GSMA™

The Mobile Economy

Sub-Saharan Africa

2020

GSMA

Intelligence

The GSMA represents the interests of mobile operators worldwide, uniting more than 750 operators with almost 400 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and internet companies, as well as organisations in adjacent industry sectors. The GSMA also produces the industry-leading MWC events held annually in Barcelona, Los Angeles and Shanghai, as well as the Mobile 360 Series of regional conferences.

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www.gsmaintelligence.com

info@gsmaintelligence.com

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Executive Summary

Covid-19 casts a spotlight on digital connectivity

The Covid-19 pandemic has had a profound impact on the digital landscape in Sub-Saharan Africa and around the world. The social distancing measures put in place to curb the spread of the pandemic have brought to light the value of connectivity for social and economic wellbeing. The pandemic has highlighted the importance of a robust and inclusive digital economy, underpinned by universal access to fast, reliable internet and a range of digital services for individuals and businesses.

The mobile industry in Sub-Saharan Africa has largely risen to the challenge of keeping individuals and businesses connected during the pandemic, despite changes in data consumption patterns. However, with nearly 800 million people in the region still not connected to the mobile internet, it has never been more urgent to close the digital divide.

Nearly half a billion people subscribe to mobile services in Sub-Saharan Africa

At the end of 2019, 477 million people in Sub-Saharan Africa subscribed to mobile services, accounting for 45% of the population. The mobile market in the region will reach several important milestones over the next five years: half a billion mobile subscribers in 2021, 1 billion mobile connections in 2024, and 50% subscriber penetration by 2025. These achievements will be underpinned by operators' continued investment in network infrastructure. Despite the economic uncertainty brought about by the Covid-19 crisis, operators in the region will invest $52 billion in infrastructure rollouts between 2019 and 2025.

Smartphone adoption continues to rise rapidly in the region, reaching 50% of total connections in 2020, as cheaper devices have become available. Smartphone financing models are gaining traction, demonstrated by the recent partnership between Safaricom and Google, allowing low-income consumers to pay for 4G devices in daily instalments. Over the next five years, the number of smartphone connections in Sub-Saharan Africa will almost double to reach 678 million by the end of 2025 – an adoption rate of 65%.

The 5G era has begun in Sub-Saharan Africa

Vodacom and MTN launched the first major 5G networks in Sub-Saharan Africa in 2020, offering 5G mobile and fixed wireless access (FWA) services in several locations across South Africa. This came sooner than expected after the South African government assigned temporary spectrum in the 3.5 GHz range in the wake of the Covid-19 pandemic. The immediate opportunity for 5G in South Africa, as well as the rest of the region, is to use FWA to bridge the gap in fixed broadband connectivity for homes and businesses.

5G trials have been conducted elsewhere in Sub-Saharan Africa, including in Gabon, Kenya, Nigeria and Uganda. However, mass adoption of mobile 5G is not imminent in the region. With significant unused 4G capacity and 4G adoption still relatively low, the focus in the near term for operators and other stakeholders is to increase 4G uptake. This will involve strategies to make 4G devices more affordable and the provision of relevant digital content to drive demand for enhanced connectivity services. By 2025, there will be just under 30 million mobile 5G connections in Sub-Saharan Africa, equivalent to almost 3% of total mobile connections.

Mobile industry driving social impact and contributing to economic growth

Beyond connectivity, the mobile industry has engaged with businesses and governments on initiatives to alleviate the impact of the Covid-19 pandemic on citizens. From mobile money transaction-fee waivers and discounts on data tariffs for educational and health sites, to cash and equipment donations, mobile operators and other industry players have supported the most vulnerable in society during the pandemic while also contributing to economic recovery efforts.

Mobile technologies and services generated 9% of GDP in Sub-Saharan Africa in 2019 – a contribution that amounted to more than $155 billion of economic value added. The mobile ecosystem also supported almost 3.8 million jobs (directly and indirectly) and made a substantial contribution to the funding of the public sector, with $17 billion raised through taxation. By 2024, mobile's contribution will reach around $184 billion as countries increasingly benefit from the improvements in productivity and efficiency brought about by the increased take-up of mobile services.

Policy actions for digital and fiscal resilience

Access to digital services has been crucial to keep economies active and mitigate the socioeconomic repercussions of the Covid-19 pandemic. Consequently, governments and policymakers should implement policies to enhance access to connectivity and drive investment in more resilient digital infrastructure for the future. This is crucial to reactivating the region's economy post-Covid-19 as digital technologies play an even more important role in society.

To improve mobile adoption, policy measures should focus on encouraging investment in much-needed infrastructure and improving consumers' ability to access digital services. As such, policymakers should:

- rethink fiscal policy on mobile connectivity

- facilitate mobile infrastructure deployment

- prioritise digitisation of person-to-government transactions.

Efficient and effective management of spectrum is also key to maximise the opportunities that mobile connectivity can bring to society. Making sure the required spectrum resources are available under the right conditions will lower broadband costs, increase coverage and boost connectivity. The 2020s will see strong growth in the number of Africans connected to mobile broadband. As 4G and 5G grow together throughout the decade to come, spectrum preparation can drive cost efficiency and promote growth.

Mobile Economy Sub-Saharan Africa

UNIQUE MOBILE SUBSCRIBERS

2019

477m

2025

614m

2019-2025 CAGR: 4.3%

45% → Penetration Rate (% of population) → 50%

MOBILE INTERNET USERS

2019

272m

2025

475m

2019-2025 CAGR: 9.7%

26% → Penetration Rate (% of population) → 39%

SIM CONNECTIONS

Excluding licensed cellular IoT

2019

816m

2025

1.05bn

2019-2025 CAGR: 4.3%

77% → Penetration Rate (% of population) → 86%

OPERATOR REVENUES AND INVESTMENT

2019
Operator revenues
$44.3bn

2025
Operator revenues
$48.7bn

Operator capex of $52 billion for the period 2019–2025

SMARTPHONES

% of total connections
Excluding licensed cellular IoT

2019
44%

2025
65%

4G
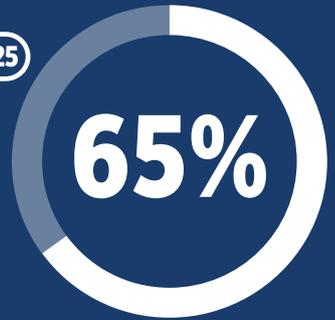
2019
9%

2025
27%

of total connections

Excluding licensed cellular IoT

5G

2025
30m connections

3%
of total connections
Excluding licensed cellular IoT

MOBILE INDUSTRY CONTRIBUTION TO GDP

2019
$155bn

2024
$184bn

9%
of GDP

PUBLIC FUNDING

2019
$17bn
Mobile ecosystem contribution to public funding
(before regulatory and spectrum fees)

EMPLOYMENT

2019
650,000
Jobs formally supported by the mobile ecosystem
+1.4m informal jobs

ECCAS

TECHNOLOGY MIX*
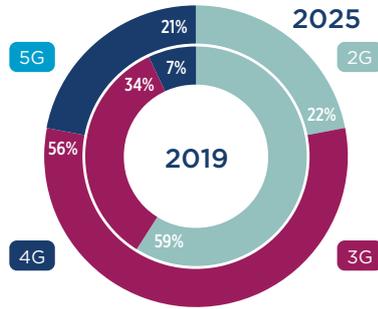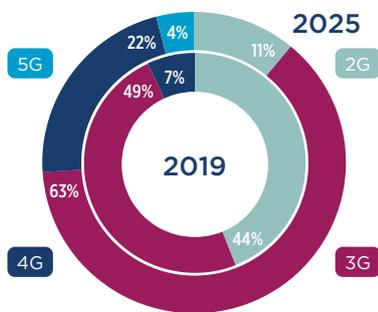
2025

2019

- 5G
- 2G
- 4G
- 3G

21%
7%
34%
56%
59%
22%

SUBSCRIBER PENETRATION

2019 ———— 2025

41% 46%

SMARTPHONE ADOPTION

2019 ———— 2025

39% 63%

ECOWAS

TECHNOLOGY MIX*

2025

2019

- 5G
- 2G
- 4G
- 3G

4%
22%
7%
49%
63%
11%
44%

SUBSCRIBER PENETRATION

2019 ———— 2025

49% 53%

SMARTPHONE ADOPTION

2019 ———— 2025

45% 65%

SADC

TECHNOLOGY MIX*

2025

2019

- 5G
- 2G
- 4G
- 3G

4%
37%
11%
14%
45%
49%
41%

SUBSCRIBER PENETRATION

2019 ———— 2025

45% 50%

SMARTPHONE ADOPTION

2019 ———— 2025

47% 67%

EAC

TECHNOLOGY MIX*

2025

2019

- 5G
- 2G
- 4G
- 3G

2%
25%
15%
8%
37%
59%
54%

SUBSCRIBER PENETRATION

2019 ———— 2025

44% 49%

SMARTPHONE ADOPTION

2019 ———— 2025

36% 62%

*Percentage of total connections

The mobile market in numbers

01

1.1
A new decade of growth begins for mobile in Sub-Saharan Africa

Figure 1

Key milestones over the next five years

	2020	2021	2022	2023	2024	2025
MOBILE SUBSCRIBERS		500 million mobile subscribers				50% of the population subscribe to mobile services
MOBILE INTERNET USERS	300 million mobile internet users		A third of the population subscribe to mobile internet services			475 million mobile internet users
CONNECTIONS	850 million mobile connections		Connections penetration reaches 80%		1 billion mobile connections	
3G	3G accounts for more than half of total connections		500 million 3G connections		3G adoption peaks at just under 59%	600 million 3G connections
4G	100 million 4G connections Average 4G adoption reaches double digits			4G overtakes 2G to become second most dominant technology	4G accounts for 25% of connections	
5G	Mobile 5G debuts in Sub-Saharan Africa		1 million mobile 5G connections			30 million 5G connections (just under 3% of total mobile connections)
MOBILE BROADBAND (MBB)	500 million MBB connections	MBB accounts for 70% of total connections			MBB accounts for over 85% of total connections	
SMARTPHONES	50% smartphone adoption		500 million smartphone connections			65% smartphone adoption

Figure 2

Sub-Saharan Africa will have more than 130 million new subscribers by 2025, half of which will come from just five markets

Unique mobile subscribers (millions)

2019	Nigeria	Ethiopia	DRC	Tanzania	Kenya	Others	2025
477	25	16	11	7	7	66	614

New subscribers
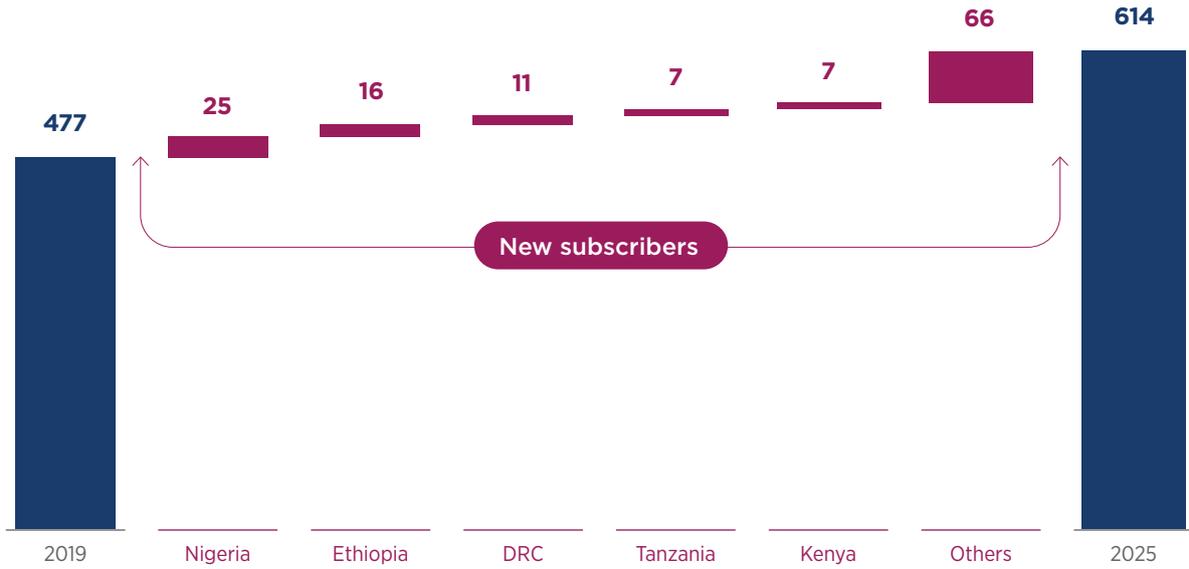
1.2
5G debuts in Sub-Saharan Africa

