Africa Digital Infrastructure Market Analysis 2021 Report
Established in 2010 under the banner of the FTTx Council Africa, the Digital Council is an independent, not for profit organisation that seeks dialogue with all stakeholders to discuss how to maximise the societal benefits of digital and data-driven technologies to increase equality and inclusivity, wellbeing and digital adoption.

In turn, we support government with issues such as policy and regulation, best practice and minimum standards through an independent voice. Member engagement is encouraged through participation in events and working groups. We offer members an opportunity to network and collaborate and discuss best practice frameworks that are in the best interest of all, solving complex issues through dialogue and policy adoption. Furthermore, we encourage dialogue between government and the private sector from a platform that is independent and product agnostic. In addition, our mission is to see broad-based investment in digital skills by all stakeholders, thereby enhancing the lives of all people living on the continent of Africa.

The Digital Council Africa believes that the development and deployment of digital access will enhance the quality of life for citizens in South Africa and Africa as a whole, providing African countries with a digital footprint that will increase their effectiveness and competitiveness within the global marketplace. The council’s charter is to educate Africa governments, policy makers and political leaders on technology and data issues facing the continent. Further, we seek to develop methods as to how digital connectivity and services can be delivered to citizens within the coming years. Through consultation with all major stakeholders and understanding their strategies and concerns, we endeavour to be the voice of the industry and to help create a better future for all involved.

For information on membership visit www.digitalcouncil.africa
AFRICA vs THE WORLD
GLOBAL DIGITAL INFRASTRUCTURE SNAPSHOT

Mobile Connectivity (March 2021)
- 68% UNIQUE SUBSCRIBER PENETRATION
- 55% UNIQUE MOBILE INTERNET SUBSCRIBER PENETRATION

Data Centres
- 4854 Co-location Data centres in 129 countries

Towers Infrastructure
- 4.94 million towers

INTERNATIONAL CONNECTIVITY
- Content provider builds are shifting towards Middle East & Africa.
- International bandwidth 4-year CAGR growth (2012-2021)
- Europe: 27%, Asia: 37%, U.S & Canada: 23%, Latin America: 26%, Middle East: 33%, Africa: 45%, Oceania: 38%

INTERNATIONAL BUSINESS ETHICS
- Total time spent using the internet: 6 hours & 54 minutes

IOT & devices
- 218 Billion apps (downloaded in 2020)
- Internet users: 5 Billion
- Active social media users: 4.5 Billion (53.6% penetration rate)
- Total time spent using the internet: 6 hours & 54 minutes

Fixed Connectivity
- Last Mile Household Penetration
- FIXED BROADBAND: 58.6%
- FTTH/B: 35%
- DSL: 10%
- Other: 0.6%

Source(s): Digitalthings analysis
**SUB-SAHARAN AFRICA DIGITAL INFRASTRUCTURE SNAPSHOT**

### Mobile Connectivity (March 2021)
- **49%**
  - **Unique Subscriber Penetration**
- **30%**
  - **Unique Mobile Internet Subscriber Penetration**

### Data Centres
- **79** Co-location Data centres in 14 countries

### Towers Infrastructure
- **169 thousand towers**

### IOT & devices
- **24 million** IoT connections
- **52%** Smart Phone penetration
- **25 Billion apps** downloaded in 2020

### OTT
- **470 Million** Internet users

### TERRESTRIAL AND INTERNATIONAL CONNECTIVITY

#### Fibre Reach (SSA):
- **58.2%** of population within 25km of fibre node (55.6% in 2020)

#### Fibre Optic Network Route KM (Africa)
- **1.17 million KM** operational
- **98 thousand KM** under construction
- **120 thousand KM** planned construction

#### International Bandwidth (SSA)
- **26.7 Tbps**
- Intra-Africa traffic
  - **16%**

### Fixed Connectivity

#### Last Mile Household Penetration
- **Social network penetration rate**
  - **Southern Africa 41%**
  - **Western Africa 16%**
  - **Eastern Africa 10%**
  - **Middle Africa 8%**
- **2021**

#### Last Mile Household Penetration
- **Internet users**
  - **470 Million**

#### Fixed Broadband
- **FTP/H/B**
  - **2.2%**
- **DSL**
  - **0.6%**
- **Other**
  - **0.1%**
  - **0.1%**

### Other

Source(s): Digitalthings analysis
AFRICA’s DIGITAL EVOLUTION
CURRENT STATE OF INTERNATIONAL CONNECTIVITY - SSA

Africa is the fastest growing region for the international bandwidth, however it only accounts for c.2% of the global internet bandwidth.

