



The Mobile Economy
West
Africa
2018



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Contents

EXECUTIVE SUMMARY	2
<hr/>	
1 WEST AFRICA MOBILE MARKET OVERVIEW	6
1.1 Mobile adoption growing fast, underpinned by demographic shift	7
1.2 Technology shift: transition to mobile broadband in progress	10
1.3 Smartphone adoption: low-cost devices drive growth	12
1.4 Financials: fragile revenue growth weighs on margins and capex	13
<hr/>	
2 MOBILE SUPPORTING ECONOMIC GROWTH AND JOBS	15
2.1 The direct economic contribution of the mobile ecosystem	16
2.2 Indirect and productivity impacts of mobile technology	17
2.3 Outlook and trends for the next five years	17
<hr/>	
3 MOBILE AS A PLATFORM FOR EMPOWERING CONSUMERS ACROSS WEST AFRICA	18
3.1 Enabling innovation for socioeconomic impact	19
3.2 Delivering digital inclusion and financial services	22
3.3 Enabling access to life-enhancing services	25
3.4 Realising the SDGs	26
<hr/>	
4 SUSTAINING GROWTH AND INNOVATION IN THE MOBILE INDUSTRY ACROSS WEST AFRICA	28
4.1 The role of governments	29
4.2 Competition and market structure	32

Executive Summary



Mobile adoption on the rise

Mobile adoption has grown rapidly in West Africa in recent years, helped by the expansion of mobile networks to underserved communities and the increasing affordability of services and device costs. By the end of 2017, there were 176 million unique subscribers across the West Africa sub-region, comprising the 15 member states of the Economic Community of West African States (ECOWAS). Overall subscriber penetration reached 47% in 2017, up from 28% at the start of this decade. Despite the remarkable subscriber growth in the sub-region in recent years, and indeed across Sub-Saharan Africa, more than half of the region's population do not yet subscribe to a mobile service.

Subscriber growth will be driven by a demographic shift in the coming years, as many young adults take out a mobile subscription. Over the period to 2025, around 72 million new mobile subscribers will be added in West Africa, taking subscriber penetration to 54%. The transition to mobile broadband is gaining momentum across West Africa. 3G remains the dominant mobile broadband technology, but 4G adoption is rising rapidly from network expansion and greater availability of 4G devices. The number of smartphone connections has more than doubled over the last two years to reach 112 million, accounting for 35% of total connections on average at the end of 2017.





Mobile contributing to GDP and employment

In 2017, the mobile ecosystem contributed \$37 billion, equivalent to 6.5% of GDP, to the West African economy. The mobile ecosystem consists of mobile operators, infrastructure service providers, retailers and distributors of mobile products and services, mobile handset manufacturers, and mobile content, application and service providers. The use of mobile technology also drives improvements in productivity and efficiency for workers and firms. 3G and 4G technology allow workers and firms to use mobile data and internet services. This improves access to information and services, which in turn drives efficiency in business processes across many industries, including finance and health. This impact of mobile internet is particularly significant where fixed infrastructure is poor and mostly

confined to large cities and business & industrial districts.

Mobile operators and the wider mobile ecosystem provided direct employment to more than 200,000 people in West Africa in 2017, predominantly in the retailing and distribution of services and handsets. In addition to this, economic activity in the ecosystem creates jobs in other linked sectors as a result of the demand generated by the mobile sector. Going forward, we expect the economic contribution of the mobile ecosystem to continue to increase in both relative and absolute terms. In value-added terms, we estimate that mobile will contribute \$51 billion to the West African economy by 2022, equivalent to 7.7% of GDP.



Mobile delivering greater inclusion and empowering consumers

The number of mobile internet subscribers doubled over the last four years to reach 78 million, nearly half of the total number of mobile subscribers, by the end of 2017. The number of registered mobile money accounts in the sub-region reached 104.5 million in 2017, while the total value of transactions for the same period reached \$5.3 billion. The rapid adoption of mobile services and the funding and infrastructure gaps in the provision of essential services present an opportunity for local innovators to create digital solutions that address a wide range of social and economic challenges across different countries in the sub-region. As of February 2018, there were 142 active tech hubs across West Africa.

Collaboration among all stakeholders is required to sustain growth and innovation

in the mobile industry across the sub-region. In addition to the work of operators to expand and improve networks, significant efforts from governments at all levels are needed to create the right conditions for continued investment. At the supranational level, ECOWAS is well placed to convene and facilitate dialogue between multilateral stakeholders; serve as a hub for knowledge sharing and dissemination with regards to best practices; and provide a platform to harmonise differences in approach towards key issues that impact the mobile industry across the sub-region. At the country level, national and municipal governments have a role to play in addressing fiscal and regulatory issues that directly impact investment sentiments, especially on capital-intensive infrastructure deployment and the rollout of innovative mobile-based services.

WEST AFRICA

Unique mobile subscribers

2017

176m

47% PENETRATION RATE (% of population) 54%

248m

2025

CAGR 2017-25

4.4%



SIM connections

Excluding licensed cellular IoT

321m

2017

435m

2025

86% PENETRATION RATE* (% of population) 95%

3.9%

CAGR 2017-25

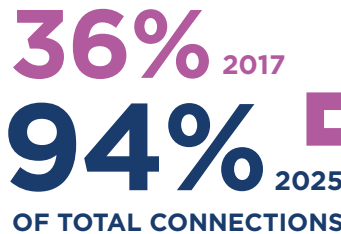


Accelerating moves to mobile broadband networks and smartphone adoption

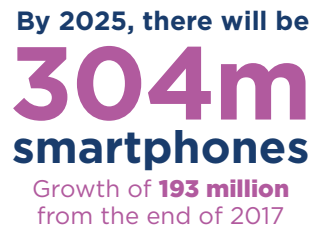
Mobile broadband networks



Mobile broadband connections



Smartphones



Data growth driving revenues and operator investments

Operator total revenues

CAGR 2017-25

14%

\$15.6bn

2017

\$17.4bn

2025



Operator capex of up to \$8 billion for the period 2018-20

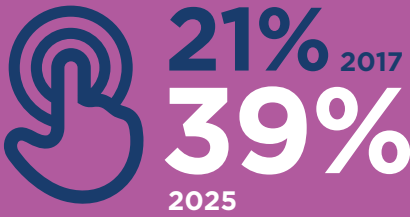


Mobile contributing to economic and social development across the region

DIGITAL INCLUSION

Delivering digital inclusion to the still unconnected populations

Mobile internet penetration



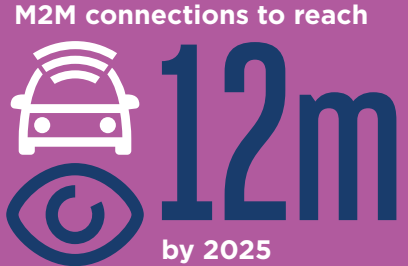
FINANCIAL INCLUSION

Delivering financial inclusion to the unbanked populations



INNOVATION

Delivering innovative new services and apps



Mobile industry contribution to GDP



Public funding

Mobile ecosystem contribution to public funding (before regulatory and spectrum fees)



Employment



Number of jobs directly supported by mobile ecosystem





01

West Africa mobile market overview

1.1 Mobile adoption growing fast, underpinned by demographic shift

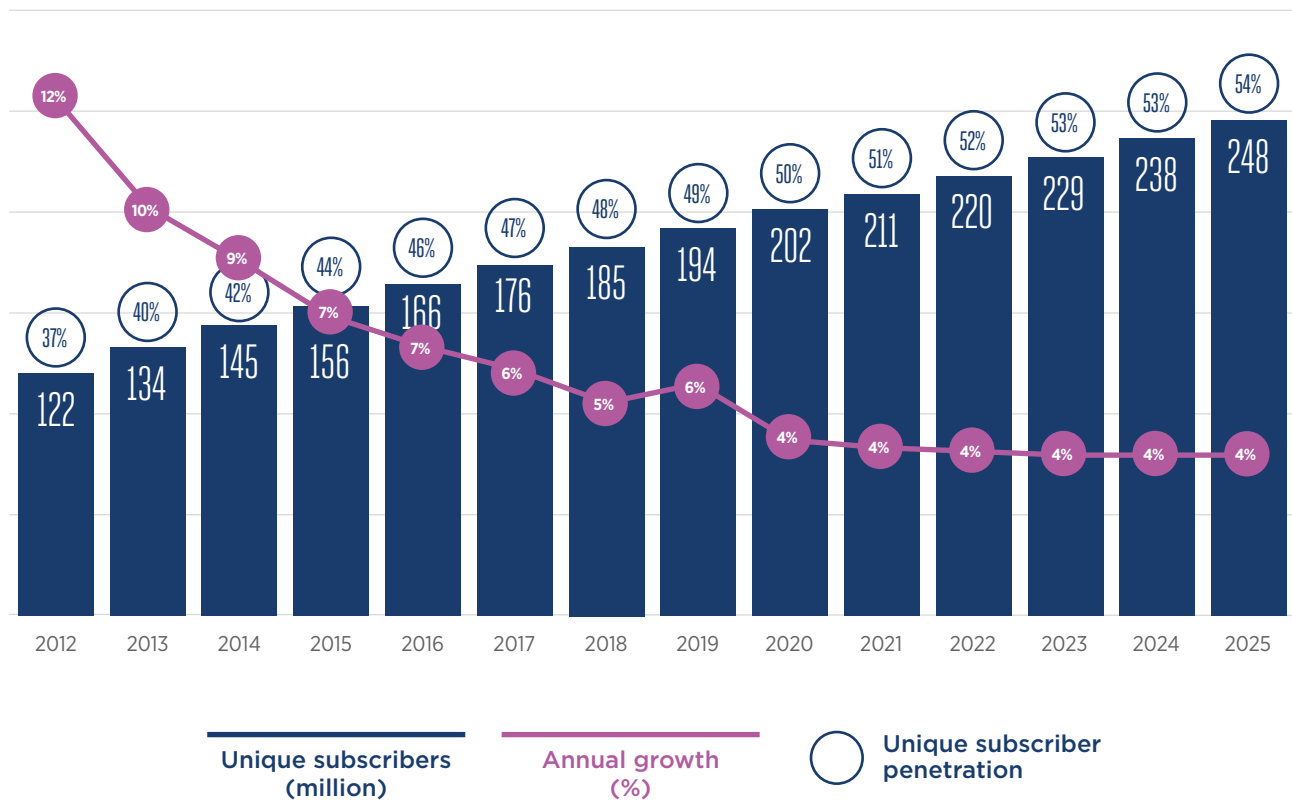
By the end of 2017, there were 176 million unique subscribers¹ across the West Africa sub-region, comprising the 15 member states of the Economic Community of West African States (ECOWAS). Mobile adoption has grown rapidly in West Africa in recent years, helped by the expansion of mobile networks to underserved communities and the increasing affordability of services and device costs. The number of mobile subscribers in the sub-region doubled between 2010 and 2017, reflecting a CAGR of just under 10% over that period. Although annual subscriber growth has now slowed to single digit rates, reaching 6% in 2017, the sub-region remains one of the fastest growing mobile markets globally, with a forecast CAGR of 4.4% over the period to 2025.