Figure 3

The 5G era has begun in Sub-Saharan Africa, but 3G will remain the dominant technology for the foreseeable future

Percentage of total connections
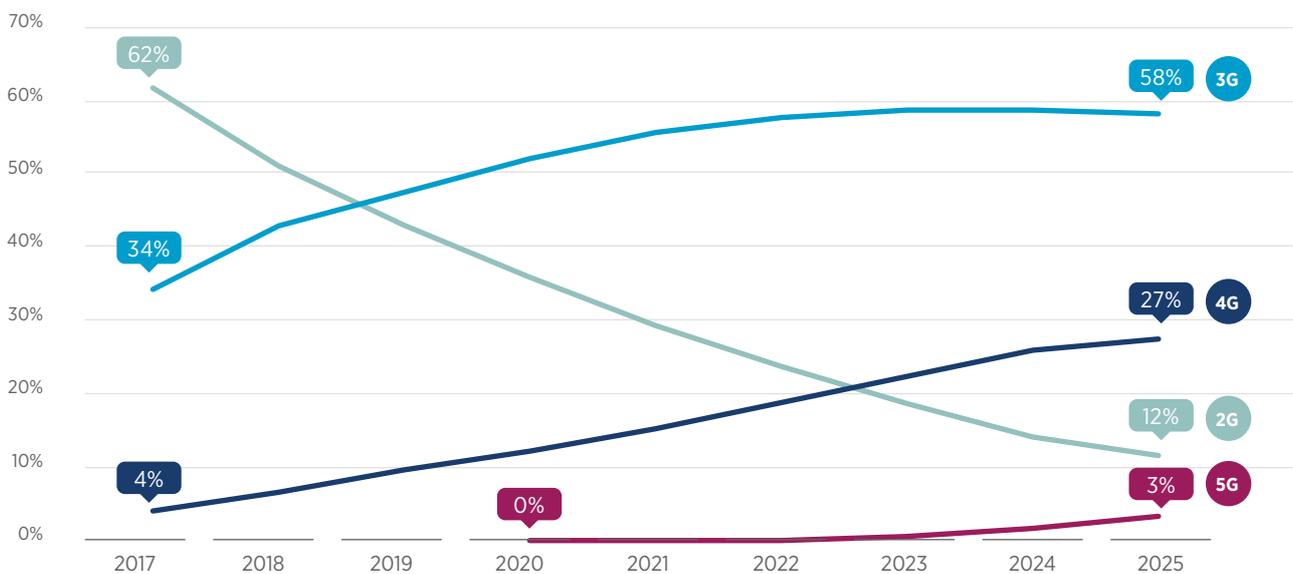
Figure 4

Commercial mobile 5G services have been launched in South Africa, and trials have been conducted in several other markets across the region

5G networks in Sub-Saharan Africa - live and trialled

Live

Trialled

Nigeria

Gabon

Uganda

Kenya

South Africa
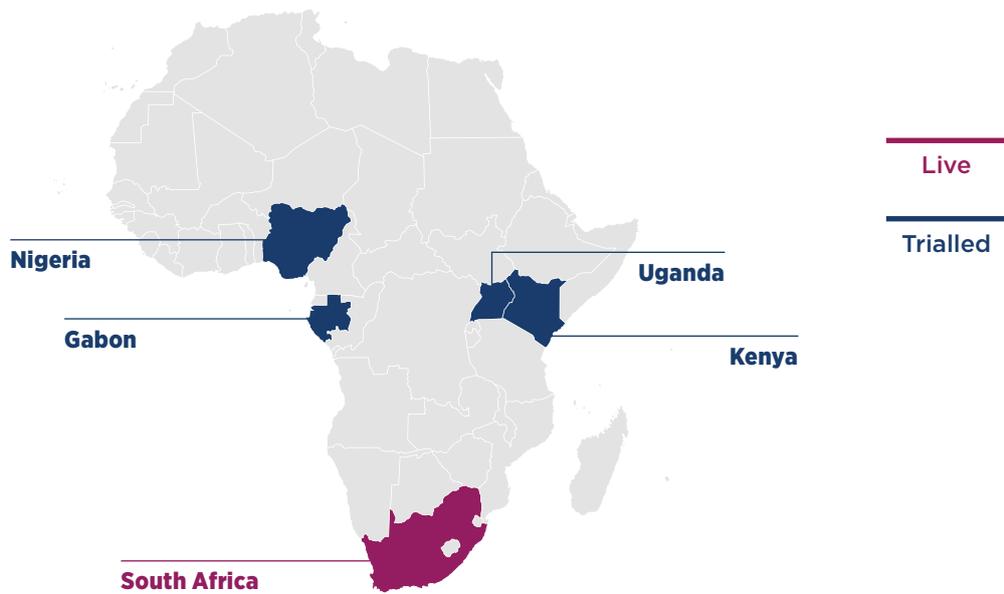
1.3
Evolution of the digital consumer

Figure 5

Nearly half a billion people will be using the mobile internet in Sub-Saharan Africa by 2025; a third will come from Nigeria and Ethiopia

Mobile internet users (millions)

Nigeria	Ethiopia	South Africa	DRC	Kenya	Tanzania	Uganda	Others	Total by 2025
101	42	39	36	29	23	20	185	475
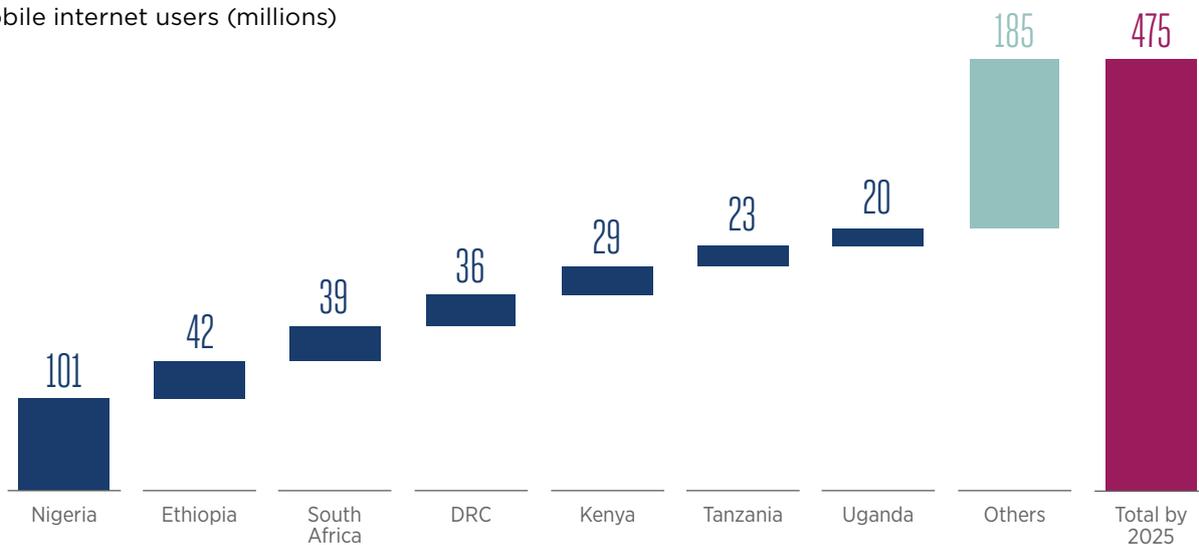
Figure 6

Mobile data consumption in Sub-Saharan Africa will grow more than fourfold to 2025, spurred by increased smartphone adoption and availability of affordable high-speed networks

Mobile data traffic
(GB per subscriber per month)

1.6
2019

x4.4

7.1
2025
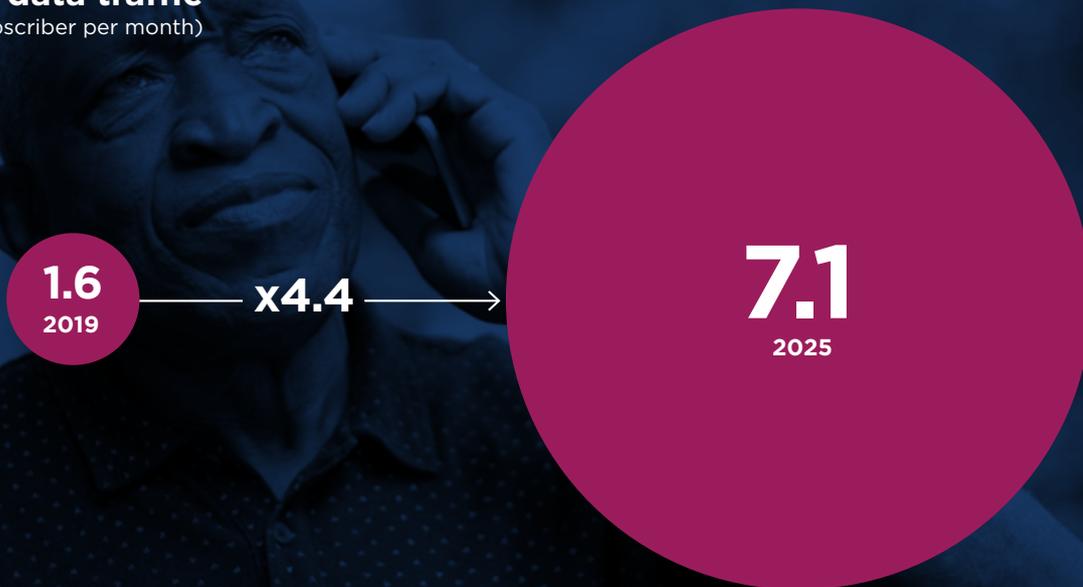
Data traffic trends: mobile streaming on the rise

The media and entertainment (M&E) space in Sub-Saharan Africa is showing signs of digital disruption, prompted by rising mobile internet and smartphone adoption, a youthful population and the increasing availability of local entertainment content. Over the last two years, a number of mobile operators have launched M&E services or partnered with third-party content providers to deliver online streaming content.

Airtel Kenya launched a free video and music streaming app called Airtel TV in August 2020, while in July 2020 video-on-demand (VoD) streaming service CineMagic partnered with Vodacom and MTN to deliver content on the operators' mobile content platforms (Vodacom Video Play and MTN Play). Meanwhile, MTN is expanding its instant messaging service Ayoba to include gaming and media channels, and its streaming app MusicTime is now live in seven MTN markets across the region.