International Connectivity

The global internet bandwidth stands at 786 Tbps in 2021, representing a four-year CAGR of 29%. The pace of growth had been slowing in recent years (except the last year during which the traffic spiked due to COVID-19); nevertheless, it equates to a near tripling of bandwidth since 2017.

Stay-at-home activity associated with COVID-19 in the last year resulted in a spike in traffic from 2019-2020. As one may expect, the return to more normal usage patterns resulted in a substantial slowdown in the annual growth rate. Average traffic growth dropped from 48% between 2019-2020 to 23% between 2020-2021, while peak traffic growth dropped from 46% to 26% over the same period.

Africa experienced the most rapid growth of international internet bandwidth to c.27 Tbps in 2021, growing at a compound annual rate of 45% between 2017 and 2021. Intra-Africa traffic accounted for 16% of the total international traffic on the continent. Rapid growth on international bandwidth in Africa has also driven the rapid erosion of pricing in return. TeleGeography reports a weighted median 10GigE IP transit price in Johannesburg declined from a near $15/Mbps/month in 2017 to $2.5/Mbps/month in 2021.

Source(s): TeleGeography, Digitalthings research
CURRENT STATE OF INTERNATIONAL CONNECTIVITY - SSA

Google’s Equiano and Facebook’s 2Africa will not only significantly increase the global network; but also the commercial pressure on other African cable system operators at a time when operators need to invest in infrastructure.

The global fibre optic submarine telecommunications cable system market size was valued at 23.4 billion in 2020 and is forecasted to reach USD 37.8 billion by 2027, the expected growth is at a compound annual growth rate of 7.1% from 2020 to 2027.

Submarine cables, the backbone of digital infrastructure, carries around 90% of data traffic across the world. The rising demand for data is one of the key factors driving investments by OTTs to increase the supply of internet through the submarine cables market. Key players of the submarine cables market are Google, Facebook, Amazon, and Microsoft. Google owns 10,433 miles of submarine cables internationally, and 63,605 miles in consortium with Facebook, Amazon, and Microsoft. Facebook owns 57,709 miles, Amazon owns 18,987 miles, and Microsoft owns 4,104 miles of submarine cables.

Google is increasing its footprint in the submarine cable space to guarantee quality access to its current and future services. Equiano is Google’s third private cable, and it will be owned and operated solely by Google with its consortium of investors. The cable will incorporate optical switching at the fibre-pair level, rather than the traditional approach of wavelength-level switching. Using optical switch simplifies the allocation of cable capacity, giving Google the flexibility to add and reallocate it in different locations as needed. The first phase of the project, connecting South Africa with Portugal, with a stop in Nigeria is forecast to be finished at the end of the year 2021.

First launched in May 2020, Facebook’s 2Africa subsea cable will now connect thirty-three countries in Africa, Europe, Middle East and Asia as per the recent announcement. The expansion plan will add the new ‘Pearls’ section of the 2Africa project, to link India, Pakistan, Iraq and Saudi Arabia into the project, improving connection into more regions. This extension will bring the total length of the 2Africa cable system to more than 45,000 kilometers, making it the longest subsea cable system ever deployed. The 2Africa cable alone, with a massive potential capacity of over 180 Tbps over 16 fibre pairs, will double the total internet capacity on the continent once completed by 2024. The members of the consortium include China Mobile, Facebook, MTN, Orange, STC, Telecom Egypt, Vodafone and WIOCC.
CURRENT STATE OF FIXED ACCESS CONNECTIVITY - SSA

Fibre and LTE fixed wireless broadband subscriptions continuous to replace legacy fixed broadband technologies, however household penetration still remains low and well below 5% in SSA.