The mobile market in West Africa is markedly diverse, particularly in terms of size and subscriber penetration. Nigeria is the largest market in the sub-region and contributed more than half of total subscribers in 2017. The next five largest markets – Burkina Faso, Côte d'Ivoire, Ghana, Mali and Senegal – accounted for another third of subscribers, leaving the remaining nine countries with less than a fifth of subscribers. Overall subscriber penetration reached 47% in 2017, up from 28% at the start of this decade. Subscriber penetration figures in most countries in the sub-region are within a few percentage points of the average, apart from outliers Niger on 31% and Cabo Verde on 67%.

Figure 1

Source: GSMA Intelligence

West Africa unique subscribers



1. Unique users who have subscribed to mobile services at the end of the period, excluding cellular IoT. Subscribers differ from connections such that a unique user can have multiple connections.

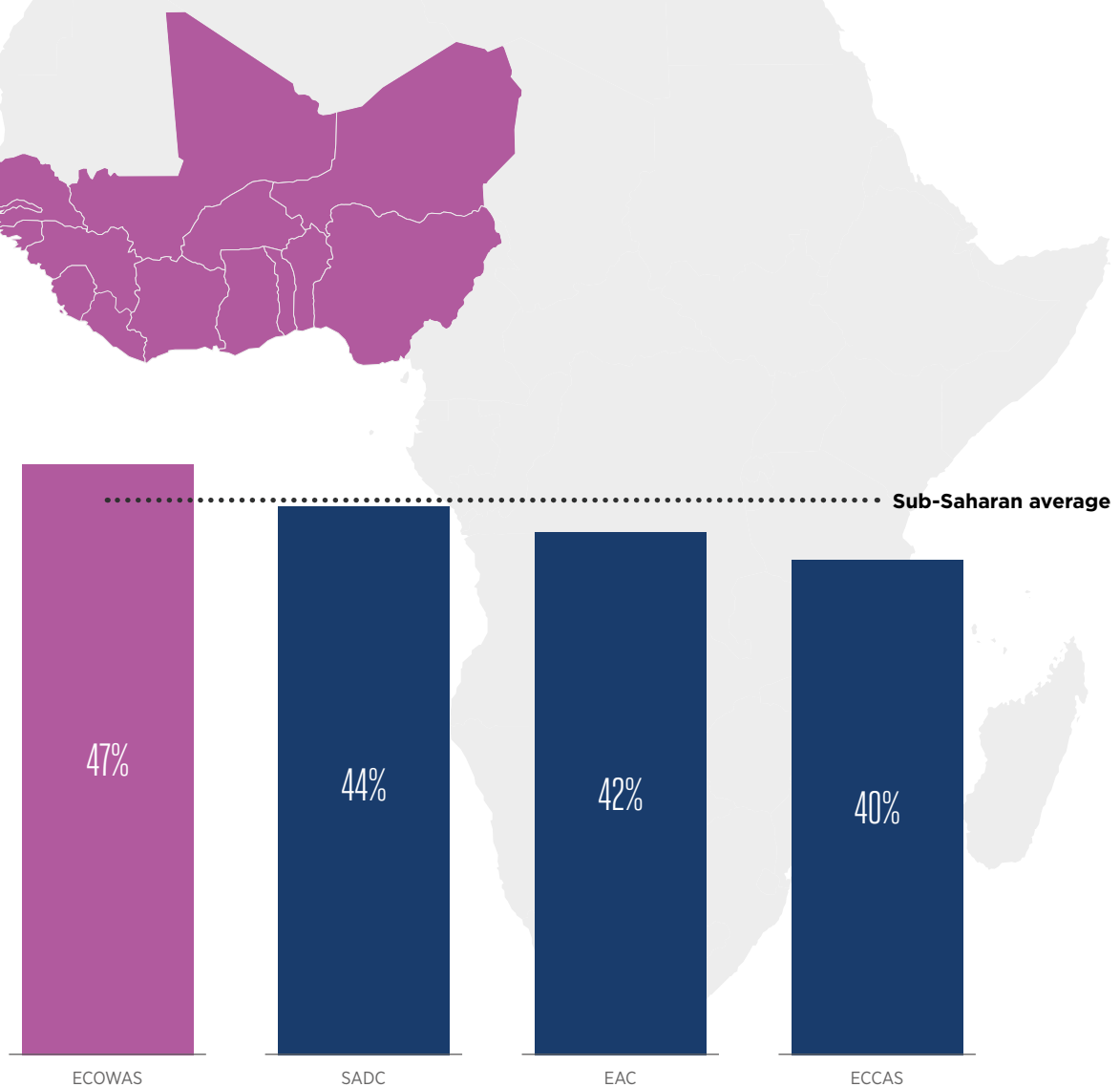
ECOWAS has the highest subscriber penetration figure of all the regional economic communities (RECs²) in Sub-Saharan Africa: EAC, ECCAS and SADC had penetration levels of 42%, 40% and 44% at the end of 2017, compared to the regional figure of 44%. Despite the remarkable subscriber growth in the sub-region in recent years, and indeed across Sub-Saharan Africa, the penetration figures

show that more than half the region's population do not yet subscribe to mobile services. While this underscores the potential for further subscriber growth, it also highlights the need to address the barriers to mobile adoption among underserved population groups, including women, rural dwellers, and low-income consumers.

Figure 2

Source: GSMA Intelligence

Unique subscriber penetration by REC, 2017



2. The African RECs are the Economic Community of Central African States (ECCAS), the East Africa Community (EAC), the Economic Community of West African States (ECOWAS) and the Southern Africa Development Community (SADC).

Across Sub-Saharan Africa, more than 40% of the population of many countries are below the age of 16. Furthermore, mobile adoption in this demographic, at less than 20%, is relatively low in comparison to the 70% subscriber penetration among adults. Consequently, subscriber growth will be driven by a demographic shift in the coming

years, as many young adults take out a mobile subscription. Over the period to 2025, around 72 million new mobile subscribers will be added in West Africa, taking subscriber penetration to 54%. Nigeria will account for the largest share of new subscribers, while Niger will record the fastest growth over this period (Figure 3).