Figure 7

Sub-Saharan Africa will have nearly 700 million smartphone connections by 2025 as low-cost devices and smartphone financing schemes accelerate adoption

Smartphone connections: top three markets in Sub-Saharan Africa (2025)

Nigeria
154m

South Africa
73m

Kenya
47m

Smartphones as a percentage of total connections

	2019	2025
Sub-Saharan Africa average	44%	65%
Ethiopia	38%	61%
EAC	37%	62%
ECCAS	39%	63%
ECOWAS	45%	65%
SADC	48%	67%

■ 2019   ■ 2025
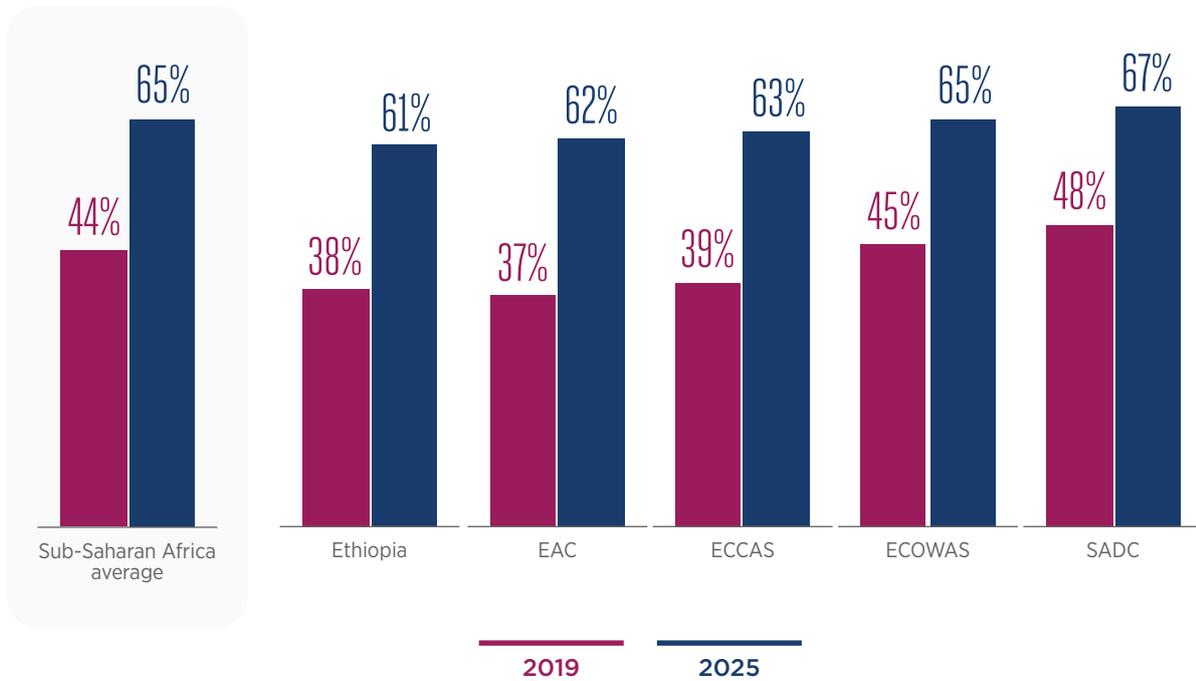
Smartphone trends: financing solutions for low-income users gain traction

Smartphone adoption in Sub-Saharan Africa is rising but lags the global average (64% at the end of 2019) by a considerable margin. Affordability, especially of 4G-enabled devices, remains a key barrier to smartphone adoption. The average selling price of smartphones has reduced significantly in recent years, with the influx of sub-$100 devices from Chinese brands such as Tecno and Infinix, and the growing momentum behind the KaiOS-powered smart feature phones. However, many consumers are still unable to afford the one-off upfront cost of purchasing a device.

Against this backdrop, smartphone financing schemes are beginning to gain traction in the region. In July 2020, Safaricom partnered with Google to launch the Lipa Mdogo Mdogo payment plan, allowing customers with 2G and a daily wage to upgrade to 4G devices for a deposit of KES1,000 ($10) and daily instalments of KES20. The daily, rather than monthly, payment option reflects the financial culture of low-income users, many of whom earn a daily wage and can only afford smaller payments on a regular basis.

In 2019, smartphone start-up Mara Phones partnered with several banks, including Nedbank in South Africa and Bank of Kigali in Rwanda, to pre-finance devices for consumers, who can pay for their devices in monthly instalments of $4–6 over two to three years. The Mara solution targets aspirational users who are looking for fully featured devices (usually priced at above $100) but are unable to pay the full cost upfront.

The success of the mobile-enabled pay-as-you-go model for the provision of affordable home solar equipment underscores the opportunity to make 4G smartphones accessible to more consumers through financing schemes. While there are still concerns around the lack of credit-scoring facilities, operators are well placed to leverage account activities, including mobile money transactions, to create a credible credit profile for potential customers.

1.4
Revenue outlook remains strong, despite short-term Covid-19 impact

The financial impact of Covid-19 on the mobile industry in Sub-Saharan Africa is mixed. The sudden enforcement of lockdown measures at the start of the pandemic led to a sharp rise in data consumption and mobile money transactions, as a number of social and economic activities shifted online. While increased usage had a positive impact on revenues initially, it was soon partially offset by discounts, transaction-fee waivers and other initiatives from operators to support vulnerable consumers.

The pandemic has sparked the region's first recession in 25 years, with economic growth projected to decline from 2.4% in 2019 to between –2.1% and –5.1%, according to the World Bank.[1] The International Growth Centre estimates that containment measures in the region may have pushed an additional 9.1% of the population into extreme poverty.[2] These developments have significant implications for overall consumer spend, and telecoms spend in particular. Prepaid connections account for more than 95% of mobile connections in Sub-Saharan Africa, meaning users have the flexibility to vary telecoms spend when their financial situation changes.

1.   "For Sub-Saharan Africa, Coronavirus Crisis Calls for Policies for Greater Resilience", World Bank, April 2020
2.   "The economic impact of COVID-19 lockdowns in sub-Saharan Africa", International Growth Centre, May 2020

Figure 8

Covid-19 will weigh on operator revenue growth in the short term, but the medium- to long-term outlook remains strong on rising 4G and mobile money adoption

Revenue ($ billion)   Annual growth
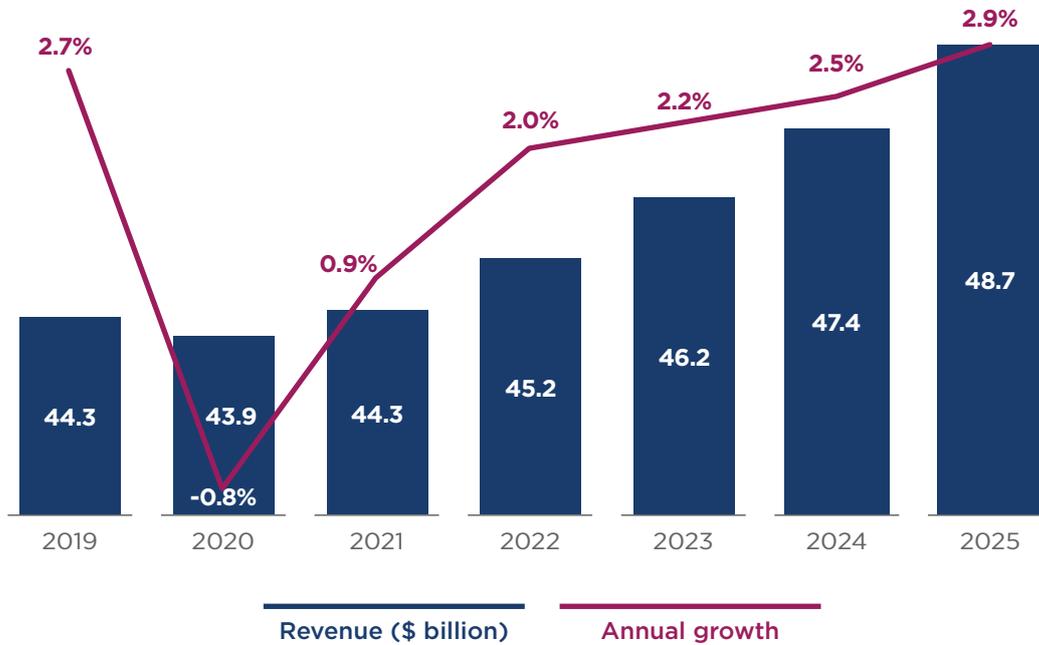
Figure 9

Despite economic uncertainty, operators will continue to invest in infrastructure rollout, especially mobile broadband networks; 5G will account for the majority of capex from 2024

% of total capex
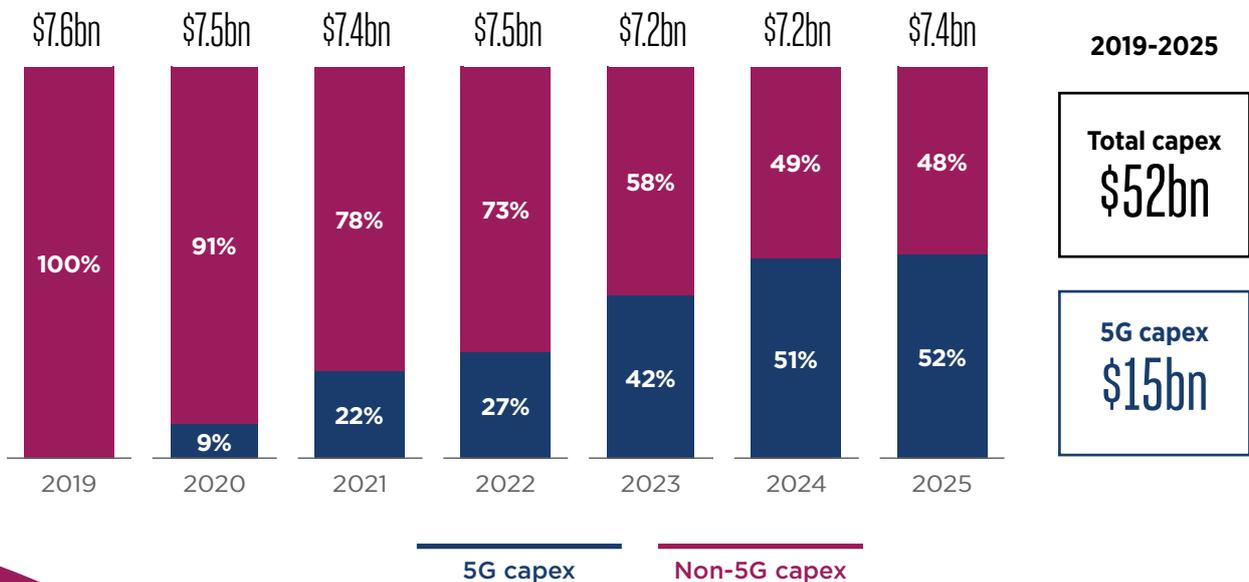
5G capex   Non-5G capex

Key trends shaping the digital landscape

The digital landscape in Sub-Saharan Africa and beyond is evolving rapidly, driven by tech innovation, changing consumer behaviour, digital transformation and operators' continued investments in enhanced connectivity solutions. Here, we highlight the outlook for four key trends that will shape the digital landscape.

2.1
5G

The transition to 5G will gain momentum in the 2020s. As of June 2020, 5G was commercially available from 87 operators in 39 markets worldwide, while another 84 operators had announced plans to launch commercial 5G services. Covid-19 has had a mixed impact on 5G developments. Operators in some markets, such as Sweden, were allowed to launch 5G early to ensure that sufficient capacity was available during the crisis, while the pandemic has delayed the spectrum auction in India and interrupted rollout plans in markets including Greece and Portugal. Globally, there will be 1.7 billion mobile 5G connections by 2025, accounting for a fifth of total mobile connections.

In Sub-Saharan Africa, Rain has been offering 5G fixed wireless access (FWA) in South Africa since 2019. However, Vodacom and MTN launched the first major 5G networks in the region in 2020, offering 5G mobile and FWA services in South Africa and formally kicking off the 5G era in the region. This came sooner than expected after the South African government assigned temporary spectrum in the 3.5 GHz range in the wake of the pandemic. Both operators will look to secure 5G spectrum on a permanent basis to support a more sustainable rollout. Also in South Africa, Liquid Telecom is building a wholesale 5G network, due to be available later in 2020, using 3.5 GHz spectrum.

Elsewhere in Sub-Saharan Africa, Telma Madagascar and Cable & Wireless Seychelles have announced plans to launch commercial services, while 5G trials have been conducted in Gabon, Kenya, Nigeria and Uganda. However, mass adoption of the technology is not imminent in the region. With significant unused 4G capacity and 4G adoption still relatively low on average, the focus for operators in the near term will be on increasing 4G uptake. This will involve strategies to make 4G devices more affordable and the provision of relevant digital content to drive demand for enhanced connectivity.

That said, 5G FWA will be crucial in providing high-speed broadband connectivity to households and businesses, given the lack of fixed-line infrastructure. This will be vital in a post-Covid-19 world as the digital economy expands across the region and more social and economic activities move online.