The list of leading countries in terms of the number of fibre-broadband connections has not changed significantly. South Africa has seen the most significant growth within the past year with fibre-based broadband subscriptions exceeding 1 million in 2021 and representing almost half the fibre-based broadband subscriptions in SSA. It is followed by Kenya progressing towards the half a million mark and Mauritius with over 300 thousand subscribers with limited growth potential as most households already served with a fibre-broadband. Progress on all other markets has been relatively limited.

Overall fixed broadband household penetration rate remained flat within the past year at 2.2% of the total households in Sub-Saharan Africa. Fibre-broadband service uptake rates have continuously increased due to the shift towards remote and an online lifestyle underpinned by the COVID-19 pandemic. While 4/5G based fixed wireless subscriptions have not been included in the above graph, the number of operators providing such services and products offered in this category has also grown. DSL, traditional (unlicensed) fixed wireless and satellite subscriptions continued to be replaced by fibre and 4/5G fixed wireless products.
**CURRENT STATE OF FIXED ACCESS CONNECTIVITY - SSA**

Fixed Wireless Access has proven itself as a serious contender within the fixed broadband technologies and service adoption is beyond the tipping point.

### Fixed Wireless Access (FWA)
- FWA is an increasingly cost-efficient alternative compared to fixed services such as DSL, cable and fibre. Increasing capacity, allowed by greater spectrum allocations and technological advancements, is driving higher network efficiency in terms of the cost per delivered gigabyte.
- As per Ericsson, over 70 percent of all service providers are now offering fixed wireless access (FWA) services, globally. Connections are forecast to exceed 180 million by the end of 2026, accounting for more than 20 percent of total mobile network data traffic globally.
- FWA is, in many cases, the quickest alternative to meet growing broadband service demand, particularly in the areas outside fibre coverage. In April 2021, Ericsson, for the fifth time, updated its study of retail packages offered by service providers worldwide. Service providers’ adoption of FWA offerings has increased by 12 percentage points during the last six months, and more than doubled since the first measurements in December 2018. Almost 90 percent of service providers that have launched 5G also have an FWA offering (4G and/or 5G).
- The highest growth during the first half of 2021, has been in regions with the lowest fixed broadband penetration – that is, the Middle East and Africa, Central and Eastern Europe, Asia-Pacific and Central and Latin America. These regions grew between 4–13 percentage points. Central and Eastern Europe have had a growth of almost 25 percentage points since the start of the pandemic in February 2020. Globally, they now have the second-highest adoption at 84 percent, while Western Europe has the highest FWA adoption at 93 percent.
- The limited reporting of FWA connections, combined with varying FWA definitions, results in differences in the reported number of connections globally. However, Ericsson estimated that there were more than 60 million FWA connections by the end of 2020. This number is forecast to grow more than threefold through 2026, reaching over 180 million. Out of these, 5G FWA connections are expected to grow to more than 70 million by 2026, representing around 40 percent of total FWA connections.

**Percentage of Service Providers Offering FWA in MEA**

<table>
<thead>
<tr>
<th>Date</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec '18</td>
<td>33%</td>
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<tr>
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<td>Oct '20</td>
<td>58%</td>
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<td>Apr '21</td>
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**FWA Connections**

<table>
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<th>Year</th>
<th>4G and other technology FWA connection</th>
<th>5G FWA Connection</th>
</tr>
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<tr>
<td>2019</td>
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<tr>
<td>2025</td>
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<td>50</td>
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<tr>
<td>2026</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>
CURRENT STATE OF FIXED ACCESS CONNECTIVITY - SSA

FTTH/B remains a niche fixed broadband technology in SSA, nevertheless rollouts are shifting towards secondary cities and major towns in leading markets as urban coverage matures.