Figure 3

Source: GSMA Intelligence

Share of subscriber growth, 2017–2025

CAGR 2017–2025



1.2 Technology shift: transition to mobile broadband in progress

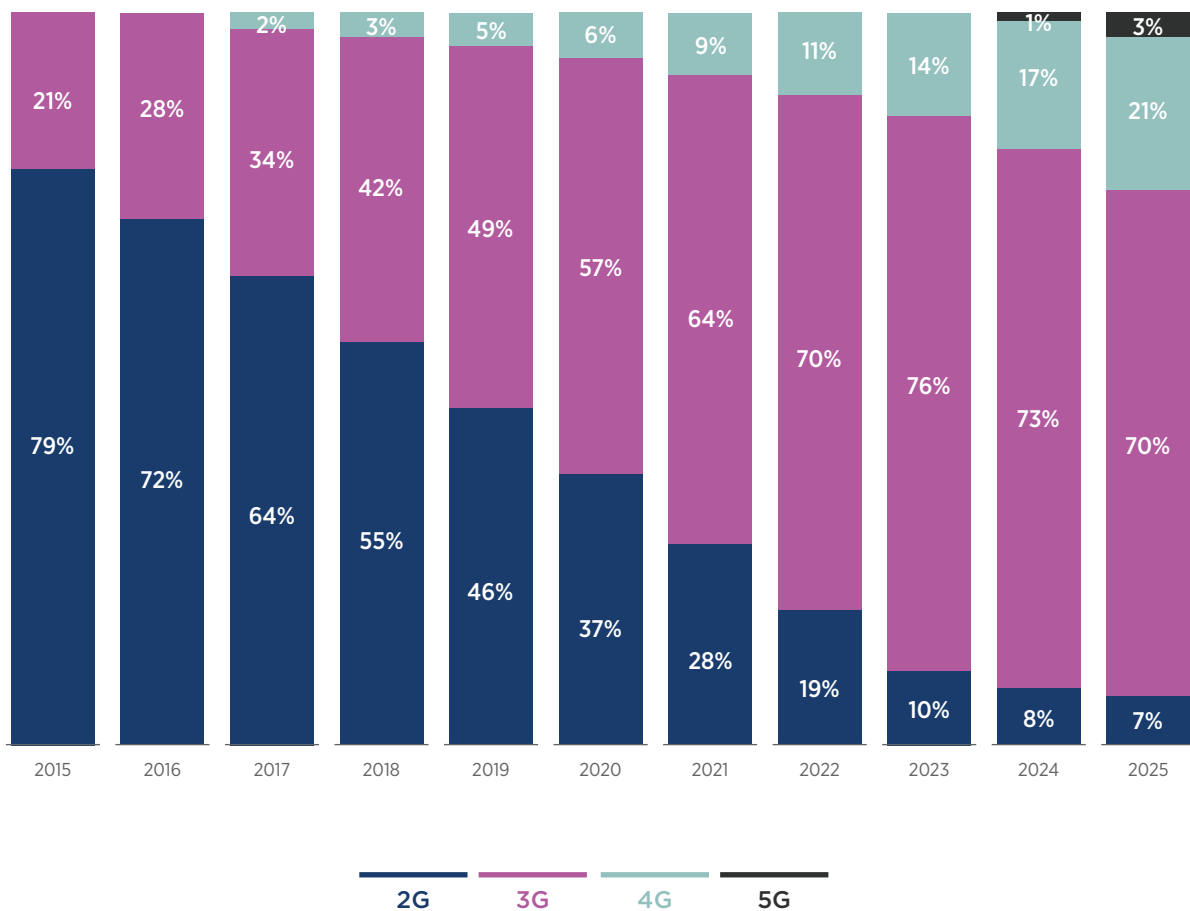
The transition to mobile broadband is gaining momentum across West Africa, driven by the expansion of 3G and 4G networks, lower data tariffs and the increasing affordability of smartphones. 3G remains the dominant mobile broadband technology: commercial 3G services are available in

all 15 countries in the sub-region, while 3G networks now cover two thirds of the population. The total number of mobile broadband connections will exceed 400 million by 2025, representing a fourfold rise on 2017, and will account for more than 90% of total connections.

Figure 4

Source: GSMA Intelligence

Mobile connections by technology



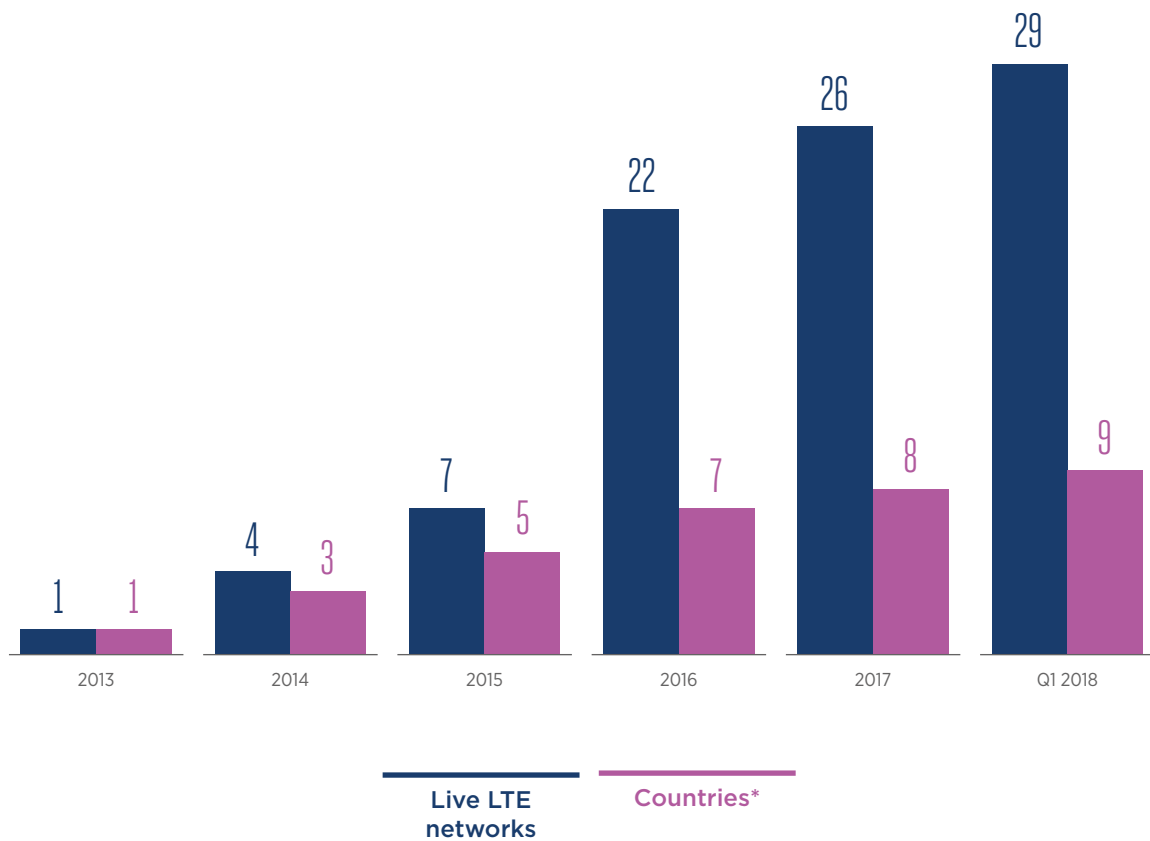
4G adoption is rising rapidly as a result of network expansion and greater availability of 4G devices. As of the first quarter of 2018, there were 29 live LTE networks in nine countries across West Africa, six of which have launched in the last year, including

Airtel Nigeria in February 2018, and Africell Gambia and Sierratel Sierra Leone in January 2018. 5G is expected to launch in the sub-region by 2025, although initial adoption will be impacted by network coverage and affordability.

Figure 5

Source: GSMA Intelligence

Live LTE networks in West Africa (cumulative)



*Benin, Côte d'Ivoire, Gambia, Ghana, Guinea-Bissau, Liberia, Nigeria, Senegal, Sierra Leone

1.3 Smartphone adoption: low-cost devices drive growth

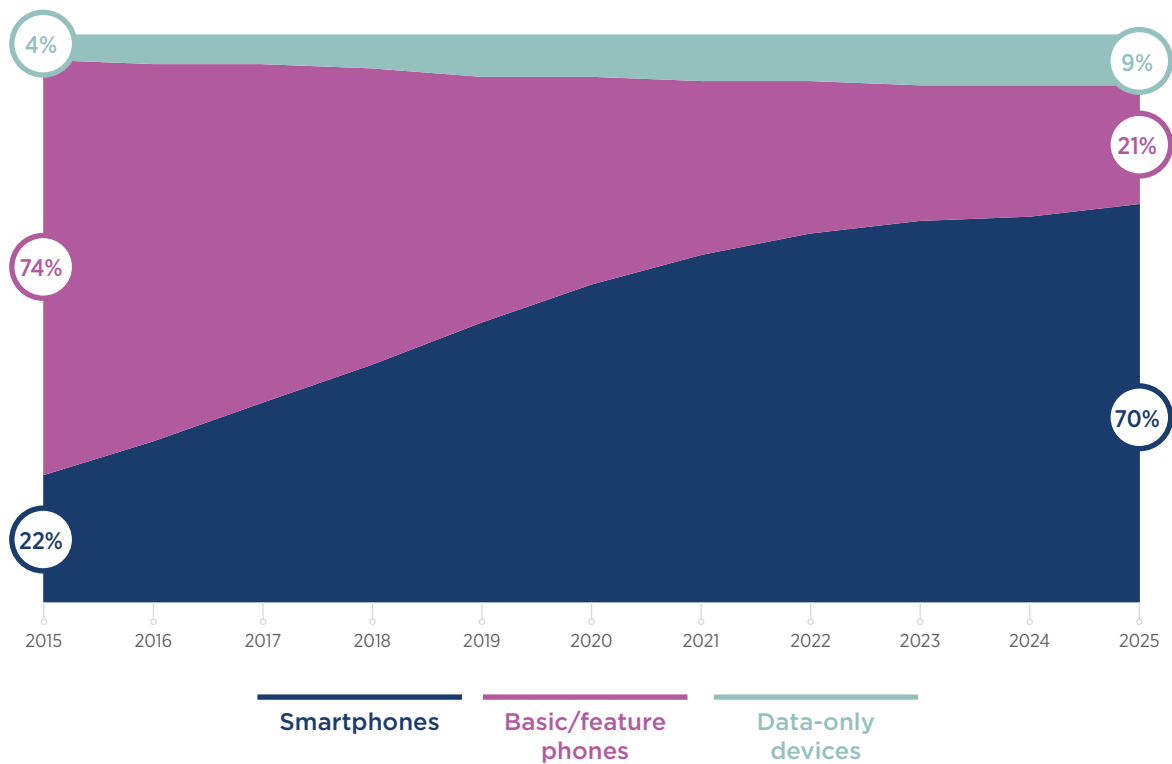
The uptake of mobile broadband in West Africa largely reflects the growing adoption of smartphones and other broadband-enabled devices. The number of smartphone connections has more than doubled over the last two years to reach 112 million, accounting for 35% of total connections on average at the end of 2017. Smartphone adoption

is fairly uniform across the sub-region, with Niger (25%) and Cabo Verde (50%) the only notable outliers. Nearly 200 million new smartphone connections will be added over the period to 2025, taking the smartphone installed base and adoption to just over 300 million and 70%, respectively.

