



The Mobile Economy

Sub-Saharan Africa 2017



The GSMA represents the interests of mobile operators worldwide, uniting nearly 800 operators with more than 300 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 industry-leading events such as Mobile World Congress, Mobile World Congress Shanghai, Mobile World Congress Americas and the Mobile 360 Series of conferences.

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Executive Summary



Sub-Saharan Africa remains the fastest growing mobile market

At the end of 2016, there were 420 million unique mobile subscribers in Sub-Saharan Africa, equivalent to a penetration rate of 43%. The region continues to grow faster than any other region; the CAGR of 6.1% over the five years to 2020 is around 50% higher than the global average. The region will have more than half a billion unique mobile subscribers by 2020, by which time around half the population will subscribe to a mobile service. The total number of SIM connections in the region reached 731 million at the end of 2016, and will rise to nearly 1 billion by 2020.

Less than a fifth of under-16 year-olds (who account for more than 40% of the population in most countries in the region) have a mobile subscription, while women were 17% less likely than men to own a mobile phone in 2016. The uptake of mobile services by these underserved groups will, in large part, drive subscriber growth in the future. Four of the most populated markets in the region – DRC, Ethiopia, Nigeria and Tanzania – will account for nearly half the 115 million new subscribers expected by 2020.



Mobile broadband and smartphone adoption gain momentum

The number of mobile broadband connections will reach half a billion by 2020, more than double the number at the end of 2016, and will account for nearly two thirds of total connections in the region. 3G will remain the dominant mobile broadband technology for the foreseeable future, but 4G adoption is rising rapidly following increasing network rollout. As of March 2017, there were 97 live 4G networks in 39 countries across Sub-Saharan Africa.

Smartphone connections in Sub-Saharan Africa have doubled over the past two years to nearly 200 million, accounting for a quarter of mobile connections in 2016. Key factors supporting the growth of smartphone adoption in the region include the increasing affordability of new devices and a growing market for second-hand devices. This trend, along with the uptake of mobile broadband services, is driving demand for digital content and, consequently, an increase in mobile data traffic. Traffic is forecast to grow twelvefold across Africa as a whole over the next five years.



Mobile generated 7.7% of GDP in Sub-Saharan Africa and supported 3.5 million jobs in 2016

In 2016, mobile technologies and services generated \$110 billion of economic value in Sub-Saharan Africa, equivalent to 7.7% of GDP. Mobile's contribution to GDP is expected to rise to \$142 billion, equivalent to 8.6% of GDP, by 2020 as countries benefit from improvements in productivity and efficiency brought about by increased take-up of mobile

services. The mobile ecosystem also supported approximately 3.5 million jobs in Sub-Saharan Africa in 2016. In addition to the mobile sector's impact on the economy and labour market, it makes a substantial contribution to the funding of the public sector, with \$13 billion raised in 2016 in the form of taxation.



Mobile a key platform for innovation in Sub-Saharan Africa

Sub-Saharan Africa will transition to higher levels of mobile engagement in the coming years, underpinned by growing access to mobile data services and smart devices as well as a youthful population that almost entirely relies on mobile for digital services, according to the GSMA Intelligence Global Mobile Engagement Index (GMEI). Consequently, mobile has become the preferred platform for creating, distributing and consuming digital content and services, including those that help address various social challenges in the region.

Opportunities in mobile-based innovation are attracting talent and investment to the tech start-up ecosystem in Sub-Saharan Africa. Some 77 tech start-ups across the region raised just over \$366.8 million in funding in 2016, growth of 33% compared to the previous year. Mobile operators also play a central role in the tech start-up ecosystem through collaborative ventures with innovators and tech hubs, providing direct investments and access to key network APIs and distribution channels.



Mobile delivering greater inclusion and helping achieve the SDGs

Mobile is a vital tool in delivering digital and financial inclusion in Sub-Saharan Africa. Around 270 million people in the region access the internet through mobile devices, while the number of registered mobile money accounts reached 280 million as of March 2017. The expanding mobile money ecosystem offers new opportunities for productivity and efficiency gains to governments, businesses and individuals, as mobile money has developed from traditional payments to provide access to more complex financial products.