Figure 10

Nearly 30 million mobile 5G connections in Sub-Saharan Africa by 2025

5G connections (millions)
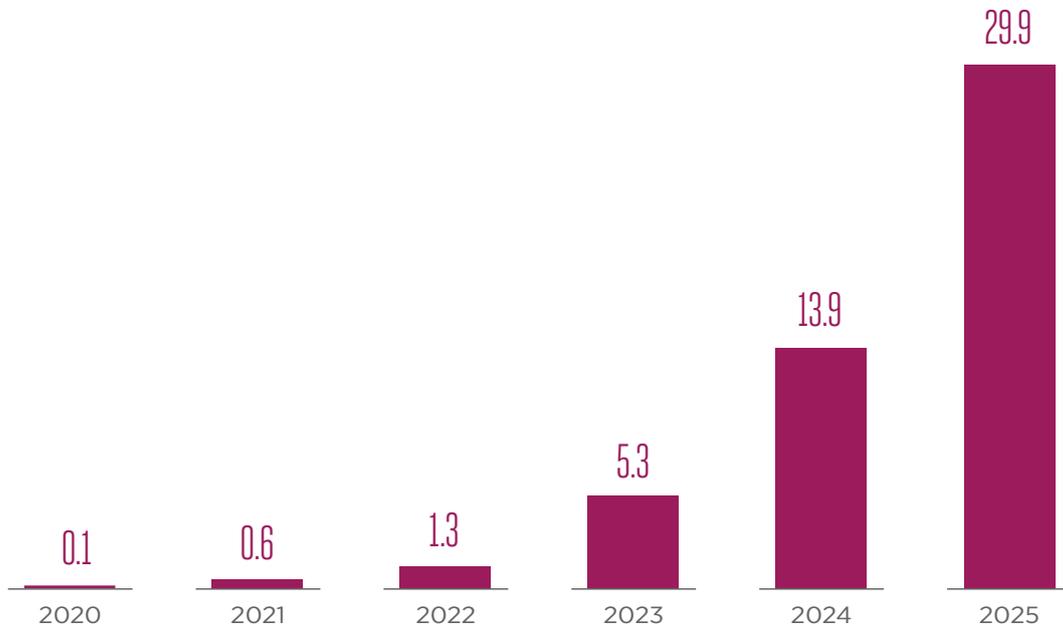
2.2
Telco of the future: digital payments

Digital payments and broader financial services provide an opportunity for operators in Sub-Saharan Africa to diversify beyond connectivity, offset stagnating core revenues and grow their presence in the digital ecosystem. For many operators, mobile money provides a solid platform from which to leverage the opportunities in the digital payments ecosystem. In Kenya, M-Pesa accounts for just over a third of Safaricom's service revenues, underlining the growth potential of digital financial services for operators.

In 2019, the number of registered mobile money accounts in Sub-Saharan Africa reached 469 million; this is expected to reach half a billion in 2020.[3] East Africa is the most mature mobile money market in Sub-Saharan Africa, accounting for more than half of total registered accounts.

3.   State of the Industry Report on Mobile Money, GSMA, 2020

The Mobile Economy Sub-Saharan Africa 2020

Figure 11

Distribution of registered mobile money accounts in Sub-Saharan Africa (December 2019)

53%	**35%**
	10% **2%**

— **Eastern Africa**   — **Western Africa**   — **Central Africa**   — **Southern Africa**
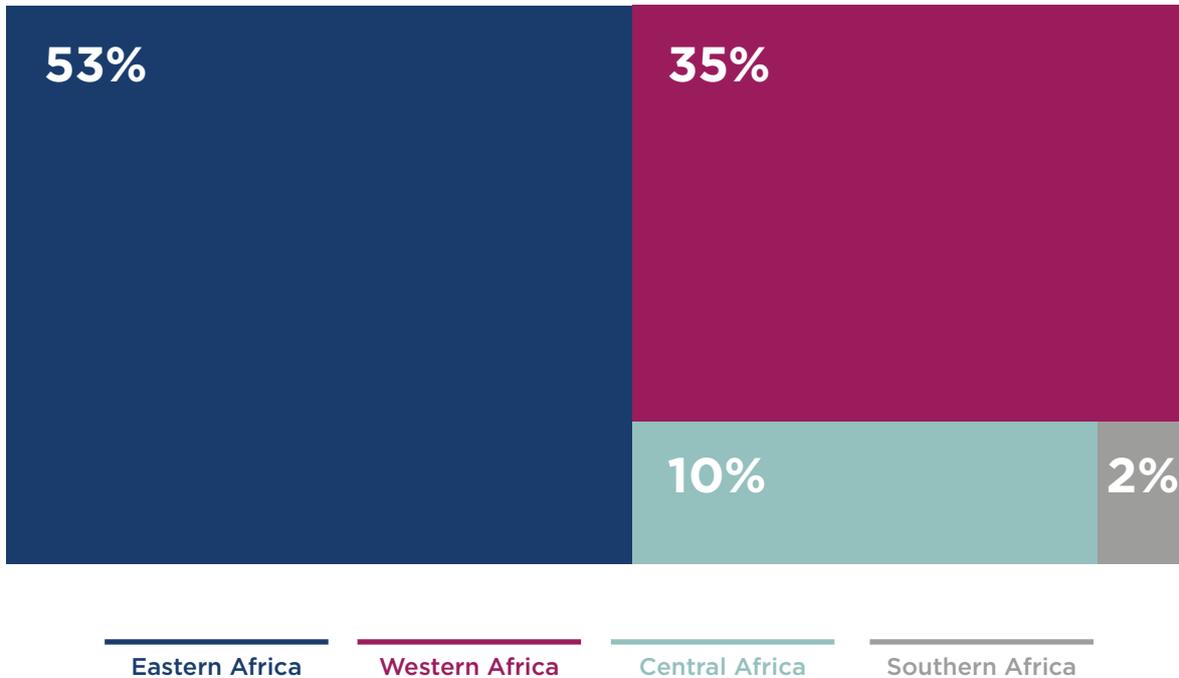
Building on existing mobile money services and the rapid expansion of the fintech ecosystem, mobile operators are introducing innovative features and establishing new partnerships to better serve use cases in digital payments:

- In July 2020, Vodacom joined forces with digital payment platform Alipay to create a 'super app' for South Africa that offers personalised financial, business and lifestyle services, including lending and insurance for SMEs, and bill payments and money transfers for consumers.

- In July 2020, Orange and financial services firm NSIA Group partnered to launch Orange Bank Africa in Côte d'Ivoire, with plans to expand into Senegal, Mali and Burkina Faso. The bank will offer a range of savings and microcredit services via Orange Money.

- In April 2020, Safaricom partnered with Visa, connecting M-Pesa's 24 million accounts and 173,000 local merchants to Visa's global network (61 million merchants and 3 billion cards).

- In October 2019, Airtel Africa partnered with Mastercard, enabling Airtel Money customers to make payments to local and global online merchants. The partnership gives Airtel Africa's subscriber base across 14 countries access to Mastercard's global network.

Laying the groundwork for financial and technology ecosystems to grow around mobile money will spur local entrepreneurialism and innovation. This, in turn, will encourage more value to remain digital. For instance, in 2019, MTN Group opened its Mobile Money API programme in seven countries (Benin, Cameroon, Congo, Côte d'Ivoire, Ghana, Uganda and Zambia) to foster innovation and enhance financial inclusion. More than 3,700 developers have already registered to the programme, driving millions of digital transactions.

The e-commerce opportunity for digital payments

E-commerce is experiencing a renaissance as shopping behaviours change, in part due to social distancing measures introduced to curb the spread of the pandemic. A survey from Visa found that 71% of respondents in Nigeria and 64% in South Africa bought groceries online for the first time because of the pandemic.[4] During the first half of 2020, pan-African online retailer Jumia also reported increased demand from sellers across the region to expand their business on its platform, as the Covid-19 crisis further established e-commerce as an important route to market.[5] As online shopping grows in popularity across Sub-Saharan Africa, mobile operators will play a key role in enabling digital payments to replace cash transactions.

2.3
IoT

Virtually all sectors of the economy have been affected by the Covid-19 pandemic, resulting in enterprises having to rethink the way they run their operations and interact with the rest of the economy. IoT solutions will be central to efforts to improve productivity and efficiency in operational processes; the GSMA Intelligence Enterprise in Focus 2019 Survey shows that the majority of enterprises (52%) around the world view IoT as transformational to their company and wider industry.[6] Licensed cellular IoT is an important part of the IoT ecosystem, with licensed LPWA (NB-IoT and LTE-M) supporting devices that require longer battery lives and services that require lower data throughputs.

Source: GSMA Intelligence

Figure 12

South Africa accounts for nearly half of cellular IoT connections in Sub-Saharan Africa, but use cases are emerging across the region

South Africa	Nigeria	Ghana	Kenya	Rest of Sub-Saharan Africa
49%	16%	7%	3%	26%
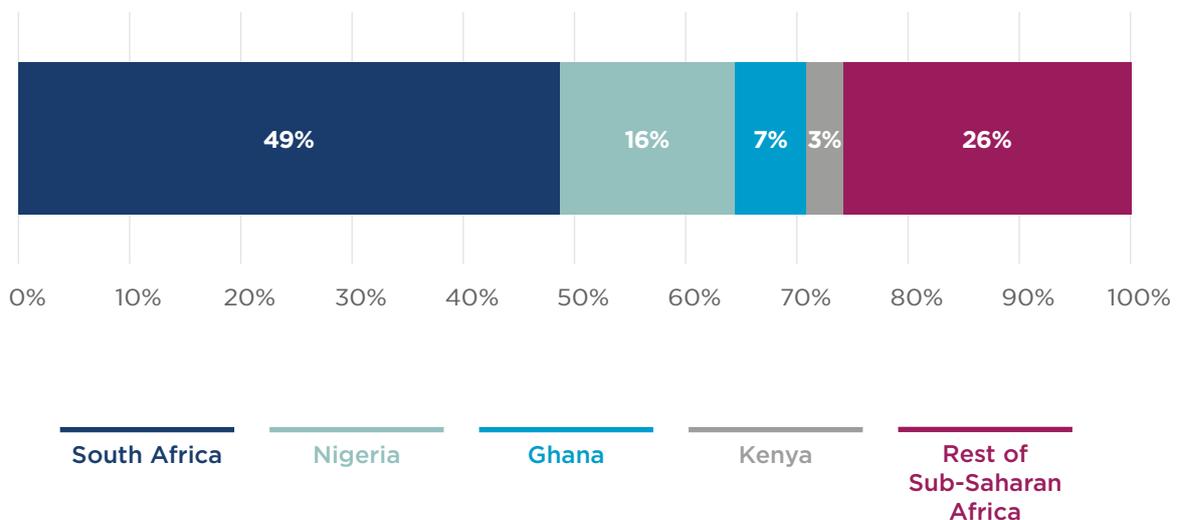
4.   See "Visa launches new 'Where You Shop Matters' initiative to support Small Businesses in Nigeria", Nairametrics, June 2020
5.   Jumia Q2 2020 results
6.   IoT in business 2020: The enterprise voice on IoT adoption, GSMA Intelligence, 2020

IoT development in Sub-Saharan Africa is still at a nascent stage and faces several challenges. These include limited investment and innovation in solutions and devices that address local use cases, unreliable power supply and low purchasing power among consumers and enterprises. However, the outlook remains positive. The number of cellular IoT connections in the region has doubled over the last five years to 16.7 million at the end of 2019. Although this is only a fraction of the 1.7 billion global connections, the upward trend is expected to continue as commercial business models become more viable.

IoT has the potential to help address region-wide challenges in key sectors, such as energy, water, agriculture, transportation & logistics, manufacturing and healthcare. With many countries in the region lacking an efficient system to deliver these essentials, demand for IoT-enabled solutions is set to increase over the coming years.

Mobile operators to play a central role in the emerging IoT ecosystem

In Kenya, Safaricom announced plans for an NB-IoT network in 2017 and has recently used the technology to serve enterprises in various sectors:

- It has implemented a remote monitoring solution for Kenyan water utility EWASCO, enabling the company to identify optimal water flow and match supply with demand. During the Covid-19 pandemic, the use of a robust IoT monitoring platform has made it possible to track real-time consumption of water provided to hospitals and other health facilities to ensure adequate supply during a critical period.

- Safaricom and M-Gas have launched a prepaid gas service for Kenyan households using the operator's NB-IoT network and M-Pesa. The solution improves affordability for users while also giving them more control over usage and replenishment of cylinders.

- Safaricom has partnered with Kenya Breweries Limited (KBL) to connect and enhance its coolers using IoT technology. Sensors connected to the coolers monitor different factors, including temperature and how often the fridge door is opened, to provide real-time data to KBL.

2.4
Digital identity

The Covid-19 pandemic has increased dependence on digital platforms for work, learning, healthcare, shopping and entertainment. With half the global population now connected to the internet, the coming years will see a steady rise in online engagement as consumers take a digital-first approach to economic and social activities. For the majority of people in Sub-Saharan Africa, the lack of a verifiable identity remains a major barrier to participating fully in the digital economy. Sub-Saharan Africa is home to only a sixth of the world's population – but half the global population without an ID live in the region.[7]

Regional and national governments recognise the benefits of online digital identity. To this end, the Smart Africa Alliance has proposed a blueprint to assist public and private sector players with the design and implementation of digital identification schemes for individuals, which are trusted by all stakeholders based on shared rules and minimum requirements, thus facilitating mutual recognition. The Smart Africa Trust Alliance (SATA) is due to be piloted in three countries – Benin, Rwanda and Tunisia.

