Federal Government of Somalia

Ministry of Communications and Technology

Development of an ICT Digital Inclusion Policy and Action Plan for Advancing Access to ICT Services for Marginalized Groups

Contextual Analysis Report

July 2023

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Abbreviations

Term	Description
ASP	Applications and Services Provider
CAGR	Compound Annual Growth rate
CDO	Chief Digital Officers
CIP	Communications Infrastructure Provider
CISP	Communications Infrastructure and Services Provider
DCC	Djibouti Data Centre
EAC	East African Community
EGDI	E-government Development Index
EU	European Union
FGS	Federal Government of Somalia
GNI	Gross National Income
GoD	Government of Djibouti
GoK	Government of Kenya
GDP	Gross Domestic Product
GIS	Geographic Information System
GNI	Gross National Income
HCI	Human Capital Index
HRMIS	Human Resources Management System
ICT	Information and Communications Technology
ICT4D	Information and Communications Technology for Development
IDP	Internally Displaced People
IFC	International Finance Corporation
IFMIS	Integrated Financial Management System
ISP	Internet Service Provider
ITU	International Telecommunications Union
IXP	Internet Exchange Point
KCL	Knowledge Consulting Ltd
KYC	Know Your Customer
Mbps	Megabits Per Second
MDAs	Ministries, Departments and Agencies of Government
MoCT	Ministry of Communication and Technology
MVNO	Mobile Virtual Network Operator
NBS	National Bureau of Statistics
NCA	National Communications Authority
NICI	National Information and Communication Infrastructure
OSI	Online Services Index
PPP	Public–Private Partnership
RIA	Research ICT Africa
RFP	Request for Proposal
RITA	Rwanda Information Technology Authority
RIXP	Regional Internet Exchange Point
RURA	Rwanda Utilities Regulatory

SCALED-UP	Somalia Capacity Advancement, Livelihood and Entrepreneurship, through Digital Uplift Project
SDG	Sustainable Development Goal
SIHBS	Somalia Integrated Household Budget Survey
SoIXP	Somalia Internet Exchange Point
SRMP	Smart Rwanda Master Plan
TII	Telecommunications Infrastructure Index

Executive Summary

This report presents a desk review and contextual analysis of digital inclusion in Somalia. It reviews documents, presents data and assesses the evolution of digital inclusion Somalia in comparison with Djibouti and the East African Community Partner States (Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda). The aspiration element is addressed by looking at Qatar and Malaysia,

Somalia's economic and political context underscores the state of its digital inclusion. Somalia has endured a long-lasting duration civil war, frequent droughts, and floods, causing significant damage to its human and physical resources that hampered its economic development.

There are a number of challenges preventing Somalis from using digital technologies effectively. They include lack of infrastructure, low quality and speed, power outages and high Internet costs compared to the income of the majority of the population. The digital divide also manifests itself across various dimension including geography (urban, rural), age (elderly, youth), quality (speed and latency), disability (physical or mental), gender (men and women), relevance of content and other social factors such as internal displacement. Internally displaced people, women, people with disabilities, elderly, youth, people with no education are among those who have limited access to digital technologies.

Somalia's current market structure is dominated by the private sector and a technology neutral-licensing framework. While the competition in the sector was critical in promoting affordable access to digital tools, lowering data and voice rates, the absence of government intervention in expanding access to underserved areas meant that the digital divide still remains high.

Benchmarking Somalia's digital infrastructure with Djibouti and members of the Eastern African Community shows that Somalia has established international connectivity via submarine landing stations but does not have adequate middle mile (national backbone) like the rest of the countries. Somalia does not have the underlying fibre backbone that is critical for digital connectivity and inclusion. It depends largely on microwave networks.

Comparison of affordability across the East African Community Partner States and Djibouti shows that although, Somalia's communication prices remain lower in dollar terms, they are very high when income is factored in. Under the ICT Regulatory Tracker, Somalia performed best in regulatory mandates, followed by regulatory authority and the competition framework, thus its regulatory reform is comparable with the East African countries.

Country digital inclusion experiences indicate that strong government commitment and investment are critical for bridging the digital divide. The cases of Kenya, Malaysia, Qatar and Rwanda indicate digital inclusion demands government investment in

infrastructure and digital public services. Malaysia's experience in integrating digital technology in its development plan was instrumental in its success in digital inclusion. Experience of the countries also shows that:

- Digital inclusion should focus on the entire spectrum of inclusion namely – **availability, accessibility, affordability, adoption, awareness of potentials and protection.**
- Development and implementation of a series of policies and plans such as a broadband strategy are critical to accelerate access to digital technologies,
- Enhancing digital public services stimulates the use of digital technologies,
- Government should initiate specific programmes that facilitate affordability including reduction of broadband tariffs and also programs that bring the cost of smartphones down (e.g., local assembly as in the Rwandan case), and
- Design and implementation of digital inclusion policies via responsible department as in the case of Qatar is important.

1 Introduction

The Federal Government of Somalia's Ministry of Communications and Technology (MoCT) is overseeing the implementation of the country's National Information and Communications Technology (ICT) Policy and Strategy 2019-2024. The policy and action plan aim to address existing gaps in the ICT infrastructure and ecosystem. Among other things, it focuses on accelerating development in the following key areas:

i. Policy, legal, and regulatory framework.
ii. Universal access strategy promoting the use of ICT by women, youth, the disabled, marginalised groups, and underserved areas.
iii. Consumer protection, privacy, and child protection.
iv. Digital services and content.
v. E-commerce, e-health, e-education, and e-governance.

However, the MoCT recognises that: "While ICT offers many opportunities for disadvantaged social and cultural groups, government policy frameworks for digital financial services and the ICT sector pay little or no attention to the existing digital divide affecting women, the disabled, youth and the rural poor, as well as the barriers (economic, structural and cultural) that may impede access." It is important to note that beyond this current refinement of the category, marginalised groups also include the urban poor, the elderly and refugees; and can indeed be extended from a policy perspective to include small, medium and micro-enterprises.

Although the cost of mobile data has fallen in Somalia, internet and computer penetration remain among the lowest in the world, with nearly 85% of the population lacking access to modern digital services. Key challenges include protracted displacement arising from insecurity, widespread illiteracy and poverty. There are over 2 million internally displaced persons (IDPs) living in precarious conditions without access to basic services, including digital communications. The MoCT would therefore like to develop a Digital Inclusion Policy that will guide the key areas of the Action Plan, with a focus on all marginalised groups. The policy will address relevant dimensions such as access to digital services and devices, affordability, digital literacy and awareness.

This contextual analysis report discusses Somalia's digital inclusion environment, with a focus on inclusiveness, and compares it with countries in the East African region and beyond to inform national aspirations and digital inclusion policy development. The report is supported by a parallel report based on a national representative survey that established the digital inclusion baseline.

1.1 Report Layout

Following this short introductory chapter:

Chapter 2 provides the background for the report.

Chapter 3 presents the contextual analysis, which explores the nature of the digital exclusion in Somalia.

Chapter 4 compares Somalia's digital technology sector and performance with selected countries in East Africa and beyond.

Chapter 5 explores global best practices in the design and implementation of digital inclusion policies and draws lessons for Somalia.

Chapter 6 presents conclusions and recommendations.

2 Background

2.1 Somalia

Somalia has six federal states - Galmudug, Harshebella, Jubaland, Southwest State (together called South Central Somalia), Puntland and Somaliland. The member states are divided into 18 regions (gobollo), as shown in Figure 1. These in turn are divided into 74 districts (degmooyin). Banadir, which covers the same area as the capital city of Mogadishu is also a region. Somalia has an estimated population of around 17.1 million people, of whom more than 2 million live in Mogadishu.[1]

Figure 1: Regions of Somalia

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[1] World Population Prospects 2022. United Nations Department of Economic and Social Affairs, Population Division, https://population.un.org/wpp/

According to UN projections, two-thirds of Somalia's population is under the age of 24. The population is evenly divided between men and women as highlighted in Figure 2.
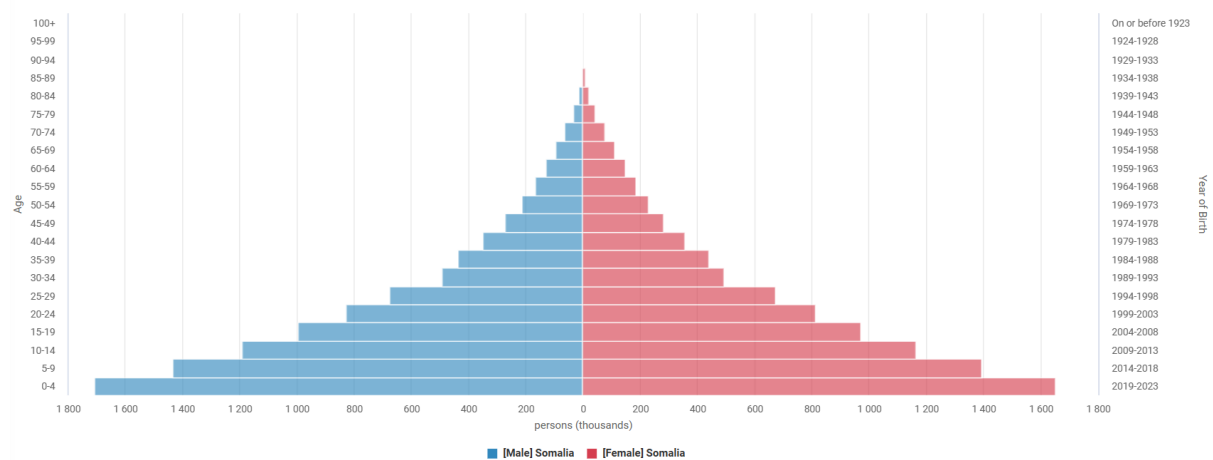
Source: UN Population Division, data portal

Figure 2: Population by 5-year age groups and gender, 2023

2.2 Digital Inclusion

In Somalia, digital inclusion is implemented within the context of the National ICT Policy and Strategy 2019-2024 that seek to address existing ICT infrastructure and ecosystem gaps by focusing, inter alia, in the following key areas:

   i.   Policy, legal, and regulatory framework.
   ii. Universal access strategy promoting the use of ICT by women, youth, the disabled, marginalised groups, and underserved areas.
   iii. Consumer protection, privacy, and child protection.
   iv. Digital services and content.
   v.   E-commerce, e-health, e-education, and e-governance.

Digital technologies offer significant opportunities for Somalia to address its many development challenges, which have been exacerbated by ongoing conflict, climate change, food insecurity, natural disasters and displacement. Digital solutions have already helped improve the livelihoods of citizens. Mobile networks have served as a lifeline to communicate during crises and with family and friends, to receive remittances, and to access educational and economic opportunities. Mobile money services have increasingly been used to facilitate money transfers and bill payments. The estimated value of mobile money transactions in 2017 was about US$2.7 billion per month (about 36% of GDP).[2]

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[2] World Bank Group. (2018). Somalia Economic Update: Rapid Growth in Mobile Money: Stability or Vulnerability? Available at:
https://documents1.worldbank.org/curated/en/975231536256355812/pdf/REPLACEMENT-PUBLIC-Somalia-Economic-Update-3-FINAL.pdf

The digital technology sector has also accelerated the development of new types of jobs and income opportunities for women, such as selling SIM cards and airtime and acting as mobile money agents. Farmers are using communication tools to access real-time market information and communicate with buyers and sellers. Social media is increasingly being used as a platform for political debate in Somalia.

The COVID 19 pandemic has further transformed the importance of digital technologies, making them central to work, communication, learning and access to information and services. In Somalia, the use of digital technologies skyrocketed during the pandemic. Communication was critical for business continuity and to avoid major disruptions in education, health services and remittances. The pandemic highlighted the need for digital inclusion for all, especially the most vulnerable and the rural populations.

Box I: Variants of Definitions of Digital Inclusion

United Nations
Digital inclusion is defined as "equitable, meaningful, and safe access to use, lead, and design of digital technologies, services, and associated opportunities for everyone, everywhere"[3]

European Union
Digital inclusion is making ICT more accessible for all and fostering the development of accessible technologies. Digital Inclusions should cover: [4]
- Assistive technologies: supporting the development of ICT that assists people with disabilities in the digital world.
- Skills and digital skills: empowering people to fight marginalisation and social exclusion, including in careers, through ICT in education.
- Social inclusion: increasing the participation rate of disadvantaged people in public, social and economic activities through social inclusion projects.