Mobile connectivity will play a central role in achieving the UN Sustainable Development Goals (SDGs) - a 17-point plan to end poverty, combat climate change and fight injustice and inequality by 2030. The 700 million mobile connections in the region are enabling various services that directly impact the SDGs. Investors and social enterprises are leveraging the large area coverage of mobile networks and key mobile services, such as messaging, mobile money and M2M, to deliver scalable and commercially viable services that address a wide range of social challenges in the region.

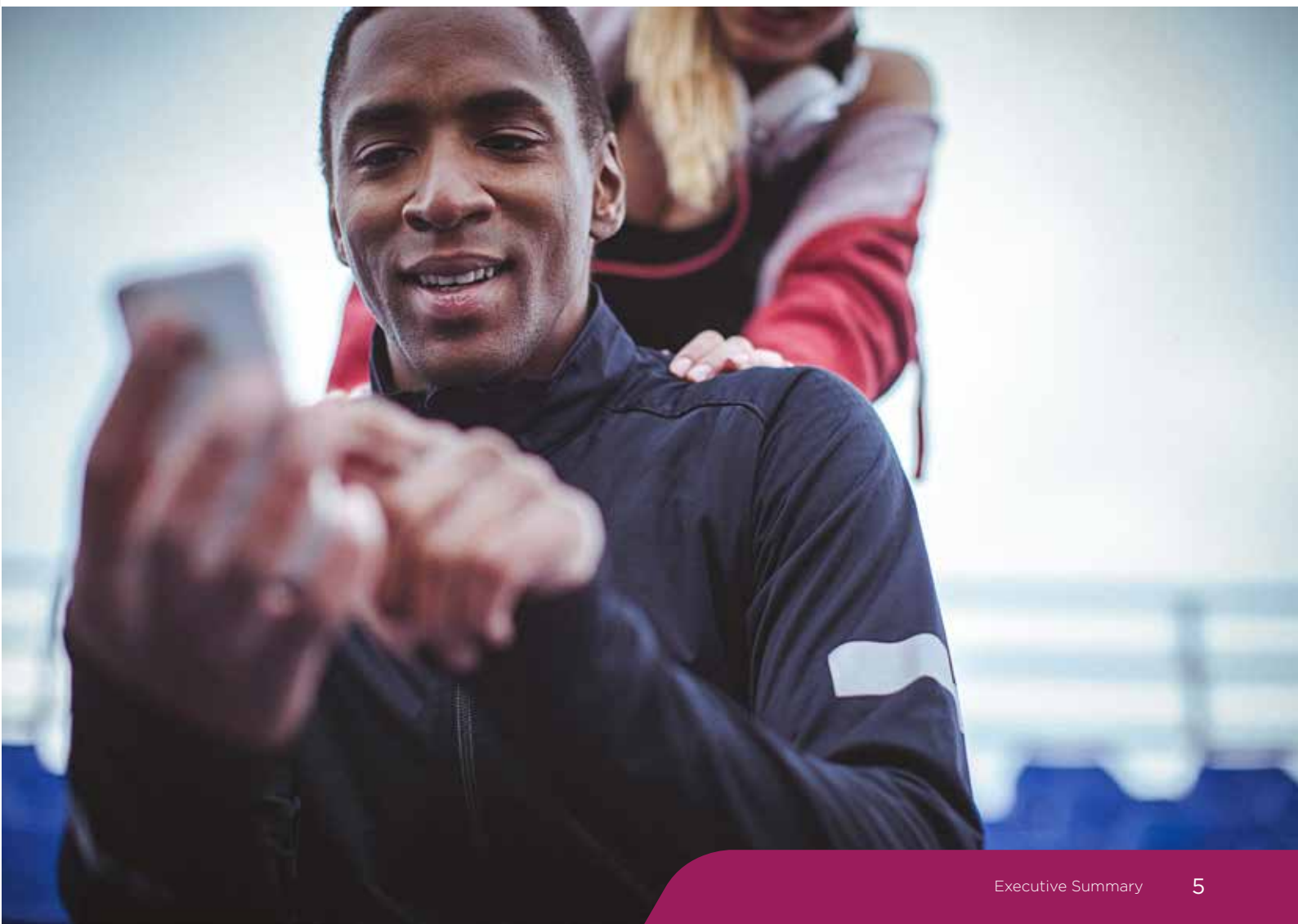


Regulation and competition in a digital age

Digitisation is driving rapid technological progress and growth, generating significant benefits for consumers in both developed and developing regions of the world. However, rapid innovation, in terms of technology and business models, together with the growing importance of economies of scale and scope, is blurring the boundaries between once-distinct markets and regulatory regimes. Policymakers all over the world, including many in Africa, are now recognising these challenges and working to implement reforms that will protect competition and consumers without impeding social and economic progress.