Figure 6

Source: GSMA Intelligence

Device adoption (percentage of connections)



Smartphone adoption will be driven by the greater availability of affordable devices. For example, Google’s Android One initiative aims to launch low-cost smartphones across emerging markets. Google has partnered with several vendors, including Nokia, HTC and Xiaomi, to launch a range of low-cost smartphones running on the Android Oreo OS, some priced below \$50. In September 2017, MTN Nigeria launched the Freetel ICE 2 smartphone, part of the Android One initiative, for NGN13,000 (\$35).

Asia-based vendors, such as Gionee and Tecno, have also launched similarly priced devices, which now serve as a convenient entry point for many first-time smartphone users, especially those in low-income brackets. Smartphone adoption in the sub-region will also benefit from the growing second-hand devices market, consisting of imported used devices and those handed down by local users upgrading to newer handsets.

1.4 Financials: fragile revenue growth weighs on margins and capex

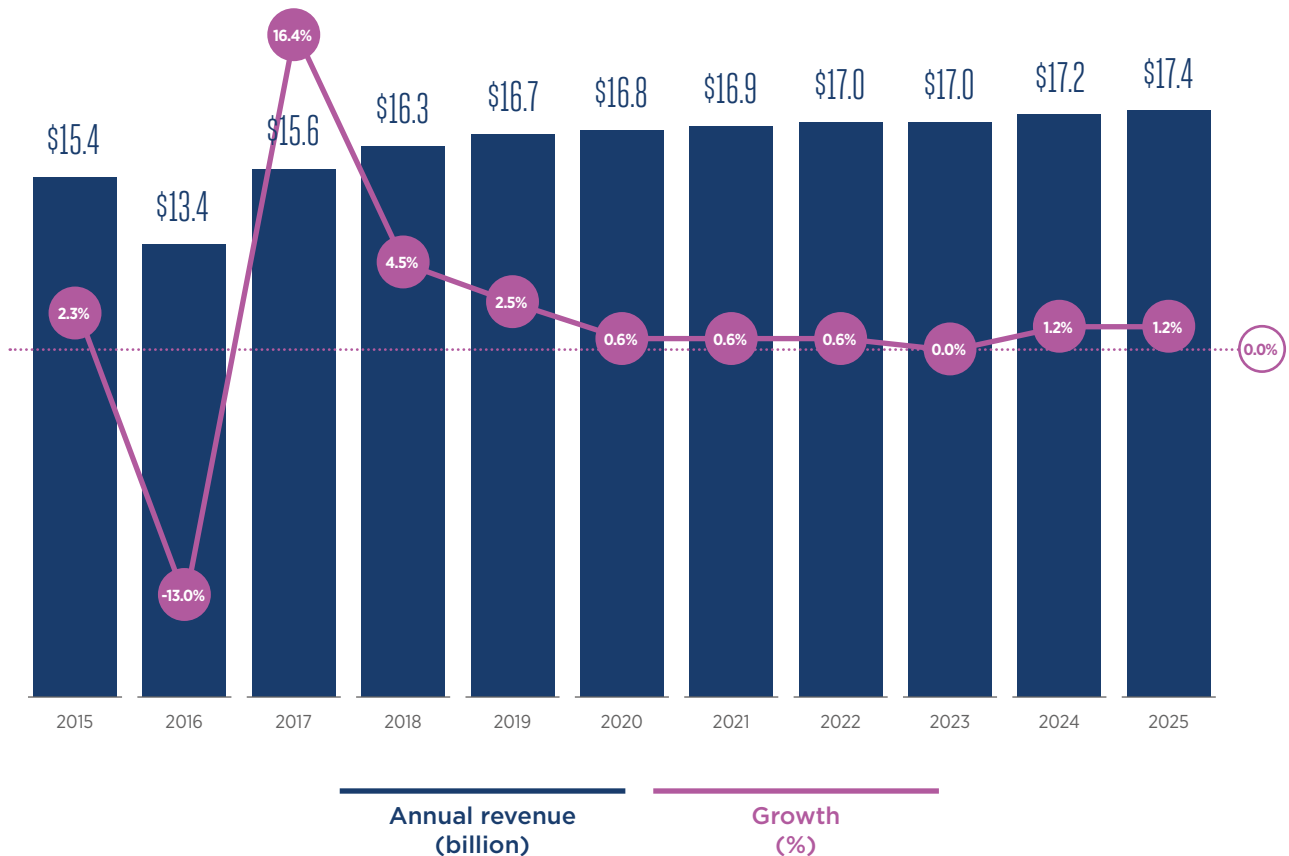
Total mobile revenues in West Africa reached \$15.6 billion in 2017, an increase of 16.4% on the previous year. This was mainly due to the base effect following a 13% decrease in 2016 as a result of sluggish economic growth and economic recession in some large markets, including Nigeria, which accounts for nearly half of mobile revenues. The sharp decline in mobile revenues in 2016 and subsequent recovery in 2017 underlines the strong correlation between economic growth and mobile revenues in Africa. Prepaid mobile subscriptions are prevalent in the region, giving users the flexibility to alter usage patterns for communications services based on short-term changes in their financial situations.

Revenue growth will remain positive, but weak at less than 2% annually, over the period to 2025 as the effects of an improved macroeconomic outlook and continued subscriber growth are counterbalanced by mounting pressure on voice and messaging revenues. The sub-region is seeing a growing shift to IP-based services, especially among younger consumers, as smartphone adoption rises. Furthermore, the majority of new subscribers will come from lower income groups who will likely spend less on mobile services than wealthier early adopters.

Figure 7

Source: GSMA Intelligence

West Africa mobile revenues



Mobile operators therefore need to explore new revenue streams, beyond basic communications services, to ensure sustainable growth. One area of potential growth is the enterprise sector. MTN and Orange have launched a wide range of connectivity, payments, and cloud storage solutions for business customers in key markets, including Côte d'Ivoire, Ghana and Nigeria.

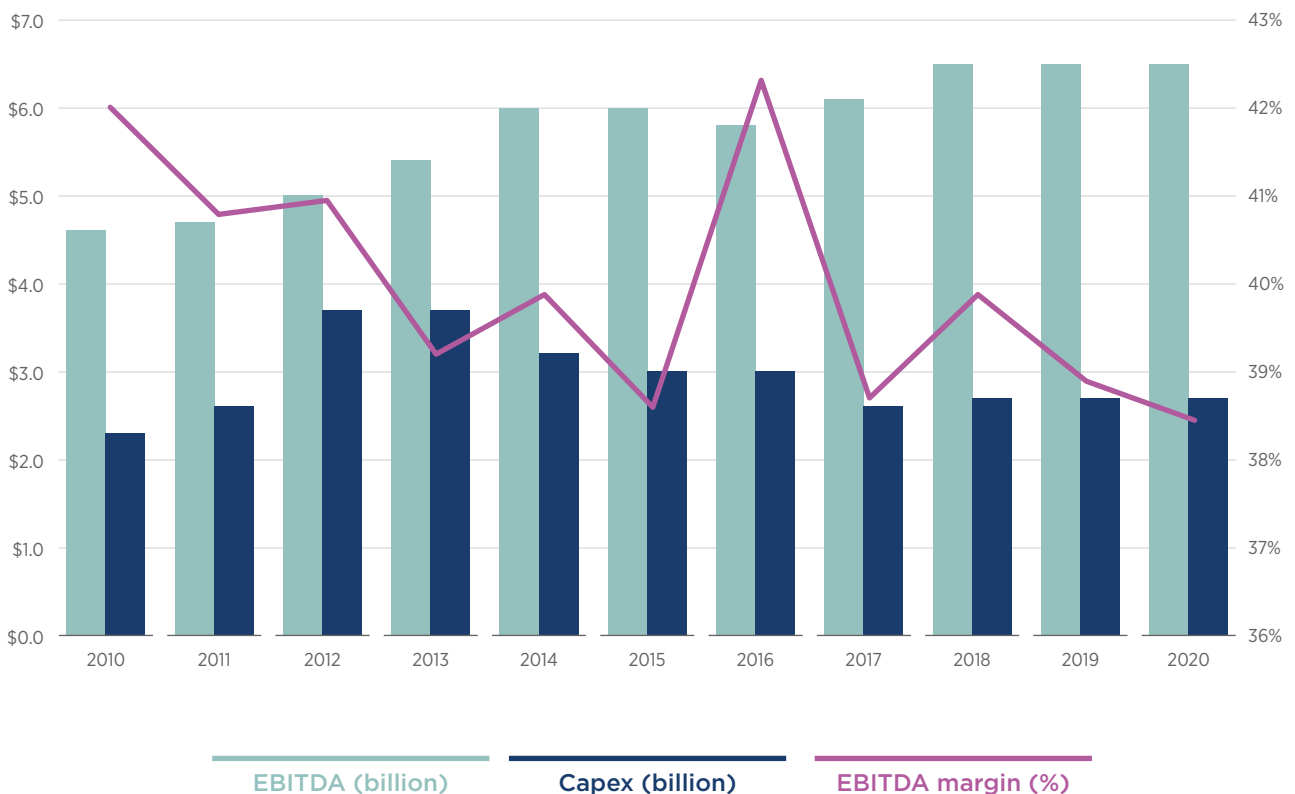
Sluggish revenue growth is having an impact on mobile operators' cashflow and margins. Operators have taken steps to ease this pressure through cost-reduction measures such as network sharing and the sale of tower assets. While this has resulted in a less severe impact on EBITDA from the decrease in revenues in 2016, EBITDA margin will remain under pressure over the period to 2020 due to slower subscriber and revenue growth.