Several challenges prevent Somalis from using digital technologies effectively. These include lack of infrastructure, low quality and speed, power outages and high internet costs compared to the income of the majority of the population. The digital divide also manifests itself in different dimensions, including geography (urban, rural), age (elderly, young), quality (speed and latency), disability (physical or mental), gender (men and women), relevance of content and other social factors such as internal displacement.

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[3] United Nations, Digital Inclusion,
https://www.un.org/techenvoy/sites/www.un.org.techenvoy/files/general/Definition_Digital-Inclusion.pdf
[4] European Union, Digital Inclusion, Shaping the Europe's Future, https://digital-strategy.ec.europa.eu/en/policies/digital-inclusion

Internally displaced persons, women, people with disabilities, the elderly, youth, and the uneducated are among those with limited access to digital technologies.

There is no universal or agreed approach to, or definition of, digital inclusion. Digital inclusion refers to the activities necessary to ensure that all individuals and communities, including the most disadvantaged, have access to and use of ICTs.

Table 1: Dimensions of digital inclusion

Dimension	Barriers to Digital Inclusion
Access	• Limited availability of Communication Infrastructure – fibre networks, mobile towers - communication infrastructure that was destroyed during the long-term conflict is being rebuilt by the private sector • Limited access to electricity • Limited availability of devices, especially smart phones, tablets, laptops, and computers • Limited speed and quality of broadband services
Affordability	• High cost of communication especially the monthly cost of a fixed broadband connection is around $60, • High cost of devices such as smartphones, computers
Location	• People in rural areas in Somalia are generally underserved in terms of access, speed and quality of services as compared to urban areas
Age	• Youth and the elderly tend to have limited access to digital technologies. Furthermore, technologies are not designed to meet the needs of the older people.
Gender	• While data do not exist, women and girls tend to have limited access to digital technologies
Content and applications	• While improving, there is limited enabling content in Somali language • Inadequate online government services due to low level of eGovernment development.
Disability	• Limited access to ICTs by persons with disabilities due to lack of resources, • Limited assistive and supportive technologies and content
Digital literacy and skills	• Limited education – basic literacy and numeracy of the population • Lack of digital literacy and skills for most of the population • Limited information literacy to assess the risk and critically evaluate information
Internal migration	• Internally displaced population often lack resources, education to benefit from digital technologies

Table 1 shows that barriers to digital inclusion are not limited to availability, affordability and accessibility of ICTs. Both access to and use of ICTs are affected by personal, political, social and economic factors. For example, although the cost of mobile data has fallen in Somalia, internet and computer penetration remain the lowest in the world. Nearly 85% of the population does not have access to modern digital services. Without

access to basic services, including digital communications, more than 2 million internally displaced people live in precarious conditions.

The availability of relevant content, applications and services, as well as issues of trust and motivation, also affect the tangible outcomes that users derive from access to and use of ICTs. In 2022, Somalia ranked at the bottom, 192 out of 193 countries, just above South Sudan, which ranked 193 in the United Nations e-government services survey.[5] This suggests that Somalia has a long way to go to improve access to inclusive e-government applications and services.

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[5] United Nations, E-Government Index 2022, https://desapublications.un.org/sites/default/files/publications/2022-09/Web%20version%20E-Government%202022.pdf

3 Contextual Analysis

Somalia's social, economic and political context underscores the state of its digital inclusion. Global benchmarks show that internet access correlates with economic growth. Somalia has endured a protracted civil war, frequent droughts and floods that have severely damaged its human and physical resources and hampered its economic development. Its socio-economic conditions worsened during the COVID-19 pandemic, when GDP contracted by 0.2%. GDP growth is projected to recover to 2.8% in 2023 and 3.7% in 2024.[6]

Today, 71% of Somalis live in extreme poverty. This is well above the sub-Saharan African average of 28%. Life expectancy is 57.4 years and maternal mortality remains high at 734 deaths per 100,000 live births. Somalia's ranking on the Sustainable Development Goals is one of the lowest, at 160 out of 163 countries. On the other hand, there are many opportunities for economic growth in Somalia. Rapid urbanisation, investments in energy, ports, education and health, and the increasing use of digital technologies are expected to accelerate growth.

3.1 Policies and Institutions

Somalia has few policies, strategies and institutions that support its digital inclusion efforts. The main policies are the National Communications Law and the National ICT Policy and Strategy (2019-2024).

- The National Communications Law was passed by parliament in 2017, providing a guiding formal regulatory framework for the ICT sector in Somalia. The law established an independent regulatory body for the comumnications sector, the National Communications Authority (NCA), providing certainty by protecting the rights of consumers and investors. This has led to increased investment in ICT infrastructure and services, as well as the growth and uptake of ICT services.
- The National ICT Policy and Strategy (2019-2024),[7] developed by MoCT, provides the framework for accelerating the ICT sector in support of the national development agenda. The Policy, whose vision is to "harness the potential benefits of ICT in support of economic development and social inclusion for all Somalis", aims to support Somalia's long-term vision for socio-economic development and achievement of the Sustainable Development Goals (SDGs). The policy calls for the expansion of ICT infrastructure across the country and the reduction of the cost of ICT services. It aims to build digitally literate human capital, increase the use of ICT services by both the public and private sectors, and address cross-cutting issues such as digital exclusion based on gender, disability, youth and other dimensions.

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[6] World Bank, Somalia Overview, https://www.worldbank.org/en/country/somalia/overview
[7] The National ICT Policy and Strategy 2019-2024 https://moct.gov.so/en/wp-content/uploads/2019/11/National-ICT-Policy-Strategy-2019-2024.pdf

- The ICT policy objectives are to:
  - Extend ICT infrastructure to all regions of Somalia, connecting all cities and sub-regional urban areas with reliable broadband connectivity.
  - Promote universal access to both voice and Internet using the most appropriate and up-to-date technologies and business models.
  - Enable Somali citizens to take full advantage of broadband services, making them a competitive and well-informed population able to participate in the socio-economic development of the country.

Some of the key institutions overseeing the ICT sector in the country include:

- Ministry of Communication and Technology (MoCT)—which sets the standards, provides technical guidance, monitors and evaluates ICT policies and regulates the ICT sector throughout the country.

- National Communications Authority (NCA)—that serves as the government agency responsible for regulating the communications sector throughout the country.

3.2 Market Structure

Somalia's current market structure is dominated by the private sector. While competition in the sector has been crucial in promoting access to digital tools and driving down data and voice tariffs, the lack of government intervention in extending access to underserved areas has meant that the digital divide remains high. There is a lack of accurate data on digital development in Somalia. Data from the International Telecommunications Union shows that internet penetration is very low and access to fixed broadband, which is an indicator of institutional adoption of digital technologies, is less than 1%. Somalia's digital affordability is 7.7% of GNI, higher than the 2% recommended by the Global Broadband Commission.[8]

Somalia's market structure has been shaped in recent years by a technology-neutral licensing framework and regulation of the sector. The NCA has developed a unified licensing framework based on the Communications Act and the ICT Policy, which distinguishes between the provision of infrastructure and/or services, with licences grouped into individual and class licences, as summarised in Table 2.

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[8] https://datahub.itu.int/data/?e=SOM

Table 2: Overview of types of licenses issued by NCA

License Category.	License Type	Services
Individual License		
Communications Infrastructure Provider (CIP)	National Communications Infrastructure	• Public Fixed Systems • Public Land and Mobile Cellular Systems
	Regional Communications Infrastructure	• Broadcasting Signal Distributor • Public Internet Networks • Public Radio Trunking Systems • Local Loop Networks (Fixed and wireless access systems) • Private Networks
	International Communications Infrastructure	• International gateway (Satellite/Terrestrial) • Cable transit • Satellite Hub System • Uplink Satellite Broadcasting Stations
Applications and Services Provider (ASP)	Applications and Services	• All services and applications carried over networks • Internet Service Provider (ISP) • International Services (voice/data/text) • VOIP services • GMPCS services • Satellite services • Resale: Mobile, leased circuit • Other value-added services
	Mobile Virtual Network Operator (MVNO)	• Mobile services
Communications Infrastructure and Services Provider (CISP)	Combined CIP and ASP Infrastructure, Applications, and Services	• -All of the above
Class License		
Terminal Equipment Providers License	Installation, Maintenance, and distribution license	Installation, maintenance and distribution of telecom equipment
VSAT Services Providers License	VSAT Services License	VSAT Networks to provide communications services
One Time Authorisation	DotSo Domain Registrar License	DotSo Registrar Services

Source: NCA Annual Report, 2020-21

The regulator has developed regulations that provide a conducive environment for market growth by monitoring service quality, improving spectrum efficiency and sharing

infrastructure. There are six mobile network operators in Somalia, all linked to financial service providers, which have been granted national CISP licences:[9]

- Hormuud, established in 2002, linked to Salaam Bank and offering Taaj international remittances and EVC mobile money,
- Golis, also established in around 2002, offering Sahal mobile money,
- Telesom, also established, founded in around 2002, offering Zaad mobile money,
- Somlink linked to IBS Bank and offering Ebesa mobile money,
- Amtel linked to Amal bank offering Mycash mobile money, and
- Somtel, established in 2009, by international money transfer operator Dahabshiil,[10] which offers eDahab mobile money.

Nationlink also has an extensive network in Somalia and has been awarded a CISP licence. Dalkom is licensed as an international communications service provider. Other licensees include:

- Somcast, acting as a regional communications infrastructure service provider and Internet service provider.
- Somnet as an MVNO.
- Somali Wireless as an Internet Service Provider and IPTV provider (applying for an Application and Service Provider Licence).
- Somali Optical Networks, Somott, and Bluecom as Internet service providers with ASP licences.

Table 3: Licensed ICT providers in Somalia

No.	Operator	License Type	Status
1	Hormuud Telecom Somalia	CISP	Licensed
2	Golis Telecom Somalia	CISP	Licensed
3	Telesom Company	CISP	Licensed
4	Somtel Somalia	CISP	Licensed
5	Amtel Somalia	CISP	Licensed
6	Somlink	CISP	Licensed
7	Somnet Telecom	MVNO	Licensed
8	Solteco	MVNP	Licensed
9	Dalkom Somalia	International CIP	Licensed
10	Somcast	ASP	Licensed
11	Somott	ASP	Licensed
12	Bluecom	ASP	Licensed
13	Somali Optical Networks	ASP	Licensed

Source: NCA, 2023[11]

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[9] Ministry of National Resources. (2013). National Adaptation Programme of Action on Climate Change. Available at: https://unfccc.int/resource/docs/napa/som01.pdf

[10] Somtel. Available at: http://www.somtelnetwork.net/about-us.php

[11] https://nca.gov.so/licensed-operators/

3.3 Connectivity and Coverage

Somalia has made good progress in expanding mobile networks, but 4G access is limited to major cities, and Somalis in rural areas often lack the same level of network access. In 2021, 30% of Hormuud's 3.6 million customers still rely on its 2G network – the majority of whom live in rural areas.[12] Deploying and maintaining infrastructure in rural areas is complex and costly, in some regions due to lack of electricity and security concerns. However, there are efforts by the private sector, such as Hormuud Telecom, SomTel and others to expand connectivity and reach everyone in Somalia in line with current government commitments, as the Somali government's National ICT Policy commits to achieving universal 4G coverage between 2024 and 2025.

3.3.1 Fiber Networks

Somalia does not have the underlying fibre backbone that is critical for digital connectivity and inclusion. There are limited fibre networks in various parts of the country that are not interconnected. The country relies largely on a microwave network. At the same time, more long-haul fibre is being built, such as the Somcable network in Somaliland and the terrestrial fibre being built by Golis in Puntland between Bosaso, Garowe and Galkayo.[13] Significant efforts are needed to invest in fibre infrastructure throughout the country in the future.

3.3.2 Data Centres

Somalia has no carrier-neutral data centres, and its cloud and storage infrastructure is still limited. Dalkom Somalia has a data centre in Mogadishu with a mirror site in Nairobi. The Mogadishu data centre offers collocation, cloud and managed services.

There is an Internet Exchange Point called Somalia IXP (SoIXP) based at Dalkom Somalia and currently operated by NCA. While the setup has been completed and only SomaliREN and GovNet have been connected, the IXP has failed to get acceptance from the telecom companies. There are efforts underway to ensure that interconnectivity through the IXP is achieved.