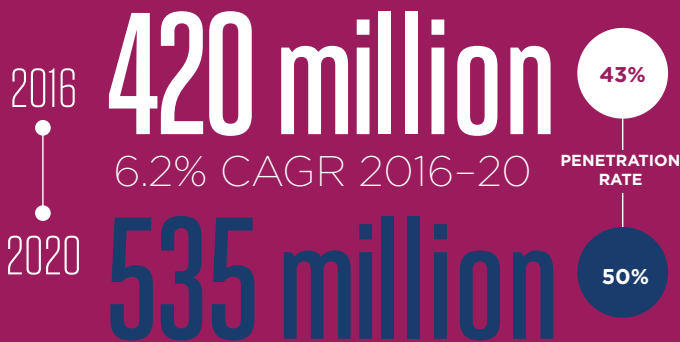
Building the foundations of mobile connectivity

and services to enable a digital society requires collaboration between governments and the mobile industry, with the former supporting industry-led initiatives with policies and programmes that create the right incentives for innovation and an enabling environment for extending connectivity to underserved areas. The existence of a regulatory regime that encourages change and supports innovation underpins much of the effort to bring about digitisation, especially in developing countries. Reliance on competition law rather than regulation (when appropriate) would help to create the conditions for continued expansion of networks and affordable services.



MOBILE ECONOMY SUB-SAHARAN AFRICA

Unique
mobile
subscribers



SIM connections



*Excluding M2M

ACCELERATING MOVES TO MOBILE BROADBAND NETWORKS AND SMARTPHONE ADOPTION

Mobile broadband
connections to increase
from 33% of total in 2016 to

60%
by 2020

By 2020, there will be

498m

smartphones, growth of
300 million from the end of 2016

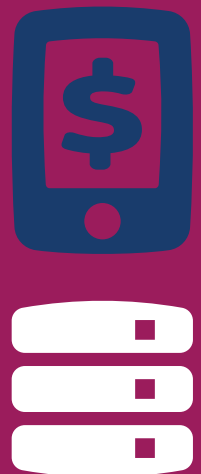
Mobile data traffic to grow
by a CAGR of

66%

over the period 2016-2020

Data growth
driving
revenues
and operator
investments

Operator total revenues



Operator CAPEX of up to **\$31 billion** for the period 2017-20

Mobile contributing to economic and social development across Sub-Saharan Africa



DIGITAL INCLUSION

Delivering digital inclusion to the still unconnected populations.

MOBILE INTERNET PENETRATION

26% 2016 — 2020 **38%**



FINANCIAL INCLUSION

Delivering financial inclusion to the unbanked populations. As of December 2016 there were

140 live mobile money services in 39 countries



INNOVATION

Delivering innovative new services and apps. Number of M2M connections to reach

26 million by 2020

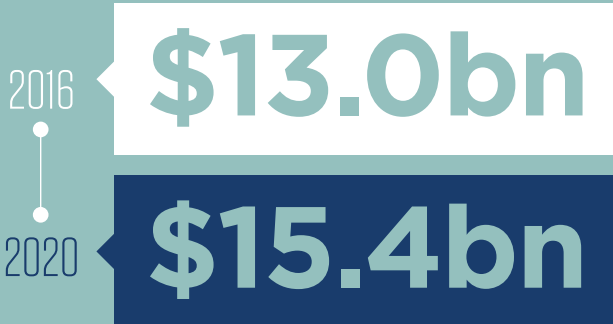


Mobile industry contribution to GDP



Public funding

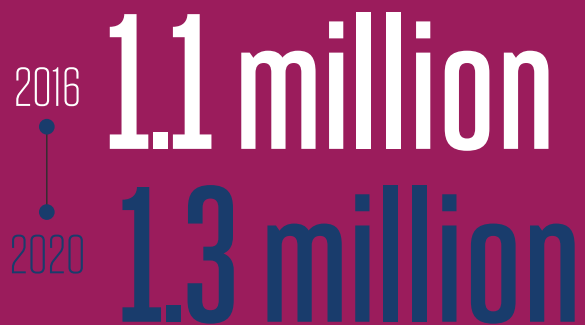
Mobile ecosystem contribution to public funding (before regulatory and spectrum fees)