FTTH/B
In most markets in SSA, fibre-based broadband service offerings remains a niche service focused on main cities and urban areas. The overall household penetration of fibre based broadband services remains below 2% in most SSA countries with the exception of the leading markets such as Mauritius, South Africa and Kenya.

South Africa is the only country in Sub-Saharan Africa that exceeded 1 million fibre broadband subscribers as of 2021, while Mauritius has achieved almost ubiquitous fibre coverage with over 87% of the households enjoying the fibre-based broadband service.

As the fibre penetration evolved, the cost of last-mile fibre deployments has also dropped significantly thanks to mature technology and cheaper deployments methods adopted such as aerial and wall pinning. Indeed Aerial fibre deployments are being adopted as the preferred method of rollout in certain countries not only for last-mile but also for national backbone projects. Drop of fibre deployment costs now allows operators to pursue expansion of fibre networks to secondary cities, townships and underserved areas in the leading markets.

There has been a growing focus by the governments and regulators to encourage further infrastructure sharing and remove artificial barriers in front of the fibre network deployments. There were several initiatives ranging from infrastructure sharing regulations, unified wayleave schemes and rapid deployment policies. Despite well-intended efforts, enforcement of such policies and regulations is still not at full force hence achieved limited impact to date.
CURRENT STATE OF MOBILE CONNECTIVITY - SSA

Nearly half the population remains unconnected in SSA and mobile internet penetration stood at 30% way below the global average of 55%.

Mobile Subscriptions

- Mobile technology remains the leading method of connectivity for most of the population and the most widely adopted on the continent. There were approximately 930 million mobile service subscriptions with 83% penetration rate against the population in Sub-Saharan Africa in 2021.
- However, it should be noted that unique subscriptions were still slightly below 50% and mobile internet subscriptions stood at 340 million which means only 30% of the Sub-Saharan African population was able to make use of internet services in 2021. That means SSA was way behind the global average of 55% mobile internet penetration.
- Globally unique mobile subscriptions have reached to 67% penetration rate at the end of 2020 and adding new subscribers is increasingly difficult, as markets are becoming saturated and the economics of reaching rural populations are incrementally challenging. Nevertheless, Sub-Saharan Africa is expected to add 120 million new subscribers by 2025, only second to the Asia Pacific region.

Source(s): GSMA, Digitalthings research
CURRENT STATE OF MOBILE CONNECTIVITY - SSA

While 2G and 3G networks are getting switched off globally, they represent a significant majority of the connections in SSA with 85% share and likely to remain important in the next 5 years.

Globally legacy 2G and 3G networks continue to be turned off by the operators. At the end of 2020, there were a total of 43 networks switched off (33 2G and 10 3G networks). Total of 107 legacy networks are expected to be turned off by 2025 mostly in the Asia-Pacific region. Africa is still behind other regions when it comes to refarming the spectrum to accommodate LTE and there have been no concrete dates for 2G and 3G shutdowns. Some operators reportedly investigate their options to turn off old 2G and 3G networks to focus on 4G and 5G technologies; however, this will not be done without consideration for the millions of consumers, M2M (machine to machine) and IoT (Internet of Things) customers who rely on the 2G network due to the technology limitations of their current devices. Due to the challenges to drive adoption of newer technologies varying from service reach to device affordability, Africa is unlikely to see major network shutdowns over the next few years.

2G subscriptions are in decline, while 4G uptake has been struggling to overcome affordability challenges despite service coverage continued to expand across the continent. 4G adoption is expected to grow towards 28% by 2025 from the current level of 15% in 2021.

5G deployments have been primarily driven by the fixed wireless use case to date and penetration has been very limited. Only 3% of the subscriptions are expected to be 5G by 2025.

3G continued growing its market share to reach 56% and was the leading mobile technology in SSA in 2021. GSMA) estimates that 3G technology will continue to account for 58% of mobile networks in SSA by 2025.

**Source(s):** GSMA, Digitalthings research
CURRENT STATE OF MOBILE CONNECTIVITY - SSA

Despite its continued adoption growth, smartphone penetration remains limited to the half of connections on the continent which in turn limits the utilisation of modern networks.