3.3.3 Mobile Money

More than two-thirds of the adult population now has access to mobile money, and two-thirds of financial transactions are made through mobile money platforms, making Somalia a leader in mobile money. The Central Bank of Somalia (CBS) has introduced a central payments system, linking the country's lenders and formalising digital payments. This has made it easier for people across the country to make payments. In June 2023, the Central Bank of Somalia (CBS) launched the Somali Quick Response Code (SOMQR), a standard that will guide payment service providers on how to issue Quick Response (QR)

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[12] https://itweb.africa/content/nWJadvbeArRqbjO1
[13] Kalba International report prepared for the World Bank in 2019.

codes to merchants and consumers across the country.[14] The standard is designed to unify the mobile payments ecosystem and make it easier to make retail payments. Somalia is following in the footsteps of Kenya, which launched a QR code standard in May 2023.[15] However, there is still a lack of robust consumer protection and know-your-customer requirements in the mobile money sector.

3.3.4 Electricity

Access to electricity is a challenge in Somalia, where most of the rural population having no connections, and the cost of electricity is among the highest in the world.[16] Electricity is provided by the private sector. The current installed generation capacity is about 106 MW. While most utilities rely on diesel generators for power generation, there is growing interest and investment in hybrid systems using solar and wind energy resources.

3.4 Factors Impacting Digital Inclusion

The latest Somalia Integrated Household Budget Survey (SIHBS), released by the National Bureau of Statistics (NBS) in early 2023, includes a module on credit, income, financial services and ICT, providing statistics that shed light on the extent of digital exclusion in the country.

3.4.1 Access/use

Access to and use of digital technologies is related to several factors such as price, policies, household income of the population as a whole and infrastructure constraints. The SIHBS survey shows that households owned several items that affect access to and use of ICT, as shown in Table 4. At household level, 40.4% owned a smart phone, 61.7% owned a mobile phone without internet access and only 3.3% owned a computer/laptop/iPad. There were significant differences by place of residence for smartphones, televisions and computers, with households in urban areas benefiting more than those in rural and nomadic areas, as summarised in Table 4.

Table 4: Selected household goods that impact digital inclusion by place of residence

Type of good	Rural (%)	Urban (%)	Nomadic (%)	National (%)
Mobile phone not able to connect to Internet	60.9	61.4	64.7	61.7
Smartphone	34.0	50.8	4.3	40.4
Television	7.4	26.2	0.0	17.9
Computer/laptop/iPad	0.3	5.2	0.0	3.3
Electricity	39.4	80.1	8.7	61.9
Solar panel	13.5	3.2	26.1	8.8

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[14] https://centralbank.gov.so/wp-content/uploads/2023/06/PRESS-RELEASE-SOMQR-920.pdf
[15] https://www.centralbank.go.ke/2023/05/03/launch-of-the-kenya-quick-response-code-standard/
[16] https://www.worldbank.org/en/news/press-release/2021/12/09/a-150-million-electricity-recovery-project-aims-to-help-light-up-somalia

Access to electricity can also have an impact on digital inclusion, as individuals need electricity to power or charge digital devices. The survey shows that overall, three in five people (61.9%) have access to electricity. There are significant differences by place of residence, with individuals in urban areas (80.1%) more likely to have access to electricity than their counterparts in rural and nomadic areas (39.4% and 8.7% respectively).

Overall, 85% of all individuals aged 15 and over owned a mobile phone as shown in Table 5. There are small differences in mobile phone ownership by gender, but a difference by educational level and by place of residence. By level of education, more individuals with tertiary education (96.2%) owned a mobile phone than those with no formal education (84.0%). By place of residence, more individuals in rural areas owned more mobile phones than their counterparts in nomadic areas.

Table 5: Mobile ownership and access

Mobile ownership and use	Own a mobile phone (%)	Do not own a mobile, but have access to one (%)
Sex		
Male	85.6	3.2
Female	84.5	3.8
Highest level of formal education		
No formal education	84.0	3.5
Primary	80.4	5.2
Secondary	90.7	2.6
Higher	96.2	0.5
Place of Residence		
Rural	86.2	2.6
Urban	85.5	3.9
Nomadic	79.9	3.3
National	**85.0**	**3.5**

The SIHBS collected data on whether individuals had used the Internet in the past three months. Overall, 27.6% of individuals aged 10 years and over had used the internet in the past three months. By place of residence, more individuals in urban areas (34.9%) had used the internet than those in rural areas (19.6%) or nomadic areas (2.0%). By gender, more men (30.8%) than women (24.7%) had used the Internet, as shown in Table 6.

Table 6: Proportion of individuals that used the Internet in the past 3 months

Background characteristics	Percentage of population 10+ using internet	Used mobile phone to access the Internet (%)	Accessed the Internet at home (%)
Sex			
Male	30.8	91.2	7.1
Female	24.7	87.7	10.9
Highest level of formal education			
No formal education	14.2	93.9	
Primary	30.7	91.5	
Secondary	71.0	86.9	
Higher	87.1	82.0	
Place of Residence			
Rural	19.6	99.1	0.7
Urban	34.9	87.6	10.6
Nomadic	2.0	100.0	
National	**27.6**	**89.8**	**8.9**

Source: Somalia Integrated Household Budget Survey 2023

The mobile phone is the primary channel through which individuals access the Internet (89.6%), followed by accessing the Internet at home (8.9%)

3.4.2 Affordability

The SIHBS did not collect data on the affordability of ICT services but it does include data on labour force participation and household expenditure that can shed some light on the ability of households and individuals to afford ICT services.

At the household level, in the month prior to the survey, 52.2% of households were unable to afford healthy and nutritious food, 34.9% experienced hunger, and 27.1% went without food for a whole day at least once. With more than half of all households unable to prioritise healthy food, these households can not afford to spend on anything on communication services.

At the individual level, 16.3% of all persons reported that they were unemployed. In terms of gender, more women (32%) were unemployed than men (29.0%), as shown in Table 7. A higher proportion of young people (15-24 years) reported being unemployed (30.1%), with the youth unemployment rate higher in urban areas (35.6%) than in rural and nomadic areas (21.8% and 5.5% respectively). The high unemployment rate, especially among youth, means that a large proportion of the population cannot afford to pay for ICT services.

Table 7: Employment status of working age individuals

Background characteristics	Employment rate (%)	Labour force participation rate (%)	Unemployment rate (%)	Youth unemployment rate (%)
Sex				
Male	32.9	38.4	14.3	29.0
Female	12.2	15.3	20.6	32.0
Place of Residence				
Rural	24.9	27.8	10.6	21.8
Urban	22.1	27.3	19.3	35.6
Nomadic	13.2	14.0	5.4	5.5
National	**21.7**	**25.9**	**16.3**	**30.1**

Source: Somalia Integrated Household Budget Survey 2023

3.4.3 Digital Skills

Data on digital literacy and skills are not available for Somalia. The level of education of the population, which affects their ability to use ICTs, is a good indicator of the state of digital literacy. Two-thirds of Somalis have no formal education, so their ability to make the most of digital technologies would necessarily be limited. Data from the nationally representative survey will fill this information gap.

3.5 Population Characteristics Impacting Digital Inclusion

There are several characteristics or dimensions of potential exclusion that affect access to and use of ICTs by different population groups in Somalia. These dimensions, including age, gender, poverty, disability, place of residence (rural, urban or nomadic) and internal displacement, are often mutually reinforcing, creating negative synergies that exclude a large proportion of people in each category from the opportunities for economic and social development that ICTs offer.

3.5.1 Age

Older people are less familiar with technology, tend to have physical limitations that may be combined with health problems or cognitive impairments. Most older people also lack a regular income and may be dependent on family or government support. This makes it difficult for them to learn and use digital technologies. Younger people are potential beneficiaries of increased access to and use of ICT, particularly through improved education and access to information, thanks to their ability to learn new digital skills. However, younger people may also lack a regular income, making it more difficult for them to access and use ICTs, unless policies and strategies are in place to minimise the barriers.

Somalia has a young population as shown by the inverse relationship between age and population size in Figure 3. The largest population age group is 5 to 9 years (18.9%), followed by <5 years (16.6%), while the smallest population age group is 75 to 79 years, representing 0.2% of the total population, as highlighted in Figure 3. Approximately one

person in two (51.5%) is aged between 0 and 14 years, while 2.4% of the population is aged 65 years and over, indicating a high dependency ratio.[17]

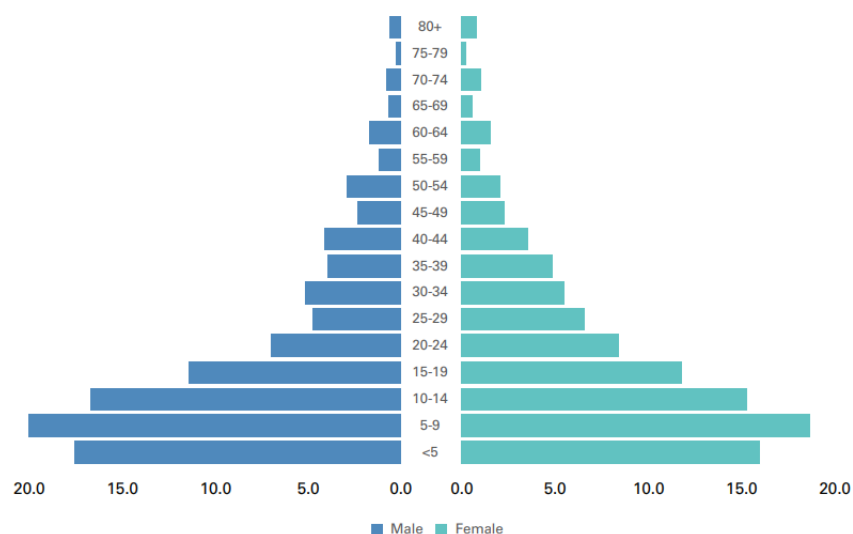*Source: Somalia Integrated Household Budget Survey 2023*

Figure 3: Population pyramid

Somalia is one of the world's most youthful countries, with more than two-thirds (76.6%) of the population under the age of 30. While such youth, if skilled and properly harnessed, could be beneficial to the development of an economy, this is not the case for Somalia. As a result of the ongoing conflict, generations of Somali youth have lacked a good education and, consequently, good digital skills, which are usually acquired as part of formal education. A large proportion of young people report being unemployed (30.1%), which is a cause for concern and affects their ability to afford and use ICT services.

3.5.2 Gender

Women and girls tend to face additional barriers to access and use of ICT due to gender discrimination, social norms and limited access to education and economic opportunities.

Overall, there are slightly more female individuals (51.7%) than male individuals (48.3%) in the population as shown in **Error! Reference source not found.**. In terms of age, there are more females than males among young people (15-35).

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[17] The dependency ratio does not consider labour force participation rates by age group. A portion of the population counted as "working age" may actually be unemployed or not in the labour force whereas a portion of the "dependent" population may actually be employed and not necessarily economically dependent

Age	Female	Male
<5	49.5%	50.5%
5-9	50.2%	49.8%
10-14	49.3%	50.7%
15-19	53.0%	47.0%
20-24	57.4%	42.6%
25-29	59.3%	40.7%
30-34	55.8%	44.2%
35-39	56.7%	43.3%
40-44	48.5%	51.5%
45-49	52.6%	47.4%
50-54	45.8%	54.2%
55-59	43.5%	56.5%
60-64	51.1%	48.9%
65-69	52.7%	47.3%
70-74	52.9%	47.1%
75-79	45.5%	54.5%
80+	53.5%	46.5%
Total	51.7%	48.3%

■ Female ■ Male
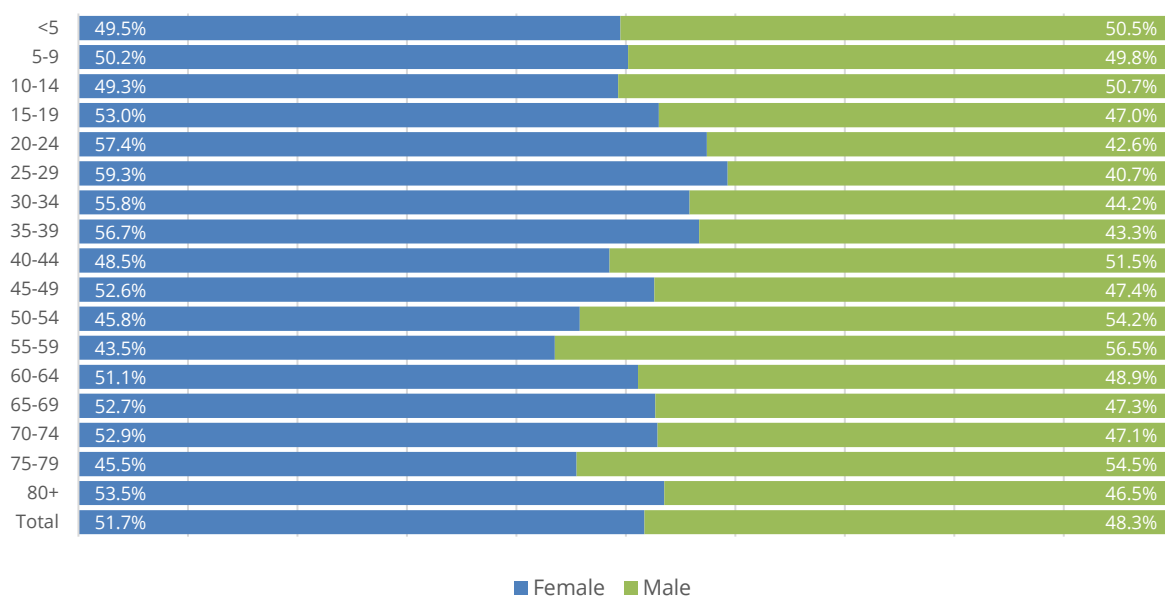
Figure 4: Gender by age group

3.5.3 Location

Rural and nomadic areas have less access to ICT infrastructure and services than urban areas in Somalia, leading to inequalities in access to information and opportunities for economic and social development.