Capex reached \$2.6 billion in 2017. The decrease of 13.3% from the previous year is largely attributable to two main factors: weak investment appetite following the economic downturn and decrease in mobile revenues in 2016; and local currency depreciation in several key markets, including Nigeria, which impacted the cost of foreign currency denominated equipment and services. Annual capex will remain steady at around \$2.7 billion over the three years to 2020, reaching a cumulative value of \$8 billion. Lower capex in the latter part of the decade, relative to a peak value of \$3.7 billion in 2012 and 2013, reflects the weak revenue growth outlook in the same period.

Figure 8

Source: GSMA Intelligence

West Africa EBITDA and capex



02

Mobile supporting economic growth and jobs

2.1 The direct economic contribution of the mobile ecosystem

The mobile ecosystem consists of mobile operators, infrastructure service providers, retailers and distributors of mobile products and services, mobile handset manufacturers, and mobile content, application and service providers. The direct economic contribution to GDP of these firms is

estimated by measuring their value added to the economy, including employee compensation, business operating surplus and taxes.

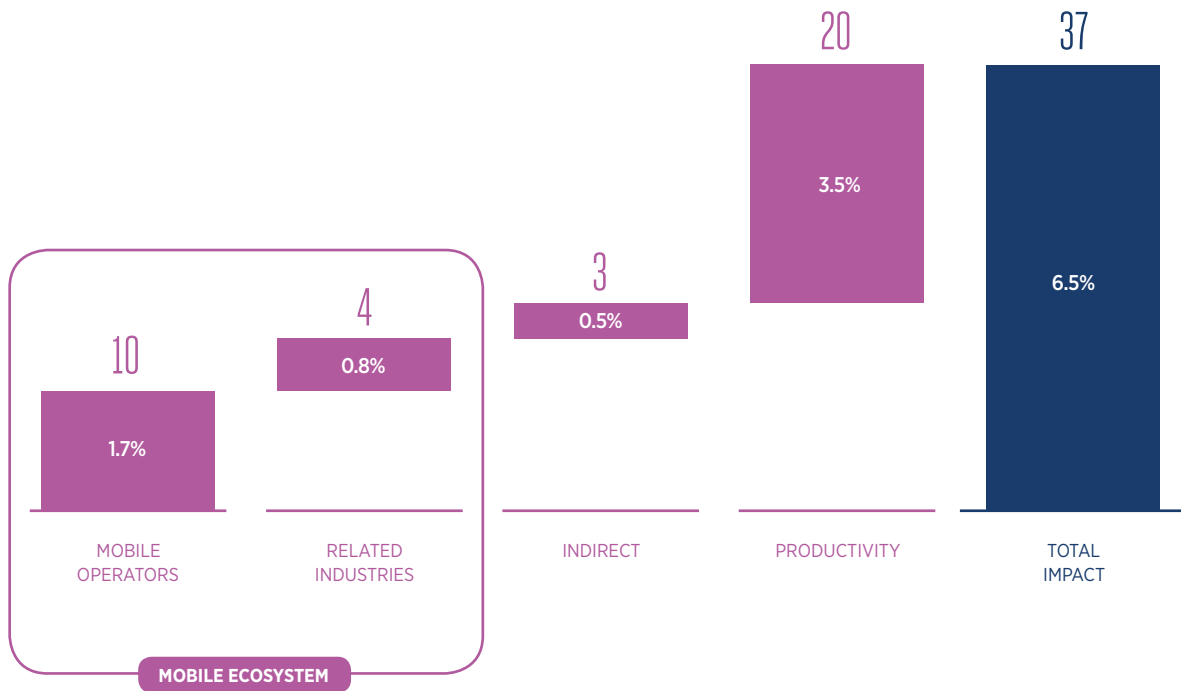
In 2017, the total value added generated by the mobile ecosystem in West Africa was \$14 billion (or 2.5% of GDP).

Figure 9

Source: GSMA Intelligence

Total (direct, indirect and productivity) contribution to GDP

(\$ billion, % 2017 GDP)



2.2 Indirect and productivity impacts of mobile technology

In addition to their direct economic contribution, firms in the mobile ecosystem purchase inputs from their providers in the supply chain. Furthermore, some of the profits and earnings generated by the mobile ecosystem are spent on other goods and services, stimulating economic activity in those sectors. We estimate that in 2017, this additional economic activity generated a further \$3 billion in value added (or 0.5% of West African GDP).

The use of mobile technology also drives improvements in productivity and efficiency for workers and firms. Basic mobile voice and text services allow workers and firms to communicate more efficiently and effectively (for example, reducing unproductive travel time). 3G and 4G

technology allows workers and firms to use mobile data and internet services. This improves access to information and services, which in turn drives efficiency in business processes across many industries, including finance and health. This impact of mobile internet is particularly significant where fixed infrastructure is poor and mostly confined to large cities and business and industrial districts.

We estimate that, together, these productivity impacts generated \$20 billion in 2017 (or 3.5% of GDP). Overall, taking into account the direct, indirect and productivity impacts, in 2017 the mobile industry made a total contribution of \$37 billion to the West African economy in value-added terms, equivalent to 6.5% of West African GDP.

Employment

In 2017, mobile operators and the wider mobile ecosystem provided direct employment to more than 200,000 people, predominantly in the retailing and distribution of services and handsets. In addition to this, economic activity in the ecosystem creates jobs in other linked sectors as a result of the demand generated by the mobile sector. The wages, public funding contributions and profits paid by the mobile industry are spent in other sectors, which provide additional jobs.

Public funding contribution

The mobile ecosystem also makes a significant contribution to the funding of the public sector through general taxation. In most countries, this includes value-added tax or sales tax, corporation tax, income tax and social security from the contributions of firms and employees. We estimate that the ecosystem made a tax contribution to the public finances of governments of \$4 billion in 2017.

2.3 Outlook and trends for the next five years

Going forward, we expect the economic contribution of the mobile ecosystem to continue to increase in both relative and absolute terms. In value-added terms, we estimate that mobile will contribute \$51 billion to the West African economy

by 2022 (7.7% of GDP) up from \$37 billion in 2017 (6.5% of GDP). Most of this value-added increase will be due to productivity gains, driven by the increasing adoption of mobile internet services.



03

Mobile as a platform for empowering consumers across West Africa



Countries across West Africa, like many other developing regions, still struggle with acute funding and infrastructure deficits in their efforts to address various social and economic challenges. Consequently, large segments of the population in these regions remain marginalised. In West Africa, where around half the population live in rural areas, mobile plays an important role in closing the access and usage gaps for key services.

3.1 Enabling innovation for socioeconomic impact

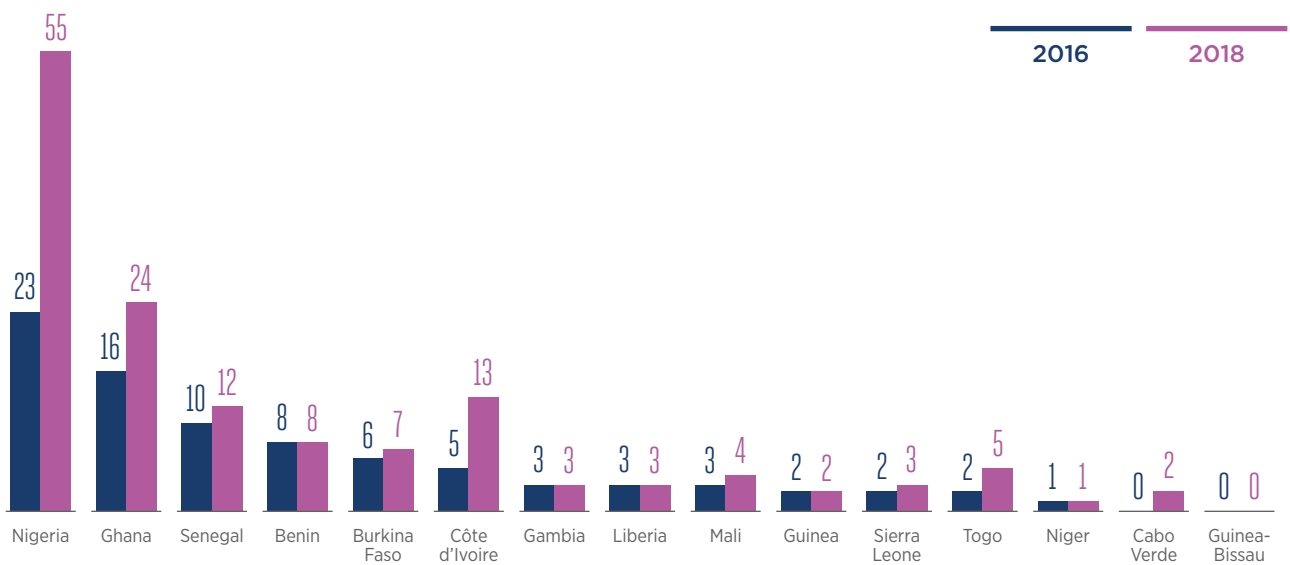
West Africa’s tech start-up ecosystem plays an increasingly important role in the development of home-grown digital content and services. Research by the GSMA Ecosystem Accelerator programme³ found that there were 142 active tech hubs across West Africa as of February 2018, compared to 84 in 2016. Nigeria and Ghana account for a large

share of tech hubs in the sub-region, although Côte d’Ivoire and Senegal are now into double-digit figures in number of active tech hubs (Figure 10). Some leading tech hubs in the sub-region include 5K Startups (Côte d’Ivoire), MEST (Ghana), Cc Hub (Nigeria) and CTIC (Senegal).