Smart phone penetration has continued its growth and reached 52% in 2021. It is expected to continue growing towards 64% by 2025.

The Covid-19 pandemic has led to supply-chain disruptions and a sharp drop in consumer demand due to economic uncertainty. Some of the key effects include longer replacement cycles extending from the global average of 2.25 years to 3 years or more, the shift towards lower-cost handsets due to the weak outlook for the global economy and migration to digital channels due to pandemic-related social restrictions. All these factors have had a detrimental impact on upgrade volumes and handset revenues.

In Africa, the overall mobile phone market declined 10.0% year on year (YoY), smartphone shipments were down 5.5% at the end of 2020, while feature phone shipments were down 8.0%.

IDC reported that 4G devices accounted for 83.9% of the smartphones shipped in the African market during Q4 2020; 3G devices garnered a 15.4% share, with 5G devices accounting for the remaining 0.7%.

As per IDC, transition brands (Tecno, Itel, and Infinix) led the African smartphone market in Q4 2020 with a combined unit share of 48.2%. Samsung and Oppo placed second and third with respective unit shares of 16.1% and 6.4%. The average selling price (ASP) of smartphones grew 5.6% QoQ due to the launch of new models by various vendors in the midrange and high-end price bands. Shipments of devices from the lowest price band ($0-$80) declined 14.5% QoQ in Q4 2020, while the $200-$300 band saw the highest growth, with shipments of these devices increasing 43.7%.

IDC expects that smartphone shipments into Africa to grow 2.9% YoY in 2021 particularly during the second half of the year as vendors face component shortages during the first half of the year.
CURRENT STATE OF DATA CENTRE INFRASTRUCTURE - SSA

Despite considerable growth in data centre capacity within the past 5 years, data centre infrastructure in Africa lags behind the leading markets.

Africa currently has an estimated 140,000 square meters of data centre white spaces. In population terms, that is the same amount of data centre space serving Switzerland’s 8.5 million people that serve Africa’s 1.26 billion people. This current capacity accounts for around 200MW. Live IT power in markets such as Dublin and London stands at 795.8MW and 728.25MW, but in Africa, this figure is significantly lower with leading markets such as Johannesburg and Nairobi recording a total live IT power of 54.9MW and 19.04MW respectively, according to DC Byte.

Despite the historic deficit, Africa has seen considerable growth in data centre infrastructure over the past five years. The addition of more than thirty multi-tenant Tier III facilities doubled the continent’s hosting capacity, measured in power load (MW) terms. Nevertheless, it is notable that the data centre capacity is not evenly distributed on the continent and South Africa alone accounted for more than two-thirds of the continent’s capacity. West Africa currently delivers less than 10 per cent of the total African data centre capacity and the majority of data content consumed in Africa is hosted outside the continent and the market is severely underserved. As per the Africa Data Centre Association, of Africa’s eighty-odd metropolitan areas with a population of more than 1m, only a third have at least one built-for purpose data centre facility at Tier III standard.

Hand in hand with other digital infrastructure, data centres play a critical role in ensuring that Africa is not left behind in the race towards establishing global digital economies, as it is fundamental to reducing latency, optimizing intra-African traffic flows and slashing operating costs in the broader African economic supply chain.
CURRENT STATE OF DATA CENTRE INFRASTRUCTURE - SSA

Having doubled in the four years to 2020, the continent’s data centre supply is expected to grow by another 25% in the next two years.

Some of the recent investment activities and announced plans are very encouraging for the continent.

In 2019, Boston-based private equity firm Berkshire Partners acquired a stake in Teraco Data Environments, which owns Africa’s largest data centre and powers much of the cloud computing in South Africa, with the aim of doubling capacity from 30MW to 60MW in the next few years. Teraco has recently built a new hyperscale data centre in Ekurhuleni.

In March 2020, investment firm Actis announced the launch of a $250 million pan-African data centre platform, that will comprise independent data centres across key African markets. The first of these investments were in Nigeria’s Rack Centre.