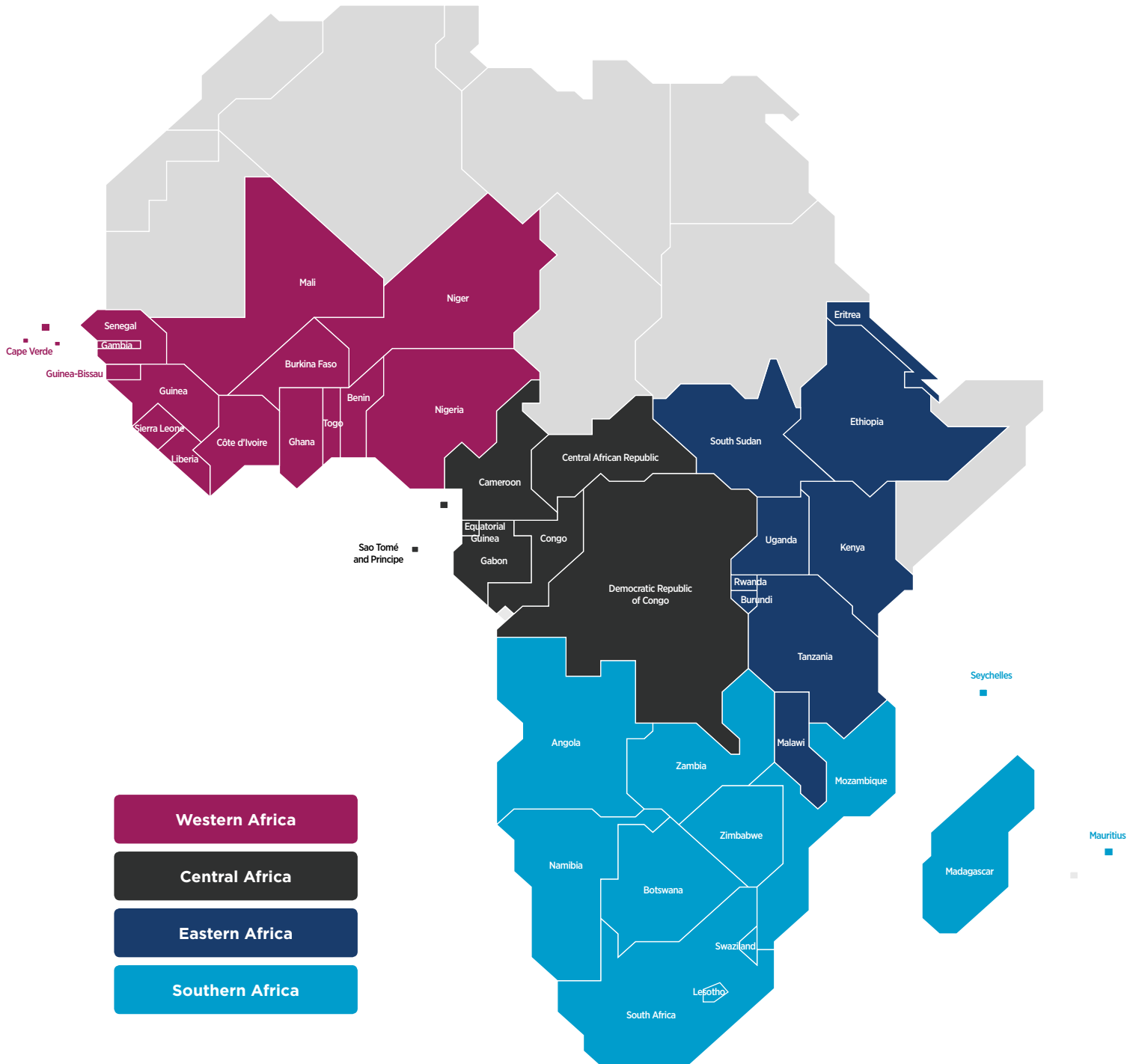
Employment



Jobs directly supported by the mobile ecosystem



Plus an additional **2.8 million** indirect jobs supported in 2020



WESTERN AFRICA

	UNIQUE SUBSCRIