs of different consumer segments of women so they can design and deliver relevant, safe and secure products and services to help close the digital gender gap.

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11 'Zambia: A 'land-linked' tech ecosystem', Mobile for Development, 19 October 2018, Link : https://tinyurl.com/y3upphgs (consulted on September 08 2020)

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