In 2021, African Infrastructure Investment Managers (AIIM), an infrastructure-focused private equity firm, acquired a majority stake in Ngoya Etix DC, a carrier-neutral data centre located in the Greater Accra region of Ghana.

Liquid Intelligent Technologies’ Africa Data Centres, which has earmarked US$1 billion for expansion across South Africa, Kenya, Nigeria, Ghana and further into Egypt and Morocco, also recorded an influx in investor interest including US$300 million from the US government’s International Development Finance Corporation.

Raxio, a pan-African data centre operator, has partnered with French infrastructure investment firm Meridiam, to deploy a network of data centres. Meridiam will inject $48 million into the venture. Raxio has so far invested in data centre facilities in the Democratic Republic of Congo, Uganda and Ethiopia.

NTTs first data centre in Africa is currently being built at the Central Point Innovation District in Johannesburg.
As per the recent report published by the Internet Society in July 2021, the number of African IXPs has increased by 58 percent over the past eight years. There are currently 47 active IXPs located in 43 cities in 35 countries in Africa. Therefore, more than half of the countries in Africa have an IXP; six countries have more than one.

The most developed Internet ecosystem is in South Africa, which has reached the goal of 80 percent of localized traffic, followed by Kenya and Nigeria with 70 percent each. All three have more than 50 networks connected to local IXPs and a broad diversity of local, regional, and international networks.

Internet traffic is often exchanged through international hubs with higher costs. The report shows average port charge at an IXP is significantly lower than the international IP transit cost – resulting in significant savings per network from exchanging traffic at the IXP rather than accessing it using international IP transit. In fact, when networks exchange traffic with each other at IXPs they mostly do so at no cost.

The presence of content delivery networks has also increased significantly and the amount of locally available content and demand for content hosting has increased. The report shows at least 33 countries in Africa have at least one international content delivery network.
CURRENT STATE OF DIGITAL SKILLS - SSA

There is a strong demand for digital skills in Sub-Saharan Africa, if the workforce is not digitally skilful the African economy will wither.

Digital Skills Revolution
We are almost at the quindicentennial of the 21st century, where the Knowledge Age empowered by digital skills is more pertinent than it was at the beginning of this century. Repetitive skills of the Industrial Revolution have been replaced by automation, decreasing the demand for employees without matric. Problem-solving, critical and analytical thinking, whilst using technology that heightens human knowledge, is needed.

Research commissioned by Harambee estimates that 59% of jobs across sub-Saharan Africa will be impacted by automation with more than 31% requiring reskilling for other functions.

There is a significant mismatch between demand and supply in the digital and ICT skills ecosystem in Africa, particularly for intermediate skills.

Demand-Supply Gap in Digital Skills by Skills Level in SSA (Demand / Supply)

<table>
<thead>
<tr>
<th>Skills Level</th>
<th>Sub-Saharan Africa</th>
<th>Global Markets</th>
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<tr>
<td>Advanced skills</td>
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<tr>
<td>Intermediate skills</td>
<td>1.1</td>
<td>1.5</td>
</tr>
<tr>
<td>Basic skills</td>
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<td>0.9</td>
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Youth employment-to-population-ratio

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<th>Region</th>
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<th>2021</th>
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<tr>
<td>Total World</td>
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<td>22.5%</td>
</tr>
<tr>
<td>Total Africa</td>
<td>20.4%</td>
<td>20.8%</td>
</tr>
<tr>
<td>Male (Africa)</td>
<td>14.6%</td>
<td>15.8%</td>
</tr>
<tr>
<td>Female (Africa)</td>
<td>26.3%</td>
<td>25.9%</td>
</tr>
</tbody>
</table>

Youth NEET rate = Total number of youth employed / Total number of youth of working age

According to the International Labour Organisation 2020 report, the total youth population in Africa not in employment, education or training (NEET) rate is 20.8%. While the NEET rate for young men in Africa has been increasing since 2012, that of young women in Africa has gradually declined with a gender disparity of almost 10 percent in 2021. There is a low ability of the economy to create employment. The proportion of the working-age youth population employed is exceptionally low and the quality of employment is mostly in the informal economy due to the high poverty rates in Africa.