Source: World Bank ID4D, GSMA Intelligence

Figure 13

Nearly one in two people in Sub-Saharan Africa lacks an ID

Percentage of population without ID (2018)
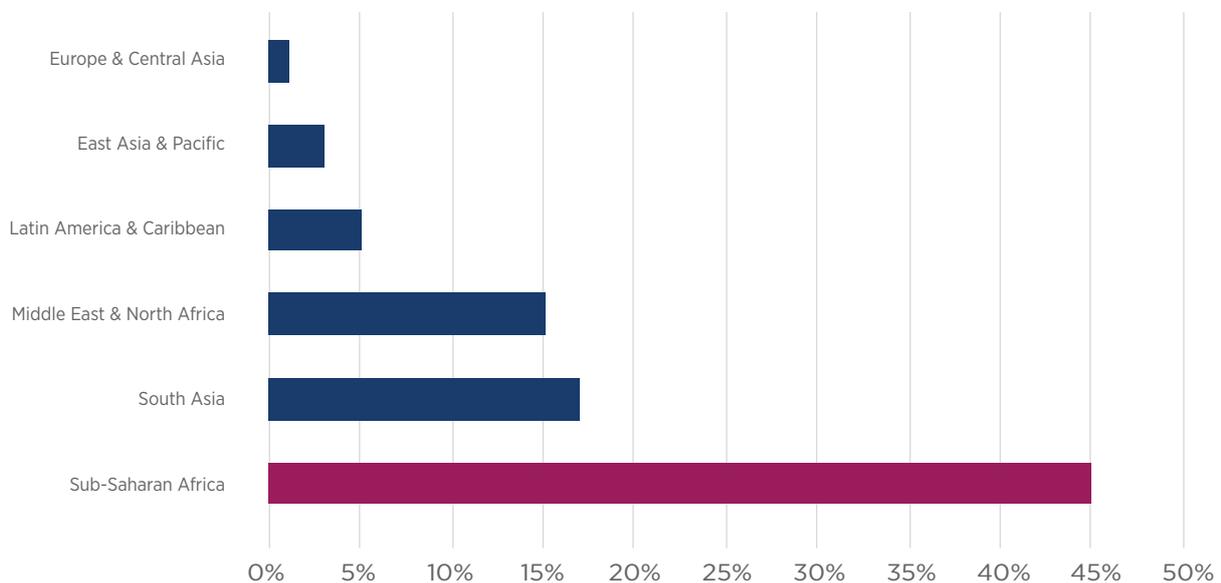
Trust is crucial to the successful development of an inclusive digital identity ecosystem. Mobile operators are uniquely positioned through their existing trusted relationships with customers, built through the provision of services such as

mobile money. Combining trust with offline/online customer channels and the responsibility of managing user data provides mobile operators with the assets and capabilities to play a primary role in the digital identity ecosystem.

7.   World Bank

03

Mobile contributing to economic growth and social progress

3.1
Mobile contribution to economic growth

In 2019, mobile technologies and services generated 9% of GDP in Sub-Saharan Africa – a contribution that amounted to $155 billion of economic value added. The mobile ecosystem also supported more than 3.8 million jobs (directly and indirectly) and made a substantial contribution to the funding of the public sector, with almost $17 billion raised through taxation. By 2024, mobile's contribution will reach almost $185 billion as countries increasingly benefit from the improvements in productivity and efficiency brought about by the increased take-up of mobile services.

The informal economy plays a large part in the mobile ecosystem in Sub-Saharan Africa. Around 1.4 million of the 2 million directly employed by the mobile ecosystem are informally employed in the distribution and retail of mobile services.

Source: GSMA Intelligence

Figure 14

The mobile ecosystem contributed $155 billion to the economy in Sub-Saharan Africa

$ billion, % GDP 2019

MOBILE ECOSYSTEM

$29	$9	$11	$106	$155
1.7%	0.5%	0.6%	6.2%	9.0%
Mobile operators	Rest of mobile ecosystem	Indirect	Productivity	Total
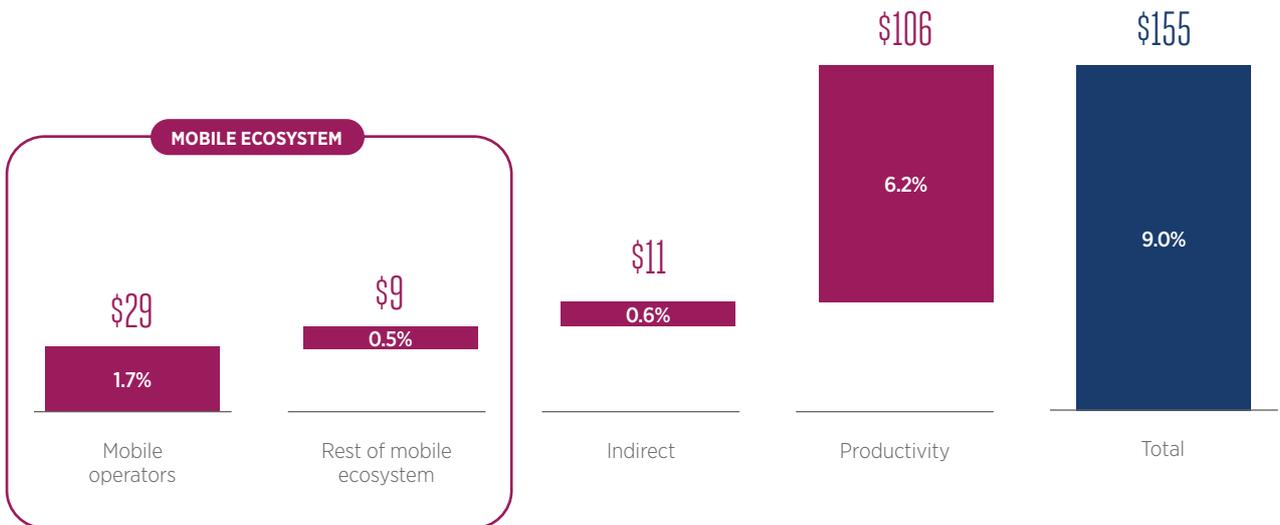
Note: totals may not add up due to rounding

27

Mobile contributing
to economic growth
and social progress

Figure 15

The mobile ecosystem directly contributed $38 billion to the Sub-Saharan African economy, mostly from mobile operators

$ billion, % GDP 2019
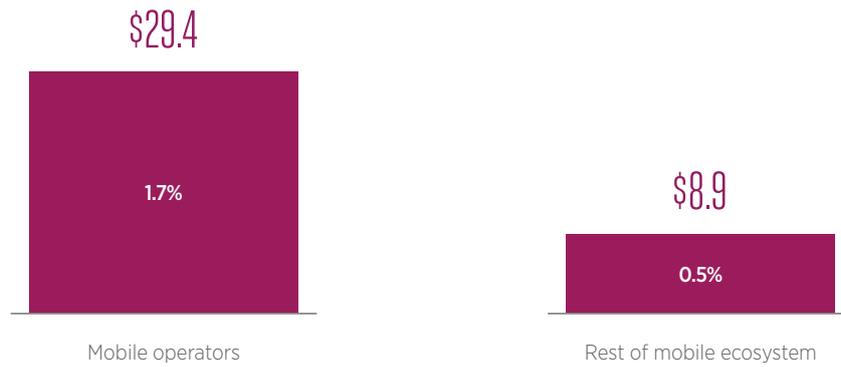
Note: Device manufacturers category not considered due to minor relevance.

Figure 16

The mobile ecosystem formally employs almost 650,000 people in Sub-Saharan Africa, 1.4 million informally, and supports another 1.8 million jobs in other parts of the economy

Jobs (million, 2019)

28

Mobile contributing
to economic growth
and social progress
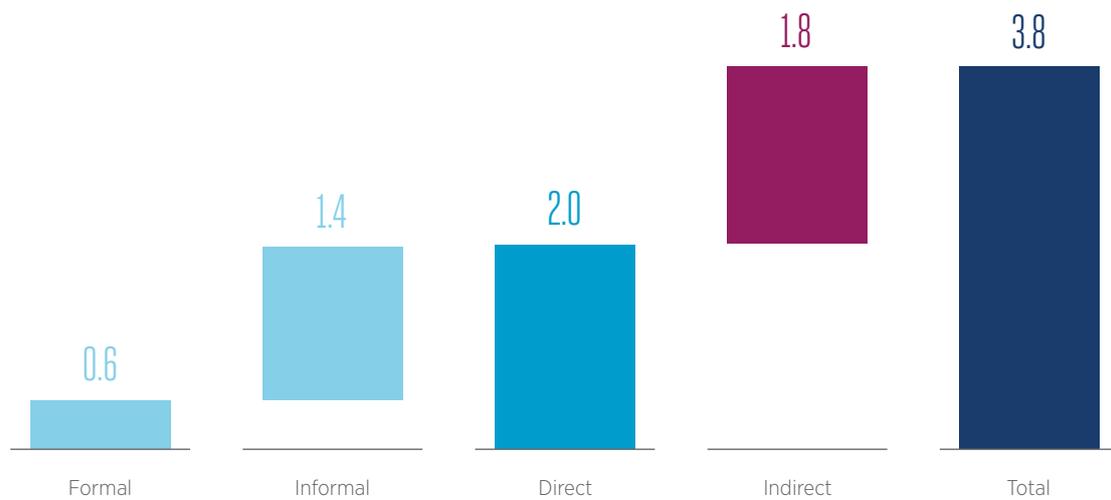
Figure 17

In 2019, the mobile ecosystem contributed almost $17 billion to the funding of the public sector through consumer and operator taxes

Fiscal contribution ($ billion)

$10.5	Services and handset VAT, sales taxes and excise duties
$6.2	Corporate and employment taxes
$16.7	Total
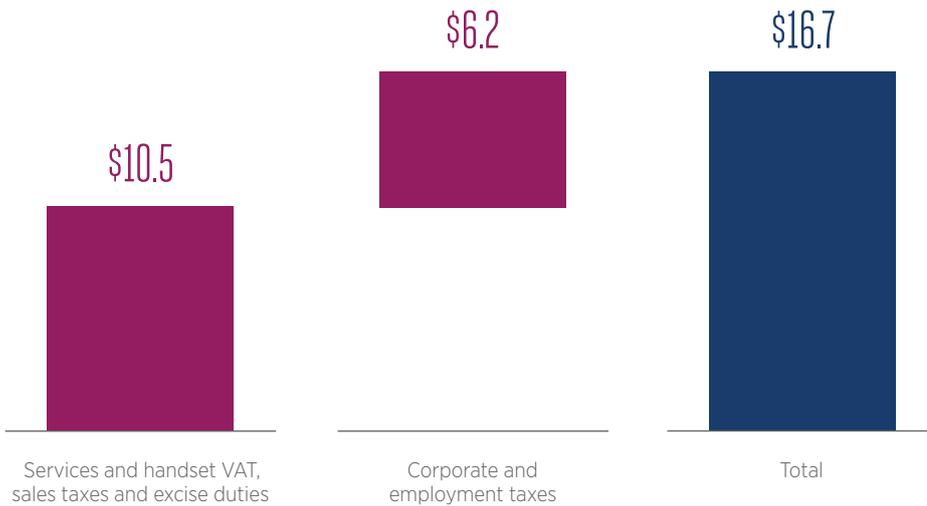
Figure 18

Driven mainly by productivity gains, the economic contribution of mobile in Sub-Saharan Africa will increase to around $184 billion in 2024

Economic contribution of mobile ecosystem ($ billion)

	2019	2020	2021	2022	2023	2024
Productivity	106	111	114	118	122	126
Indirect	11.0	11.4	11.7	12.0	12.3	12.7
Direct	38.3	39.7	40.6	41.9	43.0	44.8