Figure 10

Source: GSMA

Number of active tech hubs



The GSMA, through the Ecosystem Accelerator programme, actively supports the growth and development of the tech start-up ecosystem in Sub-Saharan Africa through the GSMA Ecosystem Accelerator Innovation Fund⁴, and by facilitating partnerships and collaboration between start-ups

and mobile operators. The partnerships bring the most impactful mobile solutions to the people and places that need them most, generating the greatest social impact. Four applicants from West Africa received funding in the first and second rounds of the Innovation Fund.



3. Ecosystem Accelerator Africa Tech Hubs Landscape 2018. GSMA, 2018

4. <https://www.gsma.com/mobilefordevelopment/eainnovationfund>

Table 1

Source: GSMA

Start-ups from West Africa benefitting from GSMA Ecosystem Accelerator Innovation Fund

	THE PROBLEM	THE START-UP	THE PROJECT
Nigeria	<p>At over 80 million, Nigeria has the world's third largest population of under 15s, comparable to the entire under-15 population of the European Union. However, the Nigerian school system ranks low in terms of both quality and enrolment rates, from primary (ranked 138 out of 138) to higher education (ranked 125 out of 138).</p>	 <p>PrepClass is a tutoring marketplace that connects students and tutors through an online platform. A pool of teachers who have been interviewed and thoroughly vetted offer their services to learners, providing a source of income for tutors while supporting the education of Nigeria's students.</p>	<p>PrepClass received a grant from the GSMA Ecosystem Accelerator Innovation Fund in April 2017 to increase the number of tuition sessions completed through the platform by connecting more learners and tutors via a web and mobile application.</p>
Nigeria	<p>Agriculture represents 23% of Nigeria's GDP. Smallholder farmers produce 90% of the country's agricultural output but have little access to credit to sustain and grow their businesses. Between 2009 and 2013, less than 3% of all annual credit issued by deposit money banks in the country went to smallholder farmers.</p>	 <p>Farmcrowdy's digital platform connects investors to farmers through sponsorship packages that fund higher yields for a share of the returns. The service allows the sponsors to browse and select screened agricultural opportunities by produce type, funding amount, contract duration and expected returns.</p>	<p>Farmcrowdy received a grant from the GSMA Ecosystem Accelerator Innovation Fund in February 2018 to develop a mobile app for smartphones and feature phones that will help farmers and sponsors to interact. The app will also deliver other services to farmers, such as information, electronic payments and training.</p>
Senegal	<p>Less than 25% of adults in Senegal have access to a bank account of any kind. This rate drops to barely 10% in rural areas. As most of the population are unable to access any form of credit, they instead rely on traditional, informal rotating savings circles called tontines, usually managed by women. As these savings circles are operated manually, the risk of fraud and disputes is high, limiting their potential.</p>	 <p>MaTontine offers a mobile-based automated platform for tontines. By allowing users to build credit scores over time, MaTontine allows them to access other financial services, such as small loans and insurance. The community-focused platform is deployed and run by tontine managers who generate some revenue through this activity.</p>	<p>MaTontine received a grant from the GSMA Ecosystem Accelerator Innovation Fund in February 2018 to scale the digital platform and incorporate a credit-scoring functionality to facilitate small loans and other financial services such as microinsurance from third-party providers.</p>
Senegal	<p>In Senegal, up to 70% of local taxes go uncollected due to fraud at different steps of the collection process. This missed income in turn prevents municipalities from improving public services (healthcare, schools, etc.) which has a direct impact on the local population.</p>	 <p>TTS TOWN is a solution developed by SudPay that allows municipalities to automate, and later digitise, the collection of local taxes from MSMEs to reduce fraud and improve collection rates. The solution initially equips municipal tax collectors with proprietary terminals and municipalities with dashboards to track tax collection.</p>	<p>SudPay received a grant from the GSMA Ecosystem Accelerator Innovation Fund in February 2018 to set up and roll out TTS TOWN in several municipalities of Dakar to assist with tax collection.</p>

The rapid adoption of mobile services and the funding and infrastructure gaps in the provision of essential services presents an opportunity for local innovators to create digital solutions that address a wide range of social and economic challenges across different countries in the sub-region.

Eneza Education – improving access to education through mobile

Of all regions, Sub-Saharan Africa has the highest rates of education exclusion.⁵ To help address this challenge, Kenya-based tech start-up Eneza Education developed a solution that delivers educational lessons and assessments through digital channels, from basic 2G connectivity and handsets to mobile internet and full web platforms. As of January 2018, 99% of Eneza users accessed the service on the SMS platform, in addition to other mobile-based platforms, including WAP and Android OS. In 2017, Eneza extended its footprint to West Africa, partnering with MTN and Airtel/Tigo to launch in Ghana. 2018 will see it launch in Côte d'Ivoire in collaboration with Orange and MTN. Partnerships with mobile operators across Sub-Saharan Africa are vital to realising its goal of reaching 50 million students across the region.



5. UNESCO

3.2 Delivering digital inclusion and financial services



Digital inclusion

Mobile technology is a key enabler of digital inclusion: it is the first and, in many cases, only source of connectivity for the majority of internet users in West Africa. The number of mobile internet subscribers doubled over the last four years to reach 78 million, nearly half the total number of mobile subscribers, by the end of 2017. However, this represents around a fifth of the total population on average, a figure that falls to less than a tenth in Niger, Liberia and Guinea-Bissau.

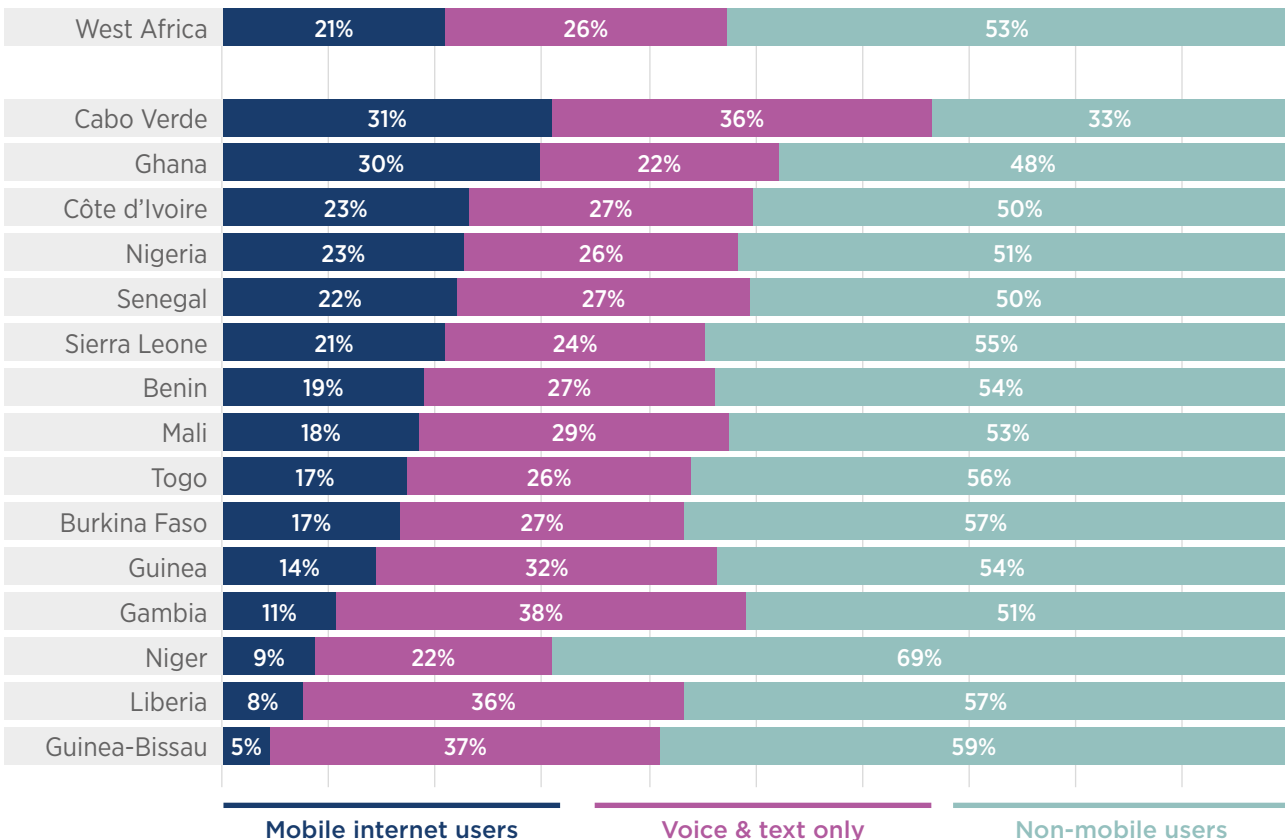
Low mobile internet penetration in the sub-region, relative to the global average of 43.2%, highlights

the need for stakeholders to work together on network solutions and services that can improve access to and usage of mobile internet services among unconnected people in the sub-region. The GSMA works with mobile operators, governments and other ecosystem players to address the four main barriers – infrastructure, affordability, consumer readiness, and content – to mobile internet adoption. Over the five years to 2025, an additional 100 million people are expected to subscribe to a mobile internet service, with the majority of new subscribers connecting through a high-speed mobile broadband⁶ network.