3.5.4 Education Levels

According to the SIHBS, two out of three people (65.5%) in Somalia have no formal education while only 4.6% and 4% of the population report having completed secondary and tertiary education respectively. By place of residence, urban dwellers tend to have higher levels of education than rural or nomadic dwellers. By gender, females have lower educational attainment than males across all education categories, as shown in Figure 5. Given that it is at the secondary and tertiary levels that students are more likely to acquire digital skills, this puts female individuals and those from rural and nomadic areas at a disadvantage in terms of acquiring the digital skills necessary to thrive in a digital economy.

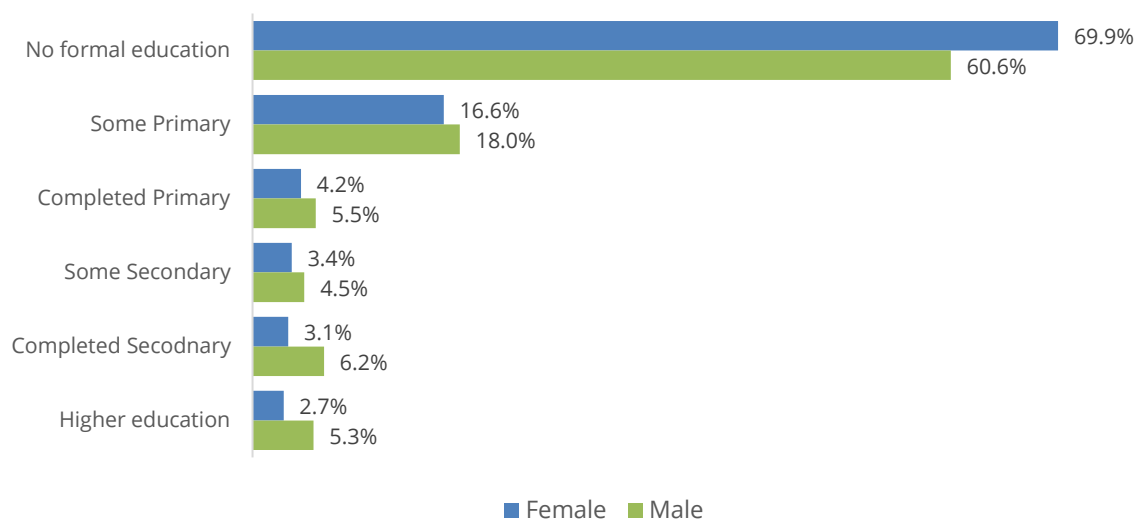*Figure 5: Educational attainment by gender*

Only one in four children of primary school age (25%) reported attending school, while this figure drops to 14.6% for secondary school. By place of residence, primary school attendance was similar in urban and rural areas (27.7% and 27.9% respectively), but much lower in nomadic areas (5.2%). Secondary school attendance is much higher in urban areas (17.7%) than in rural and nomadic areas (11.8% and 0.5% respectively). In terms of gender, primary and secondary school attendance rates are comparable, but it is worth noting that in rural areas there are slightly more female students than male students at both primary and secondary levels.

Overall, a potential challenge of low levels of enrolment and educational attainment is that individuals from poor households are more likely to struggle to find good jobs and have poor access to and use of digital technologies, making it harder to break out of the cycle of poverty and digital exclusion.

3.5.5 Poverty

The high cost of internet access and digital devices creates affordability barriers. This limits the ability of low-income populations to participate in the digital economy. According to the World Bank, "Poverty is widespread in Somalia, particularly among rural households and in IDP settlements. Nearly 70 percent of Somalis live below the poverty line, and 90 percent live in multidimensional poverty, which includes a high need for education for children and adults, improved access to water, improved sanitation, and access to electricity."[18]

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[18] Somalia Economic Update - Investing in Social Protection to Boost Resilience for Economic Growth. Washington, D.C. : World Bank Group. http://documents.worldbank.org/curated/en/099645010242215445/P17502402429f50e708a6408e3872dbb 193

According to the SIHBS, in the 12 months prior to the survey, about one in five households (20.7%) received remittances from someone living outside the household, either inside Somalia or abroad, 21.3% of households received income from cash assistance, while 14.4% received income from assistance in kind. In terms of food security, one in two households (52.2%) were unable to afford healthy and nutritious food, a third of households (34.9 per cent) experienced hunger, 37.8 per cent ran out of food and 27.0 per cent went without food for a whole day at least once.

Other common shocks affecting households include sharp increases in food prices (53.3%), drought or severe water shortages (47.3%) and the death of livestock (14.6%). All of these tend to affect households in nomadic areas more than their counterparts in urban areas, indicating an interaction between poverty and place of residence.

All of this highlights the vulnerability of a typical Somali household to a range of shocks that have the potential to disrupt the social and economic fabric of the family, making the prioritisation of access and use of ICTs a non-trivial issue for the family.

3.5.6 Disability

People with disabilities face social exclusion, discrimination, physical barriers and limited access to education and digital literacy training. In addition, many available digital devices and services lack accessibility, limiting their usability for people with disabilities. All of this limits the adoption and use of ICT by people with disabilities.

Table 8: Proportion of individuals with different types of disability

Type of disability	Have difficulty seeing, even when wearing glasses	Have difficulty hearing, even if when wearing a hearing aid	Have difficulty walking or climbing steps	Have difficulty remembering or concentrating	Have difficulty with self-care	Have difficulty communicating
Sex						
Male	34.1	20.4	40.8	26.1	31.8	36.6
Female	42.8	25.9	46.6	26.5	27.3	31.8
Place of Residence						
Rural	37.1	24.4	43.1	22.1	26.9	32.1
Urban	59.8	22.5	44.4.43.1	29.1	29.3	36.1
Nomadic	37.0	26.9	43.9	20.4	36.0	25.4
National	**38.8**	**23.4**		**26.3**	**29.3**	**34.0**

Source: Somalia Integrated Household Budget Survey 2023

3.5.7 Internal Displacement

Internally displaced persons (IDPs) tend to live in temporary shelters and camps with limited access to infrastructure, speak a different language, face financial challenges and may be subject to legal restrictions. All of this can affect their ability to access, afford and use ICT services.

In addition to the security situation, Somalia is also vulnerable to increased natural disasters due to climate change, resulting in drought, poor rainfall and low crop and livestock production, all of which cause internal displacement.[4]

Other factors affecting the use of digital technologies include a lack of content in the Somali language and a lack of motivation to use digital technologies due to a lack of trust, such as fear of personal data and information being compromised, or confidence issues, such as fear of making mistakes or not knowing how to start.

The above factors suggest that digital inclusion in Somalia should not only focus on infrastructure access, affordability and use, but also take into account social and economic circumstances such as internal displacement and low literacy rates. Efforts to improve digital inclusion should also increase the availability of Somali language content and online services.

4 Benchmarking Somalia's Digital Technology Sector with Eastern African Countries

This section compares Somalia's progress in digital development with that of the East African Partner States (Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda) and neighbouring Djibouti. It begins with the development of broadband networks, the adoption of digital technologies for social and economic development and ends with the evolution of the countries' regulatory environment.

4.1 Connectivity

4.1.1 First Mile: International Connectivity

Somalia is very well connected to international submarine cables and is better placed in terms of first mile connectivity compared to landlocked countries in East Africa. Somalia is connected by four submarine and cross-border terrestrial cables, including (i) the EASSy and 2Africa cables, which are landed by Dalkom in Mogadishu, (ii) the Gulf to Africa (G2A) cable, which is landed in Bosaso (Puntland) and connects to the Golis network, (iii) a Somcable link between Somaliland and Djibouti, (iv) the Djibouti-Africa Regional Express (DARE) cable landing in Mogadishu and connecting to Mombasa in Kenya and Djibouti (Somtel and Hormuud have access to DARE), and (v) The PEACE cable which lands in Bosaso and Mogadishu. There are other cable initiatives such as the Africa-1 cable expected to land in Berbera.[19] Somalia also has cross-border connections to Djibouti and Kenya, which provide international connectivity.

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[19] https://nca.gov.so/submarine-fiber-optic-cable-landing-operators-in-somalia-to-submit-information/
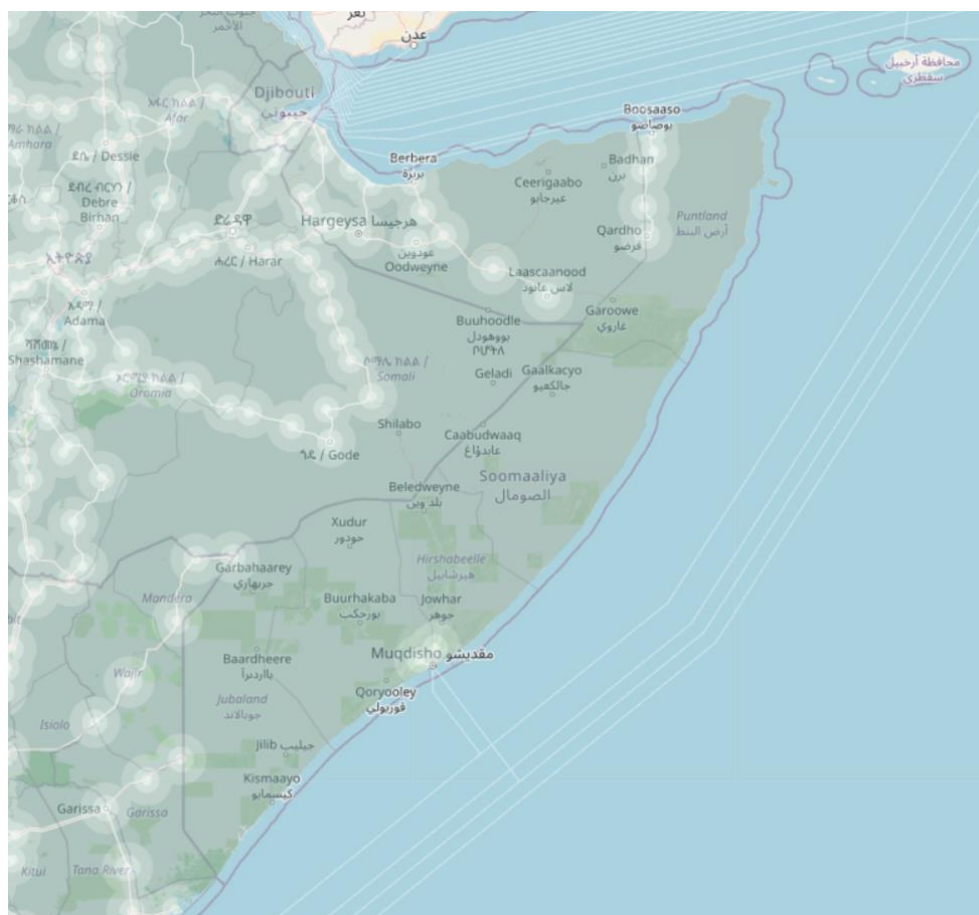
Figure 6: International fibre cables and internal fibre networks

Table 9: Comparative bandwidth usage

Country	International bandwidth per Internet user (kbps)	Average monthly mobile broadband Internet traffic per mobile broadband subscription (MB)
Somalia	**1**	**-**
Djibouti	264	5,249
Burundi	13	31
Kenya	1,212	2,380
Rwanda	16	1,341
South Sudan	1	516
Tanzania	6	3,535
Uganda	333	1,089
Africa	85	-
World	233	-

Source: ITU Digital Development Dashboard 2023

However, Somalia's use of international bandwidth lags most East African countries except South Sudan as shown in Table 9. The disparity between Kenya and Somalia in terms of international bandwidth used is an indication that there are significant opportunities for growth in Somalia. Bandwidth usage is driven by content providers

such as Google, Facebook and Amazon. Globally, the compound annual growth rate (CAGR) for international bandwidth between 2018 and 2022 was 44%, followed by Asia at 35%.[20]

4.1.2 Middle Mile: National Backbone

Somalia lags far behind East African countries in terms of domestic backhaul. The vast majority of Somalia is served by microwave links as highlighted in Figure 7. Hormuud, Golis, SomTel and Telesom have extensive microwave networks.