Direct   Indirect   Productivity

Mobile contributing to economic growth and social progress
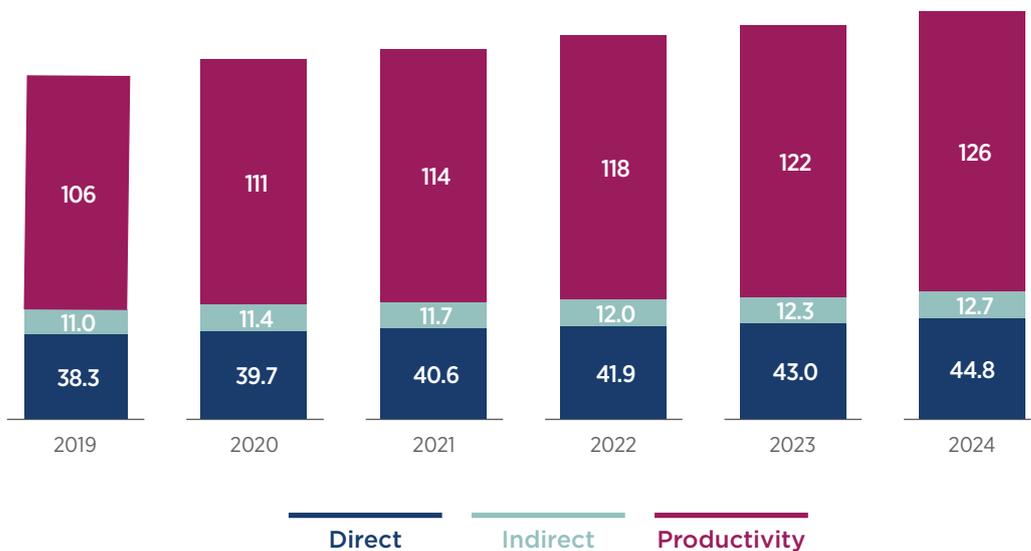
3.2
Mobile enhancing digital inclusion

The Covid-19 pandemic and social distancing measures put in place to curb the spread have brought to light the value of connectivity for social and economic wellbeing. The pandemic highlights the importance of a robust and inclusive digital economy, underpinned by universal access to fast and reliable broadband services and a broad range of digital content and services.

At the end of 2019, 272 million people across Sub-Saharan Africa were connected to the mobile internet, an increase of 34 million on 2018. However, nearly 800 million people remain offline and excluded from the budding digital economy in the region. The high cost of smartphones, relative to average income levels, and limited digital skills among rural and less literate populations are the main barriers to mobile internet adoption.

Source: GSMA Intelligence

Figure 19

Unconnected populations face many challenges, most of which are non-infrastructure related, including lack of affordability and low digital skills

Percentage of population

	Sub-Saharan Africa	Ethiopia	EAC	ECCAS	ECOWAS	SADC
Not covered	25% (262m)	15%	24%	39%	26%	19%
Covered but do not use the internet	49% (512m)	66%	55%	38%	45%	55%
Mobile internet subscribers	26% (272m)	19%	21%	23%	29%	26%

Mobile internet subscribers — **Covered but do not use the internet** — **Not covered**
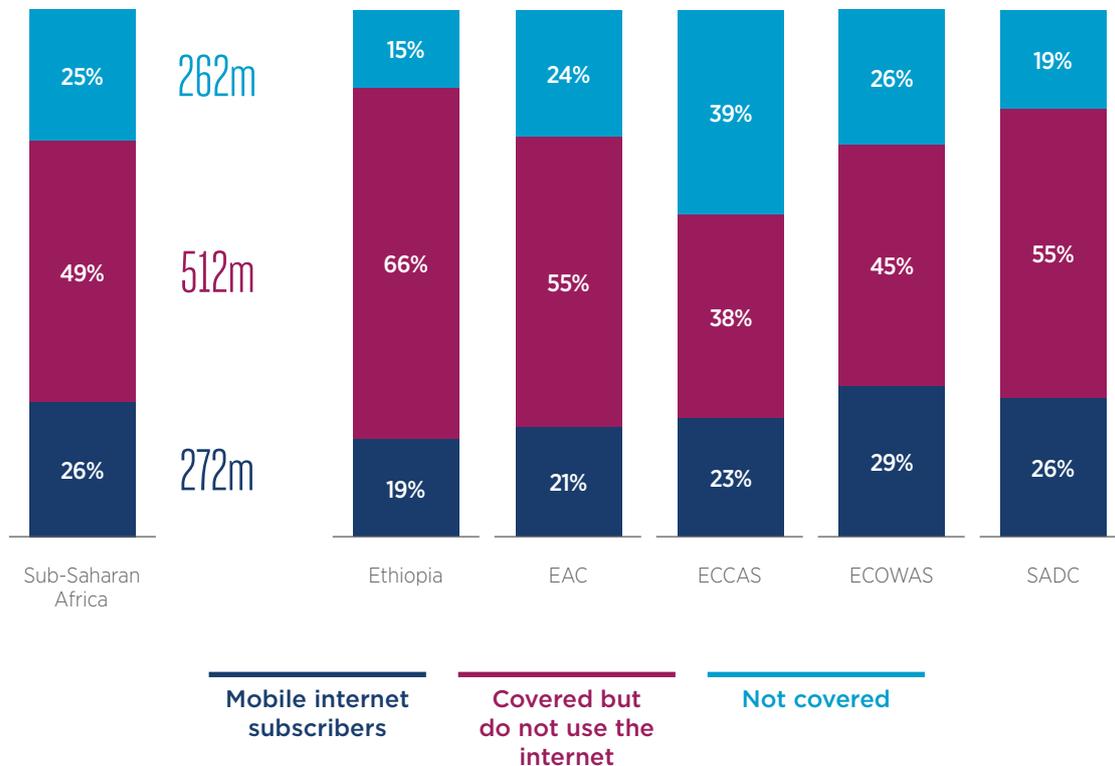
Figure 20

In the GSMA's Mobile Connectivity Index, infrastructure has seen the biggest improvement in Sub-Saharan Africa as operators ramped up investment in 3G and 4G networks

	Overall index	Infrastructure	Affordability	Consumer services	Content and services
2016 score	33	31	33	47	27
2019 score	38	40	35	49	31

2016 score **2019 score**
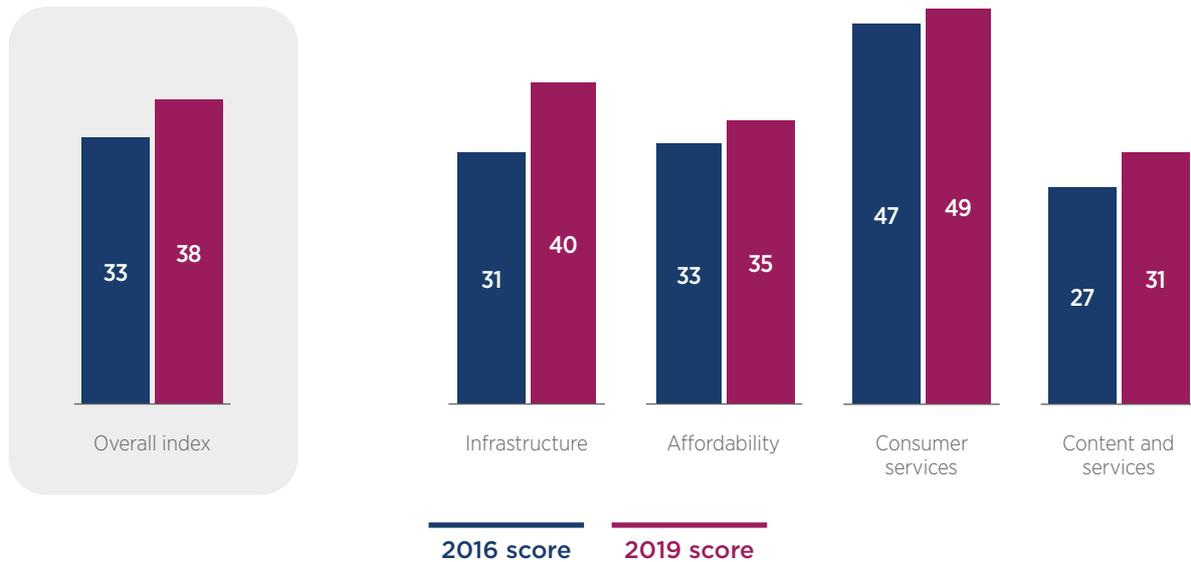
As digital technologies become more central to everyday life, the urgency to close the digital divide has never been greater. Governments and mobile industry players across the region are united on this objective.

- In August 2020, TNM partnered with KaiOS Technologies to launch the most affordable 4G KaiOS-enabled smart feature phone in Malawi. Priced at MWK24,999 ($33.90),[8] the device has been designed to suit the communications needs of first-time users and those in rural areas.

- In July 2020, Telkom Kenya and Google's Loon project launched internet services in remote parts of Kenya, after the government fast-tracked the approval process to help improve communications during the pandemic. The 4G internet service has been tested with 35,000 customers and will initially cover a region spanning 50,000 square kilometres. Loon and Vodacom Group also announced a partnership to bring similar services to Mozambique.

- In July 2020, KaiOS Technologies partnered with corporate organisations to distribute smart feature phones across Lagos State, Nigeria, to help students from low-income families (where household incomes are below $100 per month) continue their education during the Covid-19 lockdown period – and supplement their learning once schools re-open.

- In July 2020, the GSMA relaunched the Mobile Internet Skills Training Toolkit (MISTT) with five new modules: Mobile Money, Online Safety, Android, KaiOS and Accessibility Features. The MISTT has already been rolled out in 21 countries across Sub-Saharan Africa, Southeast Asia and Latin America, resulting in more than 1 million users being trained.

- In April 2020, the Ghana Investment Fund for Electronic Communications (GIFEC), a government programme to help bridge the country's digital divide, signed a deal with OpenRAN provider Parallel Wireless to connect up to 2,000 communities without coverage.

8. Malawi kwacha to US dollar conversion as of 4 August 2020

3.3
The mobile industry's response to Covid-19

The mobile industry in Sub-Saharan Africa has largely risen to the challenge of keeping individuals and businesses connected during the Covid-19 pandemic, despite the change in data consumption patterns. This reflects operators' continued investments in resilient network infrastructure. Beyond connectivity, mobile operators in the region have engaged with businesses and governments on initiatives to alleviate the impact of the pandemic on vulnerable individuals and communities.

Covid-19 response measures implemented by operators include temporary fee waivers on mobile money transactions to reduce reliance on physical cash, data tariff discounts and zero-rating for education and health sites, and cash donations to purchase personal protective equipment and essential goods.

Source: GSMA, ITU, government/company websites

Figure 21

Selected operator response measures to the Covid-19 pandemic in Sub-Saharan Africa

Multiple markets	• Airtel Africa partnered with Unicef to provide children with access to remote learning and cash assistance for their families via mobile cash transfers. The initiative aims to benefit around 133 million school-age children in 13 countries across Sub-Saharan Africa. • MTN Group contributed a cumulative sum of around ZAR42 million ($2.5 million) in a number of markets to support government relief funds for the unemployed, small and large businesses, and the procurement of essential goods and PPE. • Orange sent its local Foundations in Africa and the Middle East protective equipment and cash for staple items. Each country Orange operates in will receive financial aid and equipment worth €120,000.
Burkina Faso	• Onatel waived cash transfer fees for utility bills on Mobicash. The operator also removed commission payments for produce traders and raised the monthly payment allowance.
Cameroon	• Orange waived fees on cash transfers and utility bill payments through Orange Money, zero-rated access to educational content for students, reduced the price of internet bundles by 30% and offered a 50% discount on internet devices. • MTN suspended the payment of fees on money transfers between MoMo accounts, for amounts of up to XAF20,000 ($35) for 30 days. MTN Foundation also provided free access to websites and other digital platforms dedicated to education from MTN's network in Cameroon.
DRC	• The GSMA, mobile operators Africell, Orange and Vodacom, and other partners collaborated to use mobile big data analytics to inform the government's response. Mobile money operators also waived fees on P2P and bank-to-wallet transactions.
Ghana	• MTN waived fees on MoMo wallets for transactions, and zero-rated access to some educational sites and the Ghana Health Service's website.
Kenya	• Airtel and Safaricom waived mobile money transaction fees on Airtel money and M-Pesa, respectively, and increased the daily transfer limit for SMEs.
Liberia	• Mobile money operators waived fees for P2P, merchant and bank-to-wallet transactions.