Figure 11

Source: GSMA Intelligence

West Africa mobile internet penetration, 2017



6. 3G, 4G or 5G



Financial services

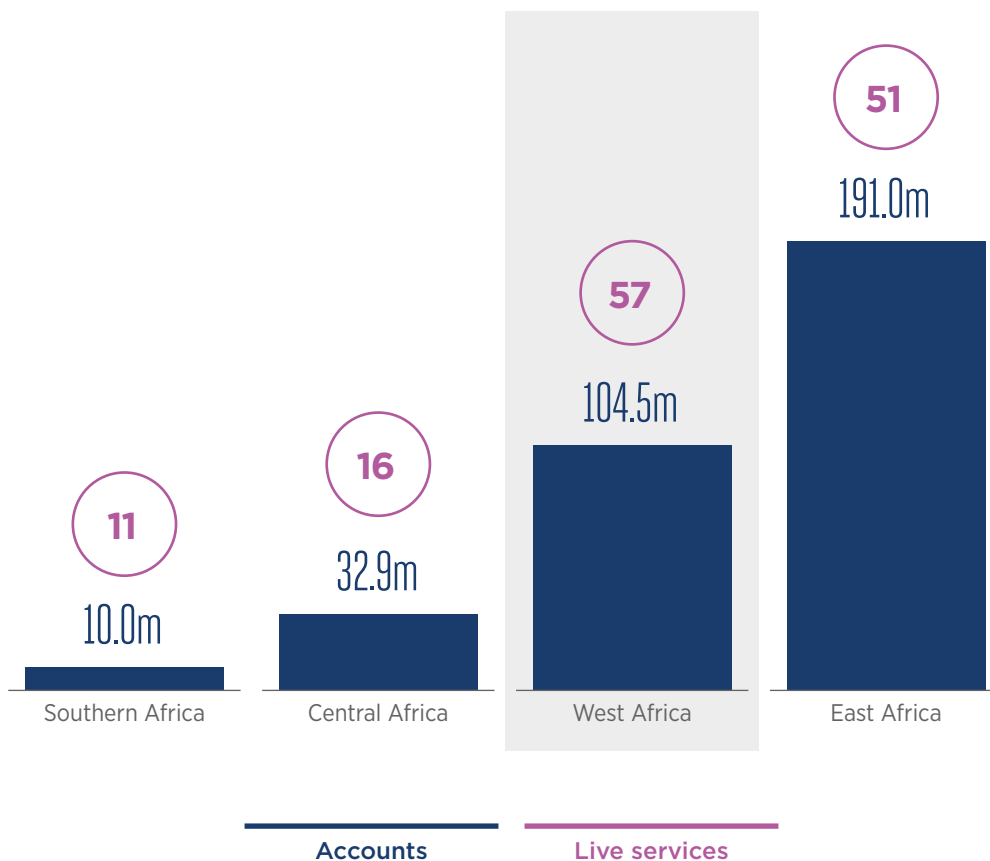
Mobile financial services, particularly mobile money, continue to grow rapidly across West Africa: the number of registered mobile money accounts in the sub-region reached 104.5 million in 2017, growth of 20.9% over the previous year. The total value of transactions for the same period reached \$5.3 billion. There are now 57 live mobile money deployments in West Africa, compared to 51 in East Africa, while the sub-region accounted for 34% of

the total mobile money accounts registered across Sub-Saharan Africa during 2017. Growth is mainly driven by a rapidly expanding agent network and an enabling regulatory environment. There are 13 times more active mobile money agents in West Africa than the total number of bank branches and ATMs in the sub-region⁷, while 13 out of 15 countries with a live mobile money service have enabling regulation.

Figure 12

Source: GSMA

Mobile money: number of registered accounts and live services, 2017



7. More than 13 times the collective total of bank branches and ATMs in the region for 12 out of 15 countries for which the data was available at FAS for 2016.



The mobile money landscape in West Africa has evolved beyond in-country peer-to-peer transfers, to international remittances, more complex financial products, and payment platforms for products and services across a wide range of sectors. Airtel, MTN and Orange are among the mobile operators that have launched cross-border money transfers, helping boost commerce and trade between several countries in the sub-region, including Burkina Faso, Côte d'Ivoire, Ghana, Mali and Senegal. In November 2017, MTN launched a credit service in Ghana to provide loans of up to GHS1,000 (\$220) to qualifying customers. In 2016, Orange established E-Money Establishments (EME) in Côte d'Ivoire, Guinea, Mali and Senegal, giving it greater autonomy and increased agility to provide a variety of financial services, including credit, savings and insurance.

Mobile money has become a key component of emerging mobile-based business models that address access, efficiency and productivity challenges across different industry verticals. One key application of the service is the digitisation of agricultural value chains, which provides considerable benefits to farmers beyond basic financial inclusion. Having a mobile money account allows farmers to make other transactions through digital channels, such as person-to-business (P2B) payments like utility, school and health fees. This transaction history, coupled with other data points such as farm location and acreage, can provide a basis for assessing a farmer's creditworthiness, opening the way to formal agricultural credit, insurance and savings products.

Ghana

In November 2016, Cargill's newly established licensed buying company (LBC) for cocoa launched operations in Ghana. Nine years after establishing its first cocoa processing plant in Ghana, the new LBC, Cargill Kokoo Sourcing Limited, allows Cargill to source cocoa from farmers directly. All payments to farmers are made exclusively through digital channels via partnerships with MTN, Tigo and e-zwich. To date, over 25,000 farmers have registered with Cargill, 10,000 of whom are actively selling beans through Cargill's LBC network at a price of GHS475 (\$105) per bag. By September 2017, about 10,000 qualifying farmers had received the first-ever sustainable premium payment of GHS25 (\$5.50) per bag made via mobile money.⁸

Côte d'Ivoire

In August 2014, Ivorian microfinance institution Advans Côte d'Ivoire partnered with a network of cocoa cooperatives and MTN Côte d'Ivoire to offer farmers a branchless Advans savings account accessible via a mobile money account. The service was initially designed to reach 7,500 farmers distributed among 40 cooperatives; it promoted saving and received support from the Consultative Group to Assist the Poor (CGAP). As of August 2017, the service had reached over 13,500 farmers spread among 100 cocoa cooperatives. So far, 6,000 farmers have used the new digital channel to transfer money from their Advans accounts to their mobile money accounts.⁹

8. [Opportunities in agricultural value chain digitisation: Learnings from Ghana](#), GSMA, 2018

9. [Opportunities in agricultural value chain digitisation: Learnings from Côte d'Ivoire](#), GSMA, 2017

3.3

Enabling access to life-enhancing services

Over the last decade, mobile has become a vital platform for bridging the access gap across multiple verticals in the developing world. This is particularly true in West Africa, where mobile operators and other key stakeholders, including governments, development organisations and the private sector, leverage various mobile services and innovative business models to deliver life-enhancing services to underserved people.

In The Gambia, Africa Water Enterprises (AWE) utilises IoT to monitor and implement pre-payment for remote water stands.

The challenge

In rural locations in The Gambia, water taps were managed by village water committees which manually collected fees and maintained the taps. The collections were not systematic and often not recorded, leading to losses and human error, and consequently no regular servicing of the water pumps and low funds for pump repairs.

The solution

Africa Water Enterprises was awarded a grant from the GSMA Mobile for Development Utilities programme to install 100 eWATERtaps in The Gambia. The eWATER system managed water distribution and revenue collection, in order to improve revenue collection and reduce the problem of broken water points due to a lack of information and lack of funds for repairs.

The project started in April 2016 by installing taps in the three villages of Brikama Ba, Jarreng and Jafai Koto in the upcountry of The Gambia. By June 2017, a total of 100 taps had been installed, expanding to the four villages of Kerr Lien, Brufut, Jappineh and Jalambereh.¹⁰ 68 of these eWATERtaps were machine-to-machine (M2M) connected, which enabled the company to monitor the taps over GSM networks to trigger responsive maintenance and repairs, as well as provide insights into customer behaviour.

The outcome

The taps have improved water services for over 9,000 people. Bill collection was managed through a contactless pay-per-use system based on offline near-field communication (NFC) tags, on which customers loaded water credit via an agent with an app. The pre-payment process led payment collection for the taps to reach 100%, as end users paid for all water distributed. Funds were used to finance repairs and maintenance operations.

10. World Bank estimates the total population of The Gambia at 2.039 million in 2016. Accurate village population numbers are difficult to find but it is estimated the Janjanbureh district, where these villages are located, has a total population of 126,910.



3.4 Realising the SDGs

Mobile is also helping to realise the UN Sustainable Development Goals (SDGs) in the sub-region, providing access to tools and applications that address a range of socioeconomic challenges. The GSMA and mobile operators are united in support for helping achieve the SDGs across the world, leveraging the power of mobile networks to accelerate this journey in a way that no other technology can. We highlight some mobile-based initiatives addressing specific SDGs across West Africa.

2 ZERO HUNGER**SDG 2 – ZERO HUNGER:
Vodafone Farmers' Club Ghana**

Vodafone Farmers' Club is an agricultural value-added service (agri VAS) with a free call bundle launched by Vodafone Ghana and VAS partner Esoko in June 2015. The product rollout was supported by a matched funding agreement between Vodafone Ghana and the GSMA through the mNutrition Initiative funded by UK aid from the UK government (DFID). Under the agreement, the GSMA mAgri Programme provided consultancy throughout the product development cycle. By December 2016, more than 200,000 users had registered for Vodafone Farmers' Club.

3 GOOD HEALTH AND WELL-BEING**SDG 3 – GOOD HEALTH AND WELL-BEING:
321 Nigeria**

Launched in September 2016, Viamo's 321 in Nigeria is an IVR information service available to Airtel network subscribers. Users dial 321 on their phone and navigate through IVR menus to access voice messages of various topics, including nutrition, health and agriculture. Each month, the first eight IVR calls are free; all subsequent calls are charged per call via airtime. The service is available in English, Hausa, Igbo, Pidgin and Yoruba. By December 2017, the service had amassed over 20,000 users.

4 QUALITY EDUCATION**SDG 4 – QUALITY EDUCATION:
Digital schools in Guinea**

As of January 2017, the Orange Digital Schools programme had been rolled out in 30 schools in Guinea, providing over 7,000 students with access to educational content via digital kits which include tablets, servers, video projectors and screens. The 30 schools taking part in the programme – sponsored by Orange Guinea employees – are in Conakry, Maritime Guinea, Middle Guinea, Upper Guinea and Forested Guinea. The initiative provides teaching staff and pupils with access to a library containing over 45,000 e-books, covering mathematics, science and French exercises.

6 CLEAN WATER AND SANITATION**SDG 6 – CLEAN WATER AND SANITATION:
Safe Water Network, Ghana**

Safe Water Network (SWN) received a grant from the GSMA Mobile for Development Utilities Innovation Fund in September 2015, to trial the use of mobile data collection to improve both the monitoring of water stations and response to maintenance issues for better service delivery. SWN builds and owns water stations in small towns and peri-urban communities in Ghana. In partnership with mWater, SWN launched a mobile monitoring app for tablets to digitise data collection for water stations and create an issue-reporting platform. This resulted in a 50% reduction in travel, data transcription and analysis costs, as well as increased acceptance of mobile technology, including mobile money payments.



04

Sustaining growth and innovation in the mobile industry across West Africa

The mobile industry is central to the economic and social development of the 15 countries in the West Africa sub-region. Around 55 million people have been connected to a mobile service in the last five years, many of them from underserved population groups, enabling them to access a wide range of life-enhancing services and improving their economic wellbeing. However, more than half the population of the sub-region remain unconnected and excluded from the socioeconomic benefits of personal connectivity. Addressing the challenges around access and usage of mobile services in the sub-region requires collaboration by all stakeholders. In addition to the work of operators to expand and improve networks, significant efforts from governments at all levels are needed to create the right conditions for continued investment.

4.1 The role of governments

At the supranational level, ECOWAS is well placed to convene and facilitate dialogue between multilateral stakeholders; serve as a hub for knowledge sharing and dissemination with regards to best practices; and provide a platform to harmonise differences in approach towards key issues that impact the mobile industry across the sub-region. ECOWAS ICT policy aims to establish a single digital market, with harmonised and standardised ICT infrastructure across the sub-region. In October 2017, ECOWAS Ministers in charge of Telecommunications and ICT approved new roaming regulations for ECOWAS member countries, with an implementation roadmap due to start in 2018. While affordable roaming has the potential to boost intra-regional trade and commerce, it is essential for ECOWAS and other stakeholders to maintain a continuous review of the process and to adapt interventions to the changing telecoms landscape in the sub-region.

As investments occur at the country level, national and municipal governments have a vital role to play in addressing fiscal and regulatory issues that directly impact investment sentiment, especially

for capital-intensive infrastructure deployment and the rollout of innovative mobile-based services.

For example, to accelerate the move towards universal access to connectivity and maximise the potential of mobile, it is essential to implement an efficient tax structure that focuses on increasing mobile affordability and supports investments in infrastructure deployment.

There is a mixed picture of mobile-sector-specific taxation across the sub-region. In November 2017, the government of Niger voted to abolish the country's tax on incoming international traffic, which contributes around XOF20 billion (\$36.2 million) to the state treasury annually, under the Finance Act 2018. Consequently, the country's telecoms operators have committed to make significant investments in improving coverage and service quality. Côte d'Ivoire, on the other hand, has implemented a 0.5% levy on mobile money services, a move that could directly impact the affordability and usage of the services, especially among the most vulnerable users.

Reforming mobile sector taxation in Guinea¹¹

In Guinea, the number of mobile subscribers has grown from 1.3 million in 2007 to 6 million in 2017 (46.5% unique subscriber penetration), at an average annual growth rate of 17%. Total mobile sector revenues were \$472 million in 2017; equivalent to over 6.4% of the country's GDP. This rapid growth has been facilitated by investment in the sector by Guinea's mobile operators. However, continued investment is required to improve mobile connectivity, particularly in rural and disadvantaged areas. Meanwhile, the lack of affordability of mobile ownership remains a significant barrier to mobile adoption in the country. For example, individuals in the bottom 20% of income distribution spend approximately 10.9% of their monthly income on mobile ownership (500 MB consumption basket).

Taxes contribute significantly to the affordability barrier and limit investments in 3G/4G network infrastructure. The total tax contribution of the mobile sector is also equivalent to 54% of the sector's total market revenue. This is relatively high compared with other countries in Sub-Saharan Africa, including Nigeria (9%), South Africa (20%), Rwanda (21%) and Senegal (22%). To promote further growth in the sector and the wider economy, three options for tax reform have been identified. These reforms would lead to a growth in penetration, increased technology migration to smartphones and 3G connections, and an increase in GDP and taxation revenue in the medium term.

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

	Price of services	Additional investment in the economy	Total new unique subscribers	GDP growth	Total new jobs	Annual gain in tax revenue by 2023
Elimination of the excise duty on bonus calls (taxe sur la consommation téléphonique - TCT)	-4.4%	+\$14m	+663,000	+\$57m	+4,156	+\$13m
Elimination of the surtax on international incoming traffic (SIIT) of \$0.12 per minute	-42.3% (price of international incoming traffic)	+\$24m	+927,000	+\$89m	+13,193	+\$8m
Reduction by 80% of the annual backhaul spectrum fees (redevance faisceaux hertziens)	-2.6%	+\$9m	+220,000	+\$22m	+3,798	+\$2m

11. Reforming mobile sector taxation in Guinea: Unlocking socio-economic gains from mobile connectivity, GSMA, EY report, 2018



4.2 Competition and market structure

The West Africa sub-region hosts some of the most fragmented mobile markets in Sub-Saharan Africa. Eight of the 15 countries in the sub-region have four or more service providers, including Gambia and Liberia, each with a population of less than 5 million. Market fragmentation has, in many cases, resulted from governments allowing new entrants into the market in a bid to drive down prices and accelerate network coverage through competition or issuing new mobile licences to fund public spending.

However, this has resulted in unintended consequences in many instances; artificially low prices have negatively impacted operators' margins and affected their ability to invest in network expansion. In Ghana, mobile operators Espresso and Glo Mobile have come under pressure from the government over their operational performance. In extreme cases, some operators have been forced to close their operations. For example, in Côte d'Ivoire Café Mobile closed in 2013 while GreenN and Comium both closed in 2016.

There is a growing trend towards consolidation in many fragmented markets across the region. For example, Airtel and Tigo merged their operations in Ghana in 2017. The consolidation process is often triggered by slowing subscriber and revenue growth – two trends that are already prevalent in many markets across the region. Consolidation can help operators move to more sustainable business models and support more efficient investment. A GSMA study¹² analysing the impact of the 2012 merger between two mobile operators in Austria – Hutchison 3G Austria and Orange – found that the merger had a significant positive impact for Austrian consumers. While the study and its findings are specific to Austria, the results show that a 4-to-3 mobile merger intensified competition in quality-related aspects and that a three-player market delivered more widely available and faster mobile broadband services than those experienced in four-player markets.

12. [Assessing the impact of mobile consolidation on innovation and quality - An evaluation of the Hutchison/Orange merger in Austria](#). GSMA, 2017

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