Source: World Bank, "Strategy and PPP Options for Supporting the ICT Sector and Broadband Connectivity in Somalia," Report prepared by Albany, January 2017
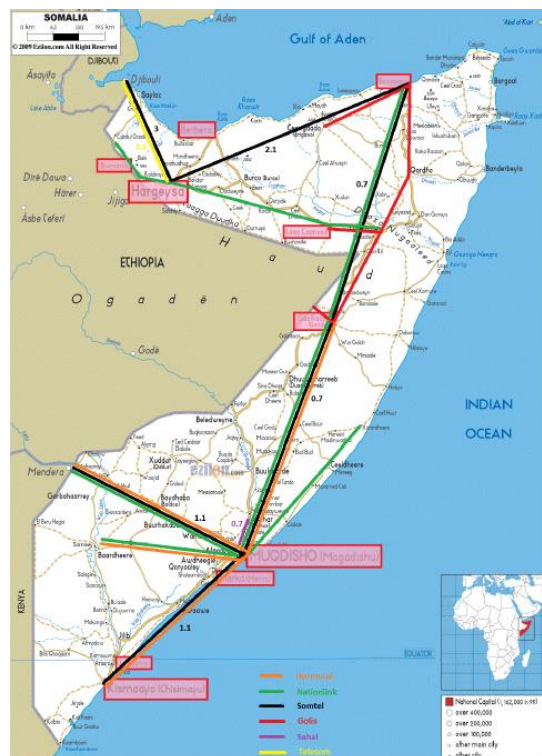

Figure 7: Microwave long distance links in Somalia (2017)

At the same time, more long-distance fibre is being built, such as the Somcable network in Somaliland and the terrestrial fibre connectivity being built by Golis in Puntland between Bosaso, Garowe and Galkayo.

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[20] Telegeography, https://blog.telegeography.com/internet-traffic-and-capacity-remain-brisk
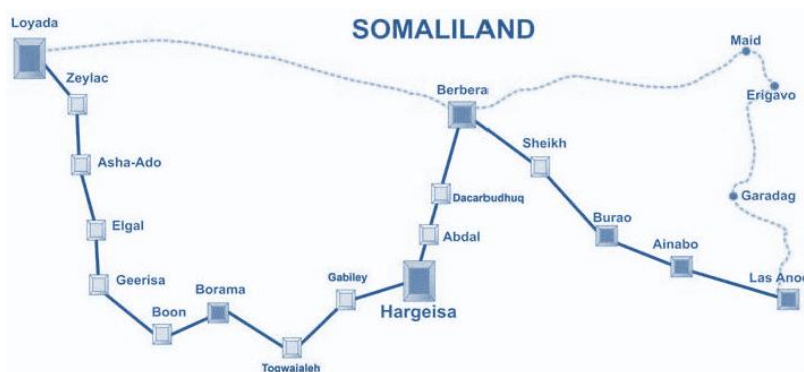
Figure 8: Somcable terrestrial fibre network in Somaliland

Fibre maps and data (see Table 10) show that Somalia lags far behind the rest of the East African Partner States and Djibouti, with the exception of South Sudan, which has limited fibre deployment throughout its territory.

Table 10: National fibre network lengths

Country	Population (millions)	Area (1,000 sqkm)	Operational fibre routes		Population within reach of a fibre node		
			Km	Per 1,000 sqkm	% within 10-km	% within 25-km	% within 50-km
Somalia	**17.6**	**627.3**	**1,874**	**3**	**10.3**	**20.7**	**31.4**
Djibouti	1.1	23.2	324	14	79.1	86.8	94.6
Burundi	13.2	25.7	5,500	214	38.4	94.6	100.0
Kenya	55.1	569.1	35,950	63	41.3	81.1	95.7
Rwanda	14.1	24.7	5,966	242	63.8	99.1	100.0
South Sudan	11.1	631.9	300	0.5	3.6	4.4	6.9
Tanzania	67.4	885.8	29,616	33	22.8	39.9	63.5
Uganda	48.6	200.5	21,062	105	32.2	72.0	94.2

4.1.3 Last Mile

Somalia's 4G population coverage was 30%, similar to Burundi and Uganda, but low compared to Djibouti, Kenya, Rwanda and Tanzania, which are on track for universal coverage.

Table 11: Coverage of mobile networks

Country	Population covered by 4G mobile network (%)	Population covered by 3G mobile network (%)
Somalia	**30**	**70**
Djibouti	90	90
Burundi	32	51
Kenya	94	95
Rwanda	98	99
South Sudan	15	15
Tanzania	85	13
Uganda	31	85

Source: ITU Digital Development Dashboard 2023

Somalia's access to digital technologies at household and individual level remains very low compared to leading East African partner states and Djibouti, as shown in Table 12.

Table 12: Household and individual access and use of the Internet

Country	Households with a computer at home (%)	Households with Internet access at home (%)	Individuals owning a mobile phone (%)	Individuals using Internet (%)	Active mobile broadband subscriptions (%)
Somalia	**3.3***	**12**	**85***	**28***	**3**
Djibouti	37	58	56	69	36
Burundi	1	0	18	6	8
Kenya	9	18	47	29	54
Rwanda	2	9	-	30	47
South Sudan	1	0	-	6	6
Tanzania	3	-	-	32	18
Uganda	2	6	64	10	52

*Source: ITU Digital Development Dashboard 2023 and *SIHBS 2023*

4.2 Internet Exchange

Internet Exchange Points (IXPs) and carrier-neutral data centres are other important components of the ICT ecosystem. Somalia Internet Exchange Point (SoIXP)[21] has three peering networks. Somalia does not currently have a carrier-neutral data centre, although MoCT is currently working to establish one.

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[21] SoIXP; http://soixp.so/

Table 13: Number of IXPs and data centres

Country	IXP (number)	Domestic Bandwidth Production (Gbps)	Carrier-neutral data centres (number)	Submarine Cable Landing (number)
Somalia	**1**	**0**	**0**	**4**
Djibouti	1	4	1	8
Burundi	1	-	0	0
Kenya	3	123	9	6
Rwanda	1	4	0	0
South Sudan	0	0	0	0
Tanzania	5	24	1	4
Uganda	1	33	1	0

Source: Packet clearing house (2023)[22] and Telegeography[23]

Google has deployed Global Caches in Hargeisa and Mogadishu, while Meta has deployed Facebook Network Appliances (FNAs) in Bosaso, Hargeisa and Mogadishu.[24]

4.3 Quality

Broadband download speeds provide a proxy for measuring the quality of Internet access that individuals use in different countries. Table 14 shows a comparison of broadband download speeds from cable.co.uk. The data show that broadband download speeds in Somalia are among the slowest on the continent. Somalia's download speeds are only better than those of Equatorial Guinea (53rd) and Guinea Bissau (54th), but slower than Djibouti and the members of the East African Community, with the exception of South Sudan.

Table 14: Comparison of broadband download speeds

Country	Mean download speed (Mbps)	Unique IPs tested	Total tests	Time to download a 5GB movie (HH:MM:SS)	Rank in Africa
Somalia	**1.60**	**2,558**	**32,563**	**07:06:40**	**52**
Djibouti	2.34	991	2,797	04:51:44	49
Burundi	3.44	328	1,221	03:18:27	43
Kenya	12.42	426,705	6,432,698	00:54:58	10
Rwanda	52.17	2,555	14,964	00:13:05	1
South Sudan	3.73	278	924	03:03:01	40
Tanzania	10.52	35697	304,217	01:04:54	14
Uganda	11.01	42,487	526,388	01:02:00	12

Source: https://www.cable.co.uk/broadband/speed/worldwide-speed-league/

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[22] Packet Clearing House, Internet exchange point directory reports. http://www.pch.net/ixpdir/summary
[23] Submarine cable map, https://www.submarinecablemap.com/
[24] World Bank Group. (2022). Missing Broadband Links in the Horn of Africa Region

4.4 Affordability

Somalia has the lowest price for internet access compared to most of the countries in Africa. The ITU price basket shown in Figure 9 compares prices for data-only broadband, low volume data and voice, high volume voice and data and, low volume voice usage.

Source: https://www.itu.int/en/ITU-D/Statistics/Pages/ICTprices/default.aspx

Figure 9: ITU price baskets used for benchmarking affordability

A comparison of affordability across the East African Community and Djibouti shows that although Somalia's communication prices remain lower in dollar terms, they are very high when income is taken into account. Somalia's ICT prices are high as a percentage of GNI. The ITU calculation shows that Somalia's overall mobile broadband data-only basket at 5.3%, is still high figure compared to the African average of 3.2% or the globally recommended target of 2%.

Table 15: Affordability of ICT services

Country	Mobile broadband Data-only basket (% of GNI per capita)	Mobile data and voice low usage basket (% of GNI per capita)	Mobile data and voice high usage basket (% of GNI per capita)	Mobile cellular low usage basket (% of GNI per capita)
Somalia	**5.3**	**2.7**	**5.3**	**4.0**
Djibouti	6.2	5.2	10.4	2.1
Burundi	12.8	24.4	53.1	23.6
Kenya	2.8	2.9	6.0	3.5
Rwanda	3.0	7.1	7.1	3.4
South Sudan				
Tanzania	4.6	3.2	6.9	1.1
Uganda	5.4	4.6	10.9	4.3
Africa	**3.2**	**6.3**	**9.3**	**3.3**

Source: ITU Digital Development Dashboard 2023 (data for 2022)

Data prices in Somalia also vary considerably depending on the provider, the technology used and the price. Data compiled by the NCA shows that prices from

Harmouud and Somlink in Mogadishu are cheaper than those from Telesom in Somaliland and Golis in Puntland.

Table 16 Retail fixed-line and fixed-wireless prices

Region/city	Provider	Category	Technology	Speed (Mbps)	Price (USD)
South-Central (Mogadishu)	Somlink	Personal	Fibre	4	30
		Business		6	50
		Enterprise		11	100
South-Central (Mogadishu)	Hormuud	ADSL Plus Service	ADSL	1	10*
				3	30**
				4	60***
				6	90****
		Enterprise	Full Duplex without extra speed	1-3	400/MB
				4-8	350/MB
				9+	300/MB
Somaliland (Hargeisa)	SO! (Powered by Somcable)	Home	Fibre	2	25
		Home		4	35
		Home		6	60
		Business		7	70
		Business		8	100
		Business		10	200
		Business		12	300
Puntland and Somaliland (Erigavo)	Golis	Basic	Fibre	3	25
		Starter		5	40
		Business		10	80
		Enterprise		10	160
Somaliland (Hargeysa)	Telesom	N/A	ADSL Wireless	0.256	20
				0.512	35
				0.750	55
				1	100
				2	200
				3	300
Somaliland	Somtel	P2P Home Basic Rural	Fixed Wireless Access	2	15
		P2P Home Basic City		2	25
		P2P Home Basic		3	35
		P2P Home Basic		6	50
		P2P Home Premium		8	75
		4G Router Home		4	25
		4G Router Home		8	50
		4G Router Home		10	75

Source: various

A comparative analysis of retail prices in East African countries shows that prices in Kenya, Rwanda, Tanzania and Uganda are generally lower than in Somalia for higher bandwidth data packages. In Somalia, underdeveloped infrastructure and other factors

tend to limit available bandwidth and pricing. Operators in Somalia tend to offer up to 10 Mbps, while those in Kenya, Rwanda, Tanzania and Uganda offer bandwidths well in excess of 100 Mbps.

Table 17: Retail fixed-line prices in East African countries

Country	Provider	Category	Technology	Speed (Mbps)	Price (USD)
Kenya	Faiba	Home Plans	Fibre	30	46
				50	92
				75	139
				125	185
		Business Plans	Fibre	15	88
				25	132
				40	220
				60	264
				75	352
				100	484
	Safaricom	Explore Home	Fibre	8	26
				20	36
				40	55
				100	110
		Explore Business	Fibre	3	36
				5	51
				10	138
Tanzania	Zuku	Home Packages	Fibre	10	30
				20	43
				40	55
				100	107
	GOfiber	Home Packages	Fibre	20	32
				40	54
				100	107
Uganda	Zuku	Home Internet	Fibre	10	42
				20	56
				40	89
				100	151
		Business Packages	Fibre	10	50
				20	84
				40	148
	Liquid Telecom	Home Packages	Fibre	20	53
				40	84
				100	147
		SME solutions	Fibre	5	63
				10	125
				15	188
Rwanda	MTN	Home Fibre	Fibre	15	19
				50	38
	Liquid Telecom	Basic Essentials	Fibre	20	27
		Family Entertainment		80	67
		Modern Family		120	109
		Power Pack		200	192

Source: various

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4.5 Content

A comparative analysis of the volume of content is difficult to make, but it is clear that Djibouti, Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda have made progress. In terms of local language content, the East African Community member states have made considerable progress in ensuring the availability of content in Swahili. Rwanda and Burundi have also made progress in ensuring the availability of content in local languages. Content covers a wide range of things - from social media to online services and applications to news and information.

A robust user-centred content ecosystem is essential to drive traffic. This means creating material that is relevant and adds value to people's lives, such as locally relevant entertainment, weather and traffic updates, or government services such as tax forms. Content that motivates, engages and extends usage, such as social media, is an important factor in digital inclusion in Somalia.

4.6 E-Government Delivery

The development of e-government services and applications in Somalia is at an early stage. MoCT has developed and passed the e-government Strategy and Policy and established a directorate to coordinate the strategy and roadmap implementation. The Federal Government of Somalia has initiated several e-government programmes, particularly those related to shared services such as the Integrated Financial Management System (IFMIS) and the Human Resources Management System (HRMIS). The government has not made progress in delivering e-government services to citizens, businesses and external users. Current systems operate as disconnected platforms and data exchange is not yet automated.

A comparative analysis of Somalia's poisition in e-government using the United Nations Department of Economic and Social Affairs' E-Government Development Index (EGDI) shows that Somalia lags behind Djibouti and other East African Community partner states, with the exception of South Sudan. The EGDI provides a normalised composite index for comparative analysis that includes a Telecommunications Infrastructure Index (TII), a Human Capital Index (HCI) and an Online Services Index (OSI). Somalia is one of eight countries with a low EGDI (below 0.25), six of which are in Africa (Central African Republic, Chad, Eritrea, Niger, Somalia and South Sudan).

Somalia scored zero for HCI and a low level of TII, as shown in Table 18, but still achieved a medium level of OSI, suggesting that its low level of infrastructure and human capital development have not been a barrier to investment in online service delivery.

Four African countries (South Africa, Mauritius, Seychelles and Tunisia, in that order) made it into the top 100 countries in terms of overall EGDI, with scores above the global average of 0.6102. Rwanda has seen a significant improvement in its ranking, moving up more than 10 places. While there are important differences between these African

countries, in general they have made rapid progress in e-government development by developing comprehensive long-term digital government strategies, supported by forward-looking digital government plans aligned with national policies and the Sustainable Development Goals (SDGs).

Table 18: Comparative performance in the e-government survey 2022

Country	Online Service Index	Telecom Infrastructure Index	Human Capital Index	Score	World Ranking (out of 193)
Somalia	**0.2944**	**0.1074**	**0**	**0.1340**	**192**
Djibouti	0.2208	0.2760	0.3529	0.2833	181
Burundi	0.3376	0.1400	0.4837	0.3204	171
Kenya	0.6821	0.4305	0.5641	0.5589	113
Rwanda	0.7935	0.3209	0.5322	0.5489	119
South Sudan	0.0518	0.0000	0.2038	0.0852	193
Tanzania	0.4700	0.2709	0.5100	0.4169	153
Uganda	0.5169	0.2472	0.5631	0.4424	144

Source: UN E-Government Survey 2022

4.7 Mobile Money Development

The GSMA Mobile Money Regulatory Index (2021)[25] measures the effectiveness of a participating country's mobile money regulatory framework by assigning a score between 0 and 100. The Index covers six dimensions (across 26 indicators), including:

  i.   Authorisation: eligibility, authorisation instruments, capital requirements, and international remittances;
 ii.   Consumer protection: safeguarding of funds, consumer protection rules, and deposit insurance;
iii.   Know-Your-Customer (KYC): permitted identifications, KYC requirements, and KYC proportionality;
 iv.   Transaction limits: entry-level transaction limits, entry-level monthly limits, entry-level balance limits, maximum transaction limits, maximum monthly limits, and maximum balance limits;
  v.   Agent networks: agent eligibility, agent authorisation, agent activities, and agent liability; and
 vi.   Infrastructure and investment environment: financial inclusion strategy, affordability, ID verification infrastructure, interoperability, settlement access, and interest payments.

The index analyses the quantitative impact of various indicators on regulation. A higher score indicates enabling regulation, while non-enabling regulation limits the performance of both the regulator and mobile money providers.

Somalia scored highest on the dimensions of transaction limits and agent network, and lowest on the dimensions of consumer protection and infrastructure and investment

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[25] GSMA Mobile Money Regulatory Index 2021, https://www.gsma.com/mobilemoneymetrics/#regulatory-index

environment, as shown in Table 19. In terms of consumer protection, Somalia still lacks provisions to protect consumer funds and deposit insurance. Under Infrastructure and Investment Environment, Somalia still lacks a financial inclusion strategy, which is important given the important role that mobile money plays in supporting people given the fragile situation in the country.

Table 19: Comparative performance in the mobile money regulatory index 2021

Country	Authorisation	Consumer Protection	KYC	Transaction limits	Agent Network	Infrastructure and Investment Environment	Index score
Somalia	**88**	**40**	**72**	**100**	**100**	**43**	**75.36**
Djibouti	-	-	-	-	-	-	-
Burundi	100	80	92	100	94	60	88.90
Kenya	100	100	32	100	100	62	84.10
Rwanda	100	100	92	100	100	83	96.36
South Sudan	100	80	92	100	94	45	86.65
Tanzania	100	80	92	100	100	60	89.80
Uganda	100	80	52	100	100	62	84.10

Source: https://www.gsma.com/mobilemoneymetrics/#regulatory-index

4.8 Regulatory Framework Evolution

ITU's Global ICT Regulatory Outlook 2023 tracks regulatory progress in 193 countries around the world, using a combination of data submitted by regulators and a survey. The Outlook combines indicators from the ICT Regulatory Tracker (which measures ICT regulatory maturity) and the G5 Benchmark (which measures digital transformation readiness)[26] to create a regulatory model summarised in Figure 10, which recognises that ICT sector regulators need to work with other sector regulators to fully realise the potential of ICTs for the digital transformation of the country.

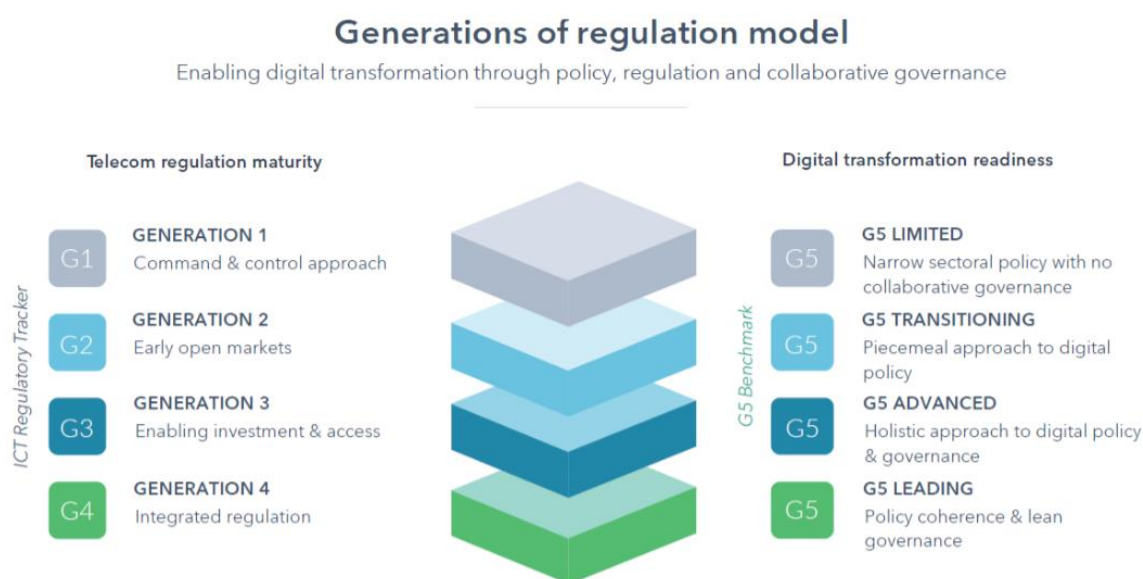[26] G5 Benchmark methodology https://app.gen5.digital/benchmark/about

Figure 10: ITU Regulatory Evolution Model

In the ICT Regulatory Tracker, Somalia scored best on regulatory mandates, followed by regulatory authority and competition framework, with regulatory regime coming last, as shown in Table 20. Some of the reasons for the poor performance on regulatory regime include the lack of a licence exemption regime, infrastructure sharing, unbundled access to the local loop, allowing secondary trading of spectrum, the use of VOIP and the availability and enforcement of number portability for consumers from both fixed and mobile operators.

Table 20: Benchmarking performance in the ICT Regulatory Tracker

Country	Regulatory Authority (20)	Regulatory Mandate (20)	Regulatory Regime (30)	Competition Framework (28)	Overall Score (100)	Regulation Maturity
Somalia	**15**	**19**	**10**	**14**	**58.00**	**G2**
Djibouti	0	2.5	2	0	4.50	G1
Burundi	12	16	12	20.67	60.70	G2
Kenya	18	22	23	27	90.00	G4
Rwanda	20	22	19	27	88.00	G4
South Sudan	15	17	10	12	54.00	G2
Tanzania	18	21	18	25	82.00	G3
Uganda	17	20	22	27	86.00	G4
Africa	15.1	17	19.8	20.4	72.30	

Source: ICT Regulatory Tracker, https://app.gen5.digital/tracker/metrics (data from 2022)

The G5 Benchmark includes 70 indicators that focus on policy and regulatory frameworks that enable digital transformation. A country's score determines the level of maturity of its national policy and regulatory frameworks, which may be limited (0-30), transitional (30-60), advanced (60-80) or leading (80-100). In the G5 benchmark, Somalia

scored highest on policy design principles, followed by national collaborative governance and the digital economy policy agenda, with the digital development toolbox coming last, as shown in Table 21.

Some of the reasons for the poor performance in the digital development toolbox are due to the lack of key instruments to promote digital development, such as an overarching digital strategy, a register/map of all ICT infrastructure, an e-health or smart health strategy, a digital identity framework, data protection rules, as well as others relevant to digital inclusion, such as a global youth employment strategy and initiatives to provide broadband services to the disabled. Somalia has also yet to sign or ratify some key international digital instruments, such as the Budapest Convention on Cybersecurity, and international agreements to determine jurisdiction and manage cross-border data flows on privacy. The lack of any cross-sectoral (ICT and other) infrastructure sharing or fibre co-deployment regulations/agreements/promotion initiatives in the country was also cited as an obstacle to cooperative regulation.[27]

Table 21: Benchmarking performance in G5 benchmark

Country	National collaborative governance	Digital Development Toolbox	Digital Economy Policy Agenda	Policy Design Principles	Overall Score (100)	G5 Level of Readiness
Somalia	**4.63**	**2.47**	**3.09**	**7.41**	**17.59**	**Limited**
Djibouti	10.19	3.24	6.48	2.78	22.69	Limited
Burundi	9.26	5.56	4.94	1.85	21.60	Limited
Kenya	10.19	22.22	13.58	14.81	60.80	Advanced
Rwanda	21.30	21.60	10.19	14.81	67.90	Advanced
South Sudan	4.63	2.78	2.16	7.41	16.98	Limited
Tanzania	16.67	10.19	4.94	13.89	45.68	Transitioning
Uganda	20.37	12.96	12.96	8.33	54.63	Transitioning

Source: ICT Regulatory Tracker, https://app.gen5.digital/tracker/metrics (data from 2021)

In Africa, Ghana, Nigeria, Rwanda, South Africa and Kenya are the only countries to achieve an advanced benchmark threshold score, while in terms of readiness for digital transformation, Rwanda is the highest ranked country in Africa (77%), followed by South Africa (75%) and Kenya (73%).