Home internet access among the poorest 20 percent of households in Africa is almost non-existent, largely due to a lack of infrastructure in rural areas. While children and young people from wealthier, urban households in several sub-Saharan countries enjoy high rates of internet access, most of their peers from poor, rural households do not. This digital divide substantially undermines the ability of young people from poor households in rural areas to gain the competencies necessary to build a better future for themselves. Education systems that were designed for the traditional era need to be updated.

Source(s): International Labour Organisation, Harambee, Digitalthings analysis
Africa needs to re-ignite job-creation through closing the digital skill gaps on the continent.

Africa has unprecedented levels of unemployment. Organisations in Africa currently face challenges of developing and maintaining multi-talented, multi-skilled workforces that meet the criteria of digital workplace demands. Qualified digital talent that contribute significantly to the economic growth and development of Africa’s digital economy, are leaving the continent in search of opportunities in countries with better work-life environments and living standards. The 2019 JCSE-IITPSA ICT Skills Survey states that South Africa continues to lose highly skilled ICT professionals to other countries. The percentage of employers recruiting overseas in 2019 rose to 37%. By digitally skilling and closing the digital skills gap, talented workers can be retained, and work will be re-shored back to Africa, which will contribute to economic growth and well-needed job creation.

Despite the high official unemployment rate of 32.6 percent in South Africa, there is a high demand for digital work which South African organisations are outsourcing to foreign markets because they cannot find skilled local expertise. Significant job opportunities for unemployed youth in Africa are being lost to markets such as China, India and Eastern Europe. According to recent research by Harambee, in total, over 28,800 digital and ICT jobs in South Africa have been outsourced to other countries which translates to estimated lost export revenue in the region of about R8.5 billion per annum. Reasons organisations site for outsourcing is evenly balanced across cost, market confidence, skills/talent and specialisation.
COVID-19 PANDEMIC PLACING A SPOT LIGHT ON THE DIGITAL DIVIDE

Intervention from government is essential to encourage the development of digital infrastructure and to narrow the digital divide in Sub-Saharan Africa by connecting the unconnected.

The impact of COVID-19 highlighted major gaps in the digital divide within Africa and has been a major driver in expediting key communications infrastructure projects to narrow the digital divide. Operators throughout SSA worked with government during the pandemic to help manage the exponential increase in internet demand. According to the African Economic Outlook 2021, the information and telecommunication sector was the only sector in Africa that’s GDP grew during the lockdowns in 2020.

Many markets in SSA especially Niger, Central African Republic, Chad and South Sudan remain underdeveloped. SSA has merely 15% fourth-generation mobile connections, while some countries around the world enjoy 100% 4G coverage. 2G/3G users need to be moved towards 4G which allows wireless internet access at high speeds, 10 times faster downloads than 3G, smoother video and music streaming. Social media penetration in Chad, Niger, Central African Republic, South Sudan and Malawi is less than 3%. Central Africa Republic has network coverage of only 20.76%, meaning that accessing the internet is novel and for a selected few like the days of the advent of computers. In South Sudan, only 14.67% of the population own a mobile device but even those privileged few have never had a quality connection experience. Many regions either do not have access to the internet, have poor quality Internet or affordability of data and internet connecting devices remain high. To narrow the digital divide in SSA, urgent government intervention is necessary to encourage the development of digital infrastructure in underserved areas.

Africa is overflowing with opportunities

SSA is a region ripe with opportunities. Half a billion of first time mobile subscribers require targeting. A huge percentage of the population over 15 years old need to buy their first own mobile devices. There is a huge gap for entry-level smartphones in the SSA market. Affordable internet connecting devices are needed. Over 1 billion people live in areas that are not covered by mobile broadband. Development of 4G to provide higher bandwidth, lower latency and improved spectrum efficiency is needed. 5G technology will bring with it new innovative Internet of Things products and services. OTT services are set to expand especially subscription video on demand (SVOD). Increasing remote workforce using their own unsecured devices from their own unsecured home networks has expanded the need for cyber security products and services. As more valuable data is produced and business continuity is key to lowering the impact of disruption, data centres and Cloud services become essential. Digital literacy to masses of uneducated under-privileged communities is required.