Malawi	• TNM partnered with the College of Medicine to offer students a 10 GB data bundle for online learning and access to over 10,000 books on Buku Digital Library.
Mali	• Orange partnered with the Ministry of Health and Social Affairs to provide free data for essential workers, zero-rated numbers for information and text messages with vital information, discounts on data tariffs, zero-rated data for remote-learning platforms, and free transactions on online payment apps.
Mozambique	• Vodacom set up 30,000 handwashing stations at M-Pesa agents across the country, provided anonymised big-data support to government in its decision making around the response, and provided the health service with both data and devices.
Nigeria	• Airtel pledged NGN1.9 billion ($4.9 million) to the fight against Covid-19. Airtel also made SMS free and zero-rated data for educational and health sites. • MTN amplified the government's awareness efforts and suspended MoMo transfer fees.
Republic of the Congo	• MTN and Airtel reduced the rates for voice calls, SMS, data and mobile money transfers.
Rwanda	• Airtel and MTN waived fees on mobile money transactions. Airtel also waived fees for water bill payments and gave cash bonuses on electricity recharges.
Senegal	• Sonatel provided free subscriptions to online educational material for students in partnership with universities in Senegal, and increased data allowances for remote working and to support companies using the Orange Business service.
South Africa	• MTN zero-rated a USSD line for reporting infections and for other critical information, and zero-rated two Ayoba Covid-19 channels for sharing updated news and information. • Telkom partnered with the National Institute for Communicable Diseases and the Council for Scientific and Industrial Research to develop a track and trace solution to identify people who may have contracted Covid-19. • Vodacom provided 20,000 devices, 100 TB of data and 10 million voice minutes to the National Department of Health to support efforts to combat the spread of Covid-19.
South Sudan	• Zain developed a management system to provide information from credible sources, such as the World Health Organization, local government entities and international medical agencies. Zain also donated handsets to health workers and launched a social media campaign to raise awareness.
Tanzania	• Vodacom Tanzania Foundation provided the Ministry of Health and ICT departments with routers and data bundles to assist them in their response efforts. Vodacom Tanzania also provided zero-rated data services to the government's Covid-19 team and free data access to the National Institute of Medical Research, and promoted its free education platform.
Togo	• T-Cell (Togo) announced a total fee waiver on all T-Money transactions.
Uganda	• Airtel and MTN waived fees on mobile money transfers. Airtel also reduced the price of internet bundles and zero-rated access to selected health and educational websites.
Zambia	• MTN waived MoMo fees, doubled transaction limits and allocated free SMS to users.
Zimbabwe	• Liquid Telecom provided financial support as well as expertise and technology for a toll-free helpline and call centre for citizens.

3.4
Driving social impact through mobile: spotlight on PAYG utility solutions

The expansion of mobile networks and mobile money in Sub-Saharan Africa has supported a range of pay-as-you-go (PAYG) business models that make products and services accessible to low-income consumers. PAYG utility solutions have a significant social impact by enabling innovative models for energy, water and sanitation services that are affordable, clean, safe and reliable.

One of the foremost applications of the PAYG business model is in the provision of solar-powered energy. In Sub-Saharan Africa, off-grid households typically rely on kerosene and diesel generators for lighting and power, which have negative health impacts and variable costs. However, PAYG solar models allow people to make incremental payments, often through mobile money, for a solar household system that can power phone and radio charging, as well as other appliances such as TVs and fans.

In a typical PAYG solar model, the customer pre-pays for a specified number of days or weeks, and the system automatically turns off when this balance runs out, with the payment going towards the customer's eventual ownership. In other models, the customer makes continuous payments to lease a solar system that is upgraded as needed by the company, which is similar to solar mini-grid models that also rely on mobile money for customers to make small pre-payments for the service.

PAYG solar has demonstrated significant social impact while also providing commercial value to mobile operators, therefore representing an opportunity to make progress with UN Sustainable Development Goal 7: Affordable and Clean Energy. Recent findings from the GSMA Mobile for Development Utilities study, "The value of pay-as-you-go solar for mobile operators", demonstrate how regular mobile money payments for an essential service can drive financial inclusion:

- Across Uganda, Benin, Rwanda and Zambia, 21–31% of PAYG users newly subscribed or re-subscribed to a mobile operator's mobile money service when they started using PAYG solar.

- PAYG solar users in Benin increased the frequency of mobile money usage by 113%, compared to a 27% increase in non-PAYG customers, between April 2018 and July 2019.

- The transaction frequency for PAYG solar users increased beyond solar payment transactions, with a 57% increase in merchant payments in Uganda.

- In Côte d'Ivoire, there was an increase of nearly 31% in clients using data after adopting the PAYG solar service, compared to 9% growth for non-PAYG customers.

The success of the PAYG solar business model has led to its replication in other essential service delivery models, such as for cooking gas, water and sanitation services. The case studies below highlight examples of PAYG solutions, supported by the GSMA Mobile for Development Utilities Innovation Fund.

Circle Gas offers PAYG liquefied petroleum gas (LPG) for cooking to low-income households

Some 70% of the population (900 million people) of Sub-Saharan Africa lack access to clean cooking fuels and use expensive and polluting fuels such as charcoal, biomass and kerosene, which have serious health impacts. Adopting alternatives, such as LPG, incurs high set-up costs. KopaGas developed a solution that allows customers to purchase gas in affordable quantities for cooking, via an IoT smart meter on the canister and mobile money pre-payments. Mobile technology is at the heart of the company's operations, supporting agents to register new customers, monitor gas consumption and pre-empt and track gas delivery to households.

KopaGas has brought measurable improvements to customers' lives, 76% of whom are women. Some 88% of customers reported that the service gave them an improved quality of life, largely driven by time and money saved, and 87% would recommend the service to a friend.

In January 2020, Circle Gas acquired KopaGas's technology in a transaction worth $25 million, thought to be the largest pure private equity investment in clean cooking technology.[9] The investment will accelerate the expansion of the business in Tanzania and Kenya. Safaricom in Kenya is also an investor in Circle Gas; the solution will run on its NB-IoT network, which provides low power mobile connectivity. This is the first time a mobile operator has invested in clean cooking solutions, recognising the commercial opportunity of mobile-enabled utility services.

CityTaps enables low-income households to access piped water services

Globally, nearly 1 billion people living in urban areas lack access to running water at home. Cash-strapped water utilities struggle to serve these people while grappling with poor revenue collection efficiency, high water losses and billing inaccuracies. The urban poor suffer the most by having to pay a triple 'tax' on poverty in time, health and money. The problem is further compounded by Africa`s rapid urbanisation, with the continent's urban population expected to more than double by 2040.

CityTaps offers a solution through a combination of prepaid smart water metering and an integrated software management system that processes PAYG payments through mobile money. Customers can access running water at home by paying with mobile money for any amount, at any time, and thereby remain in control of their bill, rather than waiting for delayed bills with large lump sums. It allows new subscribers to be connected without risk to the utility (as they are prepaid) and enables users previously disconnected due to high arrears to reconnect to utility networks and make micropayments towards their accrued debt.

In CityTaps' initial deployment with the water utility in Niamey, Niger, the company measured significant benefits for customers, utilities and mobile operators. Some 43% of customers became new mobile money users to access the service. New subscribers saved up to 94% per cubic meter of water consumed as the water utility price is regulated (unregulated water vendors charge up to 16 times more). New subscribers also saved an average of 86 minutes per day by having water piped to their households, rather than having to collect it.

CityTaps is expanding its service within Niger and into new markets such as Burkina Faso, Mali, Senegal and Kenya. Based on the success of grants from the GSMA, SEEN – the water utility in Niamey – has ordered 10,000 CTSuites. This deployment is due to be completed in 2020 and will benefit nearly 100,000 people.[10]

9.   "Circle Gas has acquired clean cooking PAYG technology and are launching it in Kenya", GSMA, January 2020
10.   "CityTaps: Delivering safe water to the urban poor through prepaid smart metering and mobile money", GSMA, April 2020

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Mobile contributing
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Loowatt provides toilets to households in informal settlements on a subscription basis

Access to basic sanitation services is a major public health challenge in Madagascar, where only a tenth of the population uses at least basic sanitation services. Across Sub-Saharan Africa, just under a third of the population has access to basic or safely managed sanitation. It is a particular challenge in Madagascar's capital, Antananarivo, where high urban density and climate change pose significant challenges to waste and faecal sludge management.

Loowatt provides households with waterless flush toilets that use a polymer film liner to collect waste and odours in a transportable container. Loowatt regularly collects and transports the waste for treatment in an anaerobic digester to convert waste into biogas and fertiliser. This innovative model relies on mobile technology to support the logistics of collecting and transporting waste, and mobile money for customers to pay for the service. Although it was not initially easy to encourage customers to use mobile money in a market where it is less widely adopted, the mobile tools are crucial to Loowatt scaling its operations, as cash collections represent 15% of costs.

Loowatt's sanitation service offers significant benefits for customers, 70% of whom are women. The solution properly contains waste, protects users and the wider community from exposure to pathogens that cause disease, and provides individuals with dignity and comfort.[11]

These innovative PAYG utility solutions demonstrate how enabling users, especially those in low-income segments, to make regular, affordable mobile money payments for crucial energy, water and sanitation services drives both financial inclusion and social impact. The solutions are particularly impactful for women as they often bear the household responsibilities that depend on reliable and safe utility services, such as cooking and childcare. In this light, PAYG utility solutions can also contribute to bridging the gender gap in the use of digital financial services among women.

The opportunity for PAYG utility models, and other applications such as PAYG smartphones, to impact livelihoods across Sub-Saharan Africa is enormous. This has prompted the GSMA to launch and scale the Instant Payment Notification Hub to make mobile money integrations easier for mobile operators and innovative utility service providers. The platform has demonstrated significant industry value and was recently spun out to Beyonic to reach commercial scale through a competitive selection process.[12] The GSMA Harmonised API initiative also provides the mobile industry with a set of standard specifications that make it easier for third-party integrations. These two tools are key to enabling an ecosystem of more PAYG solutions to reach low-income populations with essential services.

11.   "Supporting waterless flush sanitation through mobile technology – Loowatt", GSMA, April 2019
12.   "The GSMA Instant Payment Notification (IPN) Hub: Impact and insights from inception to industry transition", GSMA, April 2020

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Mobile contributing
to economic growth
and social progress

Policy actions for digital and fiscal resilience

Digital transformation is accelerating across Sub-Saharan Africa, underpinned by increasing access to broadband connectivity. Governments, public institutions, the private sector and development organisations are increasingly using digital platforms to improve lives and power economic growth in the region. It is essential for policymakers to implement policies and best practices that enable affordable services with the optimal levels of capacity and coverage.

Connectivity has become even more important during the Covid-19 pandemic, serving as a lifeline for citizens to access essential services. By enabling homeworking, remote education, online shopping and digital payments, connectivity has been crucial in keeping economies active and mitigating the socioeconomic repercussions of the pandemic. A study published by the ITU in 2019 showed that an increase of 10% in mobile broadband penetration in the continent would yield a 2.5% increase in GDP per capita.[13]

As such, governments and policymakers should manage spectrum and implement fiscal policies to enhance access to connectivity and drive investment in more resilient digital infrastructure for everyone.

4.1
Forward-looking spectrum management

Efficient and effective management of spectrum is key to maximising the opportunities that mobile connectivity can bring to society. Countries such as DRC, Ghana, South Africa and Zimbabwe have highlighted how mobile operators and policymakers can work together to improve mobile capacity and coverage by providing temporary access to much-needed spectrum.[14] Here we provide a blueprint for how countries can build on this momentum, irrespective of whether the spectrum is used for 3G, 4G or 5G.

Setting spectrum policy for 5G

The launch of commercial 5G services in South Africa is an important milestone for Sub-Saharan Africa. We expect the technology to spread across the region over the course of the next decade. However, it is important that policymakers start planning now. Making sure the needed spectrum resources are available under the right conditions when the time is right to launch will lower broadband costs, increase coverage and boost connectivity.

5G needs a significant amount of new harmonised mobile spectrum, so ensuring the timely availability of prime bands – including those whose use requires defragmentation – should be prioritised. Regulators should aim to make available 80–100 MHz of contiguous spectrum per operator in the prime 5G mid-bands (e.g. 3.5 GHz) and around 1 GHz per operator in the high bands (e.g. mmWave spectrum). Sub-1 GHz spectrum is also needed to safeguard coverage and ensure everyone can eventually access 5G.