From the above, it is clear that Somalia has initiated private sector-led programmes that have contributed to digital inclusion. Somalia's first mile connectivity compares very well with Djibouti and the East African Community Partner States. However, middle-mile connectivity (the national backbone) is underdeveloped in Somalia. The review shows that mobile money development in Somalia compares very well with the rest of East Africa. Despite recent regulatory developments, Somalia's ranking on the ITU Regulatory

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[27] https://app.gen5.digital/benchmark/country-cards/Somalia

Tracker shows that it lags far behind the rest of its neighbours. This highlights the need for continued reform in the communications sector to facilitate digital inclusion.

5 Global Best Practice in Designing and Implementing Digital Inclusion Policies -Lesson for Somalia

5.1 Introduction

This section discusses countries' experiences in designing digital inclusion policies, strategies and plans, and in following up their implementation to facilitate, access, affordability and use of digital technologies. Approaches to digital inclusion vary considerably from one country, region or municipality to another, so there is no textbook example of a perfectly implemented digital inclusion policy. However, it is clear that all countries that have sought to improve access, affordability and quality of use of digital technologies for social and economic development have made concerted efforts by government and through public and private partnerships to connect disadvantaged groups, including women, displaced persons, the elderly, youth and the poor.

Most developing countries continue to focus on the availability, accessibility and use of information and communication technologies, while advanced countries have begun to focus on adoption. and protection of citizens. As a result, most countries in the South (Africa, Asia, Latin America and the Caribbean) have begun to focus on the full spectrum of inclusion - **availability, accessibility, affordability, adoption, awareness and protection**.

The assessment shows that digital inclusion is being implemented either as part of a universal access plan or as a specific project initiated by the government (e.g., measures such as free public Wi-Fi and financial support schemes for digital skills training). For example, Botswana planned to connect 203 villages to high-speed broadband internet in 2021 and 2022, and eventually provide Wi-Fi hotspots in public places across the country, using the Universal Access Fund.[28] Other countries pursued inclusion through national broadband plans or by requiring operators to roll out services in underserved areas.

5.2 Djibouti

Djibouti's approach to digital inclusion is informed by its ten-year plan (2014-2024), the Strategy of Accelerated Growth and Promotion of Employment (SCAPE). SCAPE will be implemented in two phases. The first phase focused on modernising infrastructure and reforming sectors – with an emphasis on four key sectors: transport and logistics, ICT, tourism and fisheries. The second phase will address social inclusion, connectivity, regional integration and private sector development.

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[28] https://www.ecofinagency.com/telecom/2303-43480-botswana-launches-a-us-12-7-mln-project-to-connect-500-villages-to-the-internet

The Government of Djibouti adopted a national ICT development strategy and a 10-year ICT roadmap in 2014 to increase access, affordability and use of digital technologies by citizens. Djibouti is a global hub for interconnectivity, with two cable landing stations connecting to nine submarine cables to Europe, East Africa, the Middle East, the Eastern Mediterranean and South Asia. The Djibouti Data Centre (DCC) serves as a major meeting point for submarine cable systems in the region and complements the Djibouti Internet Exchange (DjIX).

However, Djibouti has not benefited from this powerful infrastructure due to incomplete geographical coverage, poor quality of service and high tariffs for broadband services.[29] Aware of the challenges, the Government of Djibouti has begun to liberalise the communications sector by establishing a multisectoral regulatory authority (Autorité de Régulation Multisectorielle de Djibouti, ARMD), privatising the incumbent operator and upgrading the national backbone. The Government of Djibouti has also partnered with international development agencies such as the World Bank to catalyse new investment in the digital economy, with a focus on modernising the public sector and accelerating digital connectivity across the country.

Djibouti has also made significant progress in promoting the availability of e-services to citizens. The National Agency for State Information Systems has developed and implemented a secure data exchange between the government and its registries and databases, and is deploying e-services – with 95 e-government services available through its website by 2023, which is expected to improve ICT access and use by citizens and businesses.[30]

5.3 Kenya

Kenya's approach to digital inclusion is through accelerated competition, guided by strong government planning for digital transformation. Kenya's vision for digital transformation is set out in various documents, including long-term planning through a National Kenya Digital Master Plan 2022-2032,[31] the infrastructure roadmap outlined in a National Broadband Strategy[32] and Digital Economy Blueprint[33] and financial inclusion through the National Payments Strategy[34].

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[29] World Bank, Djibouti Digital Foundation Project, https://projects.worldbank.org/en/projects-operations/project-detail/P174461

[30] Oxford Business Group, How ICT Infrastructure Projects in Djibouti Build Capacity, https://oxfordbusinessgroup.com/reports/djibouti/2023-report/ict/widening-the-net-already-a-prominent-regional-data-centre-player-the-country-looks-to-infrastructure-projects-and-privatisation-to-build-capacity-overview/

[31] https://repository.kippra.or.ke/bitstream/handle/123456789/3580/Kenya - Digital Master Plan.pdf?sequence=1&isAllowed=y

[32] https://www.ict.go.ke/wp-content/uploads/2019/05/National-Broadband-Strategy-2023-FINAL.pdf

[33] https://www.ict.go.ke/wp-content/uploads/2019/05/Kenya-Digital-Economy-2019.pdf

[34] https://www.centralbank.go.ke/wp-content/uploads/2022/02/National-Payments-Strategy-2022-2025.pdf

The aim of the Digital Master Plan is to strengthen the digital economy of the country and to transform the country into a regional ICT hub. The Digital Master Plan identifies four key pillars: digital infrastructure, digital services and data management, digital skills, and promoting digital innovation for entrepreneurship. The Master Plan targets an increase in fibre optic coverage to 100,000 km and the digitisation of 80% of public services. Improving the legal, policy and regulatory framework, strengthening research and development, information security and cyber management, and emerging technologies are other key priority areas of the Master Plan.

The country's National Broadband Strategy 2018 -2023 aims to transform Kenya into a knowledge-based economy by providing quality broadband services to all citizens in the country. The Kenyan government has also been at the forefront of the development of a national backbone and global connectivity through submarine cables. It has invested in the National Optical Fibre Backbone Infrastructure (NOFBI) and led the way in connecting to Africa's East Submarine Cable System (EASSy) and TEAMS cables. Kenya now has six submarine cables landing to provide international connectivity, including SEACOM, TEAMS, EASSy, LION 2, DARE 1 and PEACE. The extensive digital infrastructure of 9,000 km of terrestrial fibre-optic cables covers 96% of the population.

Kenya has made great strides in infrastructure development. Around 95 per cent of the population is covered by at least 2G (second generation) networks, 88 per cent by 3G and 61 per cent by 4G (fourth generation) or higher, with plans to roll out 5G (fifth generation) networks in the near future. Kenya is leading the world in the adoption of digital payments.[35] Aggressive price reductions mean that affordability is also improving – on average, 1GB of mobile data costs 4% of GNI per capita, which is closer to the internationally recommended target of 2 percent of GNI per capita.[36]

The Kenyan government has also been working to reduce access to devices. It has worked with the private sector to introduce a sub-$40 smartphone to increase digital inclusion by ensuring that all Kenyans have access to government services and platforms. Significant progress has also been made in developing digital skills and transforming government services, providing e-services to citizens and businesses. Kenya's startup sector is one of the most robust on the continent.

The government launched the Digital Literacy Program (DLP) or Digi-School in 2016. Now in its second phase, the program introduces primary school children to the use of digital technology and communications in their learning. The DLP targets learners in all public primary schools in Kenya and is about to cover all 24,000 primary schools across the country. The Education Broadband Connectivity Project is another national approach to providing internet connectivity to the country's secondary schools. Over

[35] USAID, Digital Ecosystem Country Assessment, https://www.usaid.gov/sites/default/files/2022-05/DECA_Report_KENYA_EXTERNAL_2OCT2-2-_2.pdf

[36] World Bank, Kenya Digital Economy Acceleration Project, https://documents1.worldbank.org/curated/en/175841603290654038/pdf/Concept-Project-Information-Document-PID-Kenya-Digital-Economy-Acceleration-Project-P170941.pdf

880 public secondary schools have been connected to high speed internet through the Universal Service Fund of the Communication Authority of Kenya, facilitating computer studies offered as part of the secondary school curriculum and enhancing the integration of ICT in teaching and learning.[37]

The Kenyan government is also working with development partners to accelerate access, affordability and use of digital technologies. For example, the multi-million dollar World Bank-funded Kenya Digital Acceleration Project aims to increase broadband access through the expansion of the fibre backbone and last-mile connectivity to government and educational institutions, accelerate digital skills development, and improve access to regional and global markets through regulatory and policy harmonisation with regional initiatives.[38]

5.4 Malaysia

The development of Malaysia's ICT sector coincides with the country's national development plan (known as the Malaysia Plan (MP)). ICT development began in earnest during the 6th Malaysia Plan (MP6) (1990-1995), which emphasised ICT as an enabler, with a focus on the manufacturing sector. This was further strengthened by the establishment of the National Information Technology Council (NITC) in 1994[39] to ensure that ICT was well integrated into the economy. Malaysia opened its market to additional service providers and passed its telecommunications law, the Communications & Multimedia Act, as well as other laws on telemedicine, cybercrime and other issues. Its telecommunications regulator, the Malaysian Communications & Multimedia Commission (MCMC), was established in 1998. These initial steps enabled the Internet to become part of the daily lives of millions of people.

In the 2000s, the Malaysian government began to identify ICT as a key driver of the country's economy and a potential avenue for new wealth creation. The 9th Development Plan made great strides in expanding access to the Internet. The current MP, the 12th Malaysian Plan, focuses on promoting digitalisation and advanced technology to build a high-tech economy.

In this process, the Malaysian government has developed a number of policies and laws that have contributed to the development of the digital technology sector. The National Broadband Initiative of 2010, the Public Sector ICT Strategic Plan of 2016, and JENDELA 2020 are among the government's key plans to accelerate digital inclusion. The Broadband Initiative was an overarching, multi-year plan for the country's digital development. A public-private partnership, it combines the efforts of the

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[37] https://www.ca.go.ke/education-broadband-connectivity
[38] World Bank, Kenya Digital Economy Acceleration Project, https://www.worldbank.org/en/news/press-release/2023/04/05/kenya-afe-and-the-world-bank-group-provide-a-390-million-boost-the-digital-economy
[39] http://www.nitc.org.my/

telecommunications regulator and Telekom Malaysia, the country's network operator. The NBI had six initiatives supported by the Universal Service & Access Fund:

- Established Broadband Community Centres, providing broadband services to 615,000 users in 246 locations.
- Established Citizens Internet Centres or Mini Broadband Community Centres in 138 Information Department premises across the country, providing broadband to 400,000 users.
- Established e-kiosks in community centres and district offices in 1,100 districts across Malaysia.
- Expanded public mobile coverage by building 873 new towers across Malaysia.
- Distribution of 1 million netbooks to underprivileged students from poor families, a key strategic move to provide a channel for access.
- Telecom Malaysia launched a broadband package that includes a netbook at a discounted price.[40]

Malaysia's Public Sector ICT Strategic Plan (2016-2020) aims to:[41]

- Support the achievement of Vision 2020.
- Align the use of technology with the business direction of the public sector.
- Align ICT implementation with the public sector ICT agenda.
- Ensure a return on investment through the use of technology and a structured and well-planned ICT implementation, and
- Focus on productivity and innovation.

Jalinan Digital Negara (JENDELA), which is being implemented under the 12th Malaysia Plan (2021-2025), is a collaboration between telecommunications operators in Malaysia that aims to bridge the digital divide and raise the economic status of Malaysians, as well as drive the country's socio-economic progress.

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[40] A4AI, Planning for Affordable Access Nationwide, https://a4ai.org/research/good-practices/planning-for-affordable-access-nationwide/
[41] Malaysia Central Government Data Exchange, The Malaysian Public Sector ICT Strategic Plan, http://www.mampu.gov.my/images/agensikerajaan/perkhidmatan/The-Malaysian-Public-Sector-ICT-Strategic-Plan-2016_2020.pdf
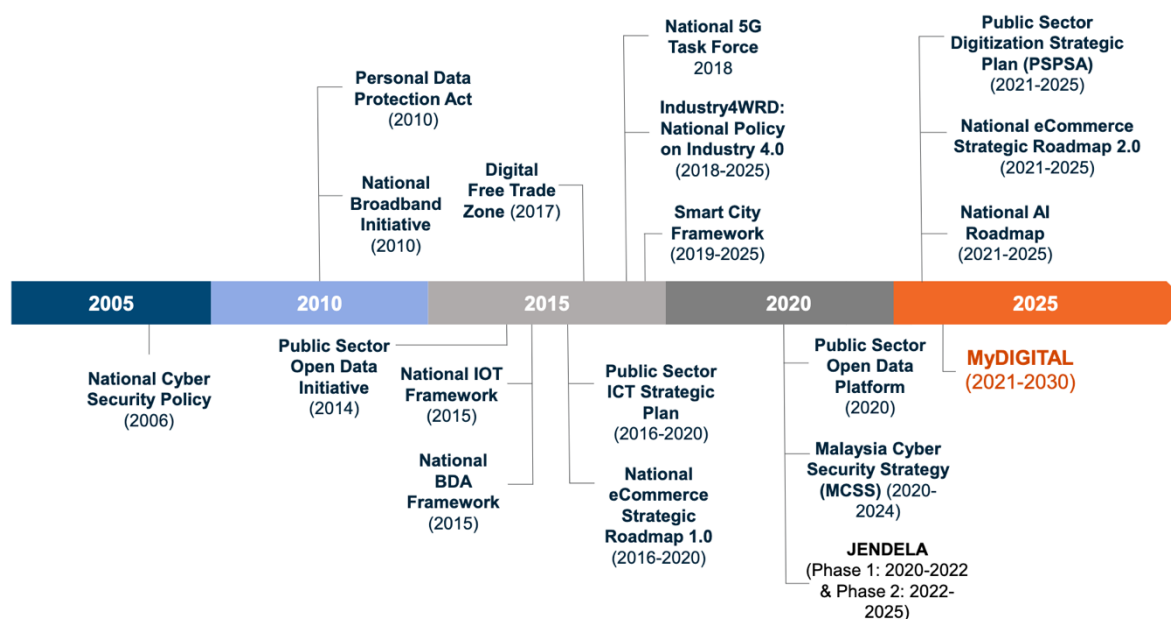
Figure 11: Evolution of Digital Technology Policies in Malaysia

In 2019, Malaysia established a National Digital Inclusion Council to create more income opportunities in the digital economy. Chaired by the Prime Minister, the council includes representatives from the ministries of economic affairs, finance, communications and multimedia, women, family and community development, rural development, housing and local government, agriculture and agro-based industries, tourism, arts and culture, transport, entrepreneurship development, youth and sports, human resources and federal territories. The Council was established to support the government's vision of shared prosperity and improved social and economic quality of life for Malaysians through technology.[42]

Malaysia's consistent planning and full integration of ICT into its development plan and its various legislative, policy and strategic frameworks, together with government leadership, have been instrumental in achieving near-universal broadband connectivity - with 95.8% 4G coverage in populated areas and 96% internet access at the household level. Malaysia is also one of the countries that has closed the gender gap in access to digital technologies, with 46% of women using the internet by 2022.[43]

5.5 Qatar

Qatar's approach to digital inclusion is very instructive, as it is one of the countries that has developed and implemented a digital inclusion strategy.[44] Qatar's digital inclusion

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[42] https://dig.watch/updates/malaysia-launches-digital-inclusion-council
[43] Khazanah Research Institute, #NetworkedNation: Digital Inclusion and Meaningful Connectivity, https://rmke12.ekonomi.gov.my/ksp/storage/event/342_42_dr_rachel_gong_digital_inclusion_and_meaningful_connectivity.pdf
[44] https://mcit.gov.qa/en/digital-society/digital-inclusion

efforts are part of a national vision to create a knowledge-based economy by 2030. The government recognises that access to digital technologies is crucial to achieving this goal, as it enables individuals to access information, learn new skills and connect with others. As a result, Qatar has invested heavily in building a robust digital infrastructure, with universal high-speed internet available throughout the country.

The Digital Inclusion Strategy aims to reach all unconnected sectors of the community through a carefully designed programme of awareness, access, training and support. Qatar's digital inclusion strategy is based on the following principles.[45]

- Delivery methods should be appropriate to each target group and work programme.
- Consider the literacy levels and needs of each target group.
- Address cultural issues.
- Contextualise awareness and training programmes.
- Provide appropriate and relevant content and support.
- Work in partnership with stakeholders and build capacity where necessary.
- Carry out ongoing analysis of needs and barriers, and evaluate and assess initiatives.

Qatar's Supreme Council for Information and Communication Technology (ictQATAR) has established a department to promote digital inclusion, with a focus on women, expatriate workers, people with disabilities, youth and those living in remote areas.[46] To address the inclusion of these groups:

- Qatar has made free Wi-Fi available in public places. This includes parks, shopping centres and other public areas, making it easy for everyone to access the internet, regardless of their financial situation.
- The government has also partnered with private companies to provide affordable internet packages for low-income families, ensuring that everyone has access to this essential service.
- Qatar has also taken steps to ensure that marginalised communities have access to the internet. For example, the government has provided free laptops and internet access to people with disabilities, enabling them to participate in online activities and connect with others.
- Qatar has implemented a programme to provide internet access to migrant workers, who often face barriers to accessing technology due to their living and working conditions.

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[45] Ministry of Information and Communication Technology, Bridging the Digital Divide, https://mot.gov.qa/sites/default/files/documents/Bridging%20the%20digital%20divide%20-%20our%20Digital%20Inclusion%20Strategy%20.pdf
[46] Khawar Iqbal & Damian Radcliffe, Bridging the Digital Divide in Qatar, https://www.iicom.org/wp-content/uploads/143093_Intermedia-41-2_IqbalRadcliffe-2.pdf

5.6 Rwanda

Rwanda's progress in digital inclusion is one of the African continent's success stories. The country's vision to become a knowledge-based economy and an upper middle-income country by 2035 is underpinned by its commitment to using ICT to accelerate growth and poverty reduction. The National Transformation Strategy (NST1-2017-24) identifies ICT as a cross-cutting enabler for development.

Rwanda's digital development efforts were accelerated in the 2000s with the formulation of National Information Communication Infrastructure (NICI) plans, culminating in the drafting of the Smart Rwanda Master Plan in 2015.

NICI I (2000-2005) laid the groundwork for the ICT sector, including the establishment of institutional, legal and regulatory frameworks and the opening of the telecommunications market by reducing entry barriers. The government also enacted laws to regulate the ICT sector. In addition, several institutions were set up to drive the implementation of the new ICT policy. These include an independent regulatory authority—the Rwanda Utilities Regulatory Authority (RURA) and a national ICT agency—the Rwanda Information Technology Authority (RITA).

NICI II (2006-2010), focused on accelerating the roll-out of infrastructure to connect people by increasing the coverage of telecommunications networks, licensing more operators and implementing the national fibre backbone. Backhaul connections to the submarine cable on the East African coast were also established. Several ICT flagship initiatives were also launched, such as the eRwanda project and the Regional Communications Infrastructure Programme (RCIP).

NICI III (2011 - 2015) focused on extending the benefits of increased connectivity to the people by transforming services to government, citizens and businesses. The plan targeted five key areas including: skills development, cyber security, community development, e-government and private sector development.

The Smart Rwanda Master Plan (SRMP) 2015-2020 focused on:

- Establishing a service-oriented, modern, accountable and real-time (SMART) government that drives Rwanda's global competitiveness and job creation.
- Becoming a highly competitive, agile, open and innovative SMART economy with the most conducive business climate that attracts large investments, rewards entrepreneurship and enables rapid growth and exports.
- Harnessing powerful ICT innovations such as digital solutions, Internet of Things, big data and analytics, creative industries and multimedia, mobility and digital lifestyle, robotics, block chain, artificial intelligence and e-commerce.

Implementation of the SRMP is led by the Ministry of Innovation and ICT (MINICT) and the implementing arm, the Rwanda Information Society Authority (RISA), in coordination with a network of Chief Digital Officers (CDOs) who have been appointed to lead

sectoral digital transformation efforts in close collaboration with other Ministries, Departments and Agencies (MDAs).[47]

The Government of Rwanda has made significant public investments in digital infrastructure and the delivery of digital public services. One of the government's key investments has been the rollout of a nationwide fibre backbone, completed in 2010, followed by the development of a nationwide 4G wholesale network through a unique public-private partnership. This has helped the country achieve some of the highest 3G and 4G network coverage rates on the continent, bringing mobile broadband within reach of virtually all Rwandans. Data from the Rwanda Utilities Regulatory Agency shows that 85% of Rwandans have access to mobile services and internet penetration is 64%.[48]

The expansion of e-government services and the creation of the government's online one-stop-shop e-services platform, Irembo, which currently provides access to nearly 100 citizen-facing e-services, has also been instrumental in expanding ICT access and use. Rwanda has also addressed inclusion challenges by promoting digital access (e.g., supporting smartphone affordability through the establishment of local mobile assembly and promoting low data costs). Developing digital literacy and skills is a top priority for the education sector.

The Government of Rwanda is also working with development partners, including the World Bank, bilateral and multilateral donors, foundations and the private sector, to accelerate access to broadband infrastructure, improve public service delivery and enhance digital literacy to facilitate ICT access and use.

5.7 Lessons

Country experiences of digital inclusion show that strong government commitment and investment are critical to bridging the digital divide. The cases of Kenya, Malaysia, Qatar and Rwanda show that digital inclusion requires government investment in infrastructure and digital public services. Malaysia's experience in integrating digital technology into its development plan has been crucial to its success in digital inclusion. The countries' experiences also show that:

- Digital inclusion should focus on the full spectrum of inclusion - **availability, accessibility, affordability, adoption, awareness of potential and protection**.
- The development and implementation of a set of policies and plans, such as a broadband strategy, is crucial to accelerate access to digital technologies,
- Improving digital public services stimulates the use of digital technologies,

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[47] World Bank, Rwanda Economic Update, January 2020, https://elibrary.worldbank.org/doi/pdf/10.1596/33247
[48] RURA, Statistics Report for Telecom, Media and Broadcasting, 2023, https://rura.rw/fileadmin/Documents/ICT/statistics/Statistics_Report_for_Telecom__Media_and_Broadcastin g_Sector_as_of_the_First_Quarter_of_the_Year_2023_.pdf

- Governments should initiate specific programmes to facilitate affordability, including the reduction of broadband tariffs and also programmes to reduce the cost of smartphones (e.g., local assembly as in the case of Rwanda), and
- The design and implementation of digital inclusion policies through a dedicated ministry, as in the case of Qatar, is important.

6 Conclusion and Recommendations for Digital Inclusion Policy

Digital technologies are fundamental to modern society - whether receiving remittances, applying for a driving licence or a job, doing homework or starting a business, citizens need digital skills, tools and connectivity to participate fully in modern society. Digital inclusion means ensuring that everyone in Somalia has access to and can use information and communication technologies, the Internet and other information, resources and services for social and economic development. This means that women, the rural poor, youth, people with disabilities and others who are excluded from digital technologies should be supported to access and use digital technologies.

There are several challenges that prevent Somalis from using digital technologies effectively. These include lack of infrastructure, low quality and speed, power outages and high internet costs compared to the incomes of much of the population. The digital divide also manifests itself in different dimensions, including geography (urban, rural), age (elderly, young), quality (speed and latency), disability (physical or mental), gender (men and women), relevance of content and other social factors such as internal displacement. Internally displaced persons, women, people with disabilities, the elderly, youth, and the uneducated are among those with limited access to digital technologies.

While Somalia has made progress in expanding infrastructure through a competitive market structure, the lack of government intervention in expanding access to underserved areas means that the digital divide remains high. Progress in other countries shows that strong commitment and clearly articulated goals and vision from a country's leadership are critical to successful digital inclusion. Better digital public services can also promote digital inclusion, so digital policies should focus not only on access and affordability, but also on adoption, literacy and skills, awareness of opportunities and protection.

This means that the digital inclusion policy will address the availability and affordability of internet services, access to devices and the internet, including bringing the cost of connectivity in line with Somalis' incomes. It will ensure that everyone has the skills and confidence to benefit from digital technologies. Digital inclusion will place a strong emphasis on literacy to ensure that everyone understands the opportunities, risks and benefits of digital technologies to improve their livelihoods. The availability of online government services will stimulate the use of digital technologies, so efforts will be made to ensure that the digital inclusion policy addresses the demand side of digital inclusion.

It is also important to enable everyone to use the Internet, including people with disabilities and those excluded due to cultural or linguistic barriers. This means that inclusion will pay attention to assistive digital technologies, ensuring that websites comply with the latest accessibility standards and that government institutions comply

with accessibility requirements appropriate for public procurement of ICT products and services.