<table>
<thead>
<tr>
<th>SSA countries with the lowest network coverage</th>
<th>Unit</th>
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<tbody>
<tr>
<td>Central African Republic</td>
<td>20.76%</td>
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<tr>
<td>Niger</td>
<td>21.68%</td>
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<tr>
<td>South Sudan</td>
<td>23.78%</td>
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<td>Chad</td>
<td>30.20%</td>
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<tr>
<td>Burundi</td>
<td>31.36%</td>
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<table>
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</tr>
<tr>
<td>Cabo Verde</td>
<td>0%</td>
</tr>
<tr>
<td>Niger</td>
<td>7.20%</td>
</tr>
<tr>
<td>Central African Republic</td>
<td>8.64%</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>8.64%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SSA countries with the lowest social media penetration</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chad</td>
<td>2.04%</td>
</tr>
<tr>
<td>Niger</td>
<td>2.08%</td>
</tr>
<tr>
<td>Central African Republic</td>
<td>2.43%</td>
</tr>
<tr>
<td>South Sudan</td>
<td>2.49%</td>
</tr>
<tr>
<td>Malawi</td>
<td>2.67%</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

Digital infrastructure investments and infrastructure sharing initiatives in the last year is encouraging, however, Sub-Saharan Africa needs more decisive and swift action from the industry stakeholders to bridge the digital divide.

The digital economy is essential to meet the requirements of a new, post Covid digital world.

Today it is widely accepted that the digital economy has the potential to create jobs, alleviates poverty, and enhances the region’s competitiveness through digital transformation of all sectors of an economy, from healthcare to education, agriculture to trade and fintech, among others. However, it goes without saying that a digital economy requires a modern and robust digital infrastructure that is inclusive and reaches all people to allow access for participation.

Unfortunately, to date digital infrastructure developments has been relatively slow and given the historic deficit, the gap between Sub-Saharan Africa and the developed economies are widening. While Africa’s infrastructure challenge is not a new one, it’s the most significant barrier on the continent among others including but not limited to broadband service quality, affordability (both of service and handsets), the policy, regulatory and fiscal environment, the status of digital skills, gender, age, education and more.

On the positive side, ICT has been one of the most dynamic and resilient sectors on the continent not only surviving but also enabling other industries to survive the catastrophic impacts of the COVID-19 pandemic. It is also one of the leading sectors that attracts foreign direct investment to international investors and development institutions who are looking to unlock value by bridging the digital divide and enabling innovative service models. As a result, there is a renewed wave of investments in Africa by the hyperscalers, infrastructure operators and investors alike, for digital infrastructure assets ranging from enormous submarine cable systems such as Equiano and 2Africa, to new data centres and towers.

Especially noteworthy is the increased level of infrastructure sharing initiatives by the network operators as their business model and focus continues to shift from traditional communication services (voice, data and messaging) to become providers of a wide range of digital lifestyle services (e.g. financial, insurance, banking, entertainment, IT, and many other). Pan-African operators continue to monetise their assets in different ways. For example, Airtel has continued to outsource its tower portfolio in various countries including Madagascar, Malawi, Gabon, Chad and Tanzania in transactions with Helios Towers and SBA. On the other hand, Orange and MTN are pursuing their plans to create their own infrastructure companies to leverage existing assets (e.g. fibre and data centres) to offer open-access services to other operators. Existing infrastructure operators have not only continued to expand their footprint but also diversify asset class to new infrastructure - by example Liquid Intelligent Technologies who has carved out the data centre assets to a new independent entity, Africa Data Centres, and announced a massive expansion plan on the continent. Teraco and MainOne are other major players who have recently completed large scale data centre deployments and announced further expansion plans of their data centre portfolios on the continent with the latest market entry the announcement of the new Vantage Datacentre to be built in Johannesburg, South Africa.
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