Mid-range frequencies are today used as the basis for the first commercial 5G networks all over the world. This initial focus, particularly on the 3.5 GHz range, produces the scale needed to bring down the cost of network equipment and mobile devices. Harmonisation has always played a key role in the success of mobile networks, and 5G is no different.

More spectrum beyond the 80–100 MHz will be required as 5G demand increases. Reusing 4G bands and extending the 3.5 GHz range are important steps. However, adding new bands is equally important. Here, mobile operators agree that the 6 GHz band holds great potential. It is already used

13.   Economic contribution of broadband, digitization and ICT regulation, ITU, 2019
14.   "Keeping everyone and everything connected: How temporary access to spectrum can ease congestion during the COVID-19 crisis", GSMA, March 2020

for backhaul, and mobile operators are making their case for its use in their 5G networks. Part of the band is also up for debate at WRC-23. Discussions regarding the band's future need to focus on maximising its value and balancing different uses.

The 2020s will see strong growth in the number of Africans connected to mobile broadband. As 4G and 5G grow together throughout the decade, spectrum preparation can drive cost efficiency and promote growth.

The need for technology-neutral spectrum licensing

For governments that want consumers and businesses to benefit from the best possible mobile broadband experience, support for technology-neutral spectrum licensing is a must. It is widely recognised as best practice when assigning spectrum to mobile operators. It enables 2G or 3G spectrum to be refarmed for 4G as well as 5G, at a pace driven by market demand. Beyond mobile broadband, the rapidly growing IoT market is also making the need to adopt neutral licences more urgent. To get technology neutrality right, key considerations should include the following:

- Attempts to extract additional revenue for converting technology-specific licences to technology-neutral licences have misfired and held back the introduction of new mobile technologies.

- While a renewal process provides an opportunity to re-issue spectrum licences as neutral, regulators should not delay the introduction by waiting for the expiry dates of existing licences.

- When assigning new spectrum, regulators should do so in a technology-neutral manner or at the very least not restrict the introduction of next-generation technologies such as 4G and 5G.

Creating an effective spectrum framework for improving coverage

Increasing access to the internet is one of the great challenges that policymakers and the mobile industry face. Only together can they improve coverage and access to jobs, education, healthcare and, more widely, the information needed to fully participate in social, political and economic life.

The GSMA's position on coverage details three best-practice positions that address spectrum directly:

1. Assign sufficient amounts of mobile spectrum to operators in a timely manner, including coverage bands

Mobile operators need timely and affordable access to a sufficient amount of spectrum to support high-speed mobile broadband services with good coverage. It is vital that sub-1 GHz coverage spectrum bands are assigned for mobile broadband. This range can cover wide areas with a small number of base stations, making it ideal to affordably cover rural areas. Digital dividend

frequency bands are essential, as they are typically the only sub-1 GHz spectrum available at the outset for mobile broadband services. Without such coverage bands, it can be very expensive – and thus impractical – to provide widespread rural mobile broadband services.

For this to work smoothly, doing the right groundwork is key. To free up additional sub-1 GHz spectrum particularly in the digital dividend, governments that are yet to complete the digital switchover need to develop a plan in agreement with broadcasters and operators, including potential funding for migration of broadcasters to alternative spectrum assignments, and for set-top box availability and distribution. The aim is to assign spectrum as efficiently as possible. As has been shown across the world, perceived migration and cost-related challenges can be overcome.

Delays to spectrum awards and limiting how much is made available also have an impact on coverage levels. Recent research shows that 4G mobile coverage increases by 11–16 percentage points, and 3G coverage 20 percentage points, when operators are assigned spectrum two years earlier.[15] The same study reveals that an additional 20 MHz of spectrum per operator increases 4G coverage by 2–4 percentage points. These principles also apply to wireless backhaul spectrum. It needs to be affordable and made available in a timely manner in sufficient quantities in the right bands and under an appropriate licensing regime.

2. Do not inflate spectrum prices. Look for trade-offs between reduced spectrum fees and carefully considered wider coverage obligations

Governments should prioritise improved mobile broadband services with excellent coverage – ahead of revenue maximisation – when awarding and renewing spectrum licences. High spectrum prices have been shown to lead to slower mobile broadband and weaker coverage. It is also important that governments strongly consider how they can achieve ambitious coverage goals by offering discounted spectrum in return for targeted obligations.

Recent research shows that 4G mobile coverage would increase by 7.5 percentage points if countries with the most expensive mobile spectrum had sold spectrum at the global average price instead.[16] There are also a growing number of examples of spectrum remaining unsold due to high prices. The cause is often poor policy decisions, including:

- directly setting high upfront costs and/or annual fees
- setting high reserve prices for auctions
- restricting the supply of spectrum, creating scarcity
- poorly designed auctions.

A growing number of governments are using reduced spectrum fees in return for operator commitments to provide coverage in carefully targeted areas. These approaches include offering spectrum for a very low cost or for free when licences are due for renewal. There are also reductions in annual fees, or reimbursements of a fixed amount of upfront costs in return for coverage commitments in areas. These approaches pragmatically address the difficulty in providing coverage in specific areas where the economics of mobile service delivery are the most challenging.

3. Avoid licence terms and conditions that discourage network investment/innovation and needlessly increase costs

It is vital that there is a policy and regulatory environment that gives the mobile industry the ability to upgrade and innovate, as well as the confidence to make significant, long-term network investments. This is vital for rural mobile coverage as the time needed to make a return on network investment can be significant; unnecessary risks and limitations create major obstacles.

It is critical that regulators award long-term, technology-neutral licences (e.g. 25 years) with the expectation of renewal. Shorter, technology-specific licences with an unclear renewal are especially harmful for rural mobile coverage as they discourage investment. Technology-specific licences – or additional costs for technology neutrality – can also mean that highly valuable coverage bands (e.g. 900 MHz) are used only for 2G rather than mobile broadband.

The conditions imposed in licences – including coverage and other quality-of-service obligations – should always be carefully considered. Imposing onerous and inflexible conditions that may be impractical or impossible to meet can jeopardise investment and result in consumer price rises. Instead, regulators should engage in a dialogue with licence holders to reach more practical solutions.

15.   The impact of spectrum prices on consumers, GSMA, 2019
16.   Ibid

4.2
Strengthening digital infrastructure

Recognising the critical role of digital technologies in keeping people connected, many governments have implemented regulatory and fiscal measures targeted at the mobile sector to support network resilience, and ensure affordability and access to vital connectivity. For example, in Nigeria, several state governments have reduced right-of-way fees for laying fibre-optic cables by up to 95% to enable the efficient and timely rollout of network infrastructure. In Colombia, the government eliminated VAT (19%) on prepaid and contract mobile service plans (voice and data) up to $17 (COP71.2) from April to August 2020.

Despite the importance of mobile connectivity for a resilient economy, access to mobile services remains a key issue in Sub-Saharan Africa. Today, 49% of the population in the region remains unconnected to mobile internet despite living in areas covered by a mobile broadband network. To improve connectivity, policy measures should focus on encouraging investment to strengthen digital infrastructure and improve consumers' ability to access digital services.

The infrastructure and affordability issues affecting consumers in Sub-Saharan Africa are in part explained by consumers and mobile operators bearing a high mobile tax burden as well as facing issues in deploying network infrastructure. Markets in Sub-Saharan Africa are subject to some of the highest overall mobile tax burdens, with the industry paying on average 10% of revenue as sector-specific taxes, compared to 4% in Europe (2017). In Sub-Saharan Africa, taxes on mobile ownership alone constitute 7% of income for the bottom 20% earners – well above the 2% affordability target set by the United Nations (2019).

Reducing or eliminating sector-specific taxation is critical to encourage investment in mobile connectivity and improve affordability. As an example, in January 2020, Chad eliminated the excise duty (18%) on mobile internet to facilitate access to and usage of data. Meanwhile, Guinea provides an example of the negative impact that high mobile taxation can have on internet connectivity and macroeconomic growth. Had the Guinean government not introduced new taxes on voice, SMS and data consumption during 2015/2016, the number of mobile connections would have grown by 1 million and average minutes and SMS per connection per quarter by 54 and 60 respectively. Moreover, the introduction of mobile-specific taxes prevented the Guinean economy from benefitting from $671 million between 2015 and 2019 as a result of the reduced development of the mobile market.

Call for action #1
Rethink fiscal policy on mobile connectivity

Policymakers need to focus their efforts on improving the affordability of mobile connectivity to enhance access to digital services and build resilient digital infrastructure in a post-Covid-19 era. Governments should consider reforming sector-specific taxation to improve mobile connectivity.

Thanks to the positive impact of mobile on the economy, reforming mobile taxation can bring higher connectivity levels as well as GDP and tax revenue. Studies undertaken for the GSMA reveal that the removal/reduction of mobile-specific taxes and fees can stimulate the economy through greater mobile penetration, investment and tax revenues.

As illustrated in Figure 22, reforming mobile taxation leads to an increase in connectivity, GDP and tax revenue.

According to an EY-GSMA study, reducing the excise duty on mobile services from 10% to 3% in the Democratic Republic of the Congo would lead to an increase in unique mobile subscribers of 2.8 million or a 2.8% increase in subscriber penetration. As a result, GDP would grow by $276 million (0.8%), with tax receipts increasing by more than $21 million per annum after five years. The tax reform would in turn bring a cumulative fiscal gain of $31 million over five years.

Source: Reforming mobile sector taxation in the Democratic Republic of the Congo, GSMA and EY 2018; Reforming mobile sector taxation in Zambia, GSMA and EY, 2018; Reforming mobile sector taxation in Madagascar, GSMA and EY, 2019.

Figure 22

Estimated impacts of tax reductions over a five-year period (2019–2023)

	DRC	Zambia	Madagascar
	Reduction of excise duty on mobile services (10% to 3%)	Reduction of annual licence fees (3% to 1% of revenue)	Elimination of customs duty on handsets (10%)
Unique subscriber penetration	+2.8 million unique subscribers (+2.8%)	+0.3 million unique subscribers (+1.4%)	+0.4 million unique subscribers (+1.5%)
GDP impact	+$276 million	+$80 million	+$71 million
Annual gain in tax revenue	+$21 million	+$8 million	+$9 million

Call for action #2
Facilitate mobile infrastructure deployment

Policymakers should be motivated by the crisis to recalibrate regulations to facilitate mobile infrastructure deployment. They should streamline planning processes and access to sites to facilitate the rapid installation of network equipment on new and existing sites. The regulatory framework should provide certainty for operators to work together on infrastructure planning and voluntarily share their passive and active infrastructure.

Common in many countries, infrastructure-sharing arrangements allow mobile operators to jointly use masts, buildings and antennas, avoiding unnecessary duplication of infrastructure. Infrastructure sharing can also provide additional capacity in congested areas where space for sites and towers is limited. This practice can also facilitate expanded coverage in previously underserved areas.

Call for action #3
Prioritise digitisation of person-to-government transactions

Against the backdrop of Covid-19 and the challenging fiscal context, a growing number of governments are prioritising the digitisation of public services as part of ambitious national agendas. The digitisation of person-to-government (P2G) payments through mobile money brings a wide range of benefits to governments, citizens and businesses. In particular, it contributes to increasing domestic revenue mobilisation through a reduction of administrative costs, a reduction of leakage and an expansion of the revenue collection base. Governments should prioritise the digitisation of P2G payments as part of their post-Covid-19 measures.

The digitisation of all payments to governments in developing countries could generate savings of 0.8–1.1% of GDP each year through reduced leakage and fraud, and increased efficiency of payments.[17] About 29% of this would accrue to the digitisation of P2G payments, amounting to a saving for governments of 0.2–0.3% of GDP ($64–93 billion) on average across the developing world. Countries with a high level of cash payments and receipts, such as developing countries, would particularly benefit from digitising payments. For example, in Guinea, enabling the payment of vehicle tax through mobile money strongly contributed to a three-fold revenue increase from GNF10 billion (2016) to GNF34 billion (2017). The number of vehicle tax licences sold increased from 124,000 to 360,000.[18] In Rwanda, mobile money is the most popular payment option to pay for government services, accounting for 55% of online payments in 2020 on the Irembo platform – the government's online portal for digital services.

17. Digital Revolutions In Public Finance, IMF, 2017
18. Minutes of ministerial council of 27 July 2017, Government of Guinea, 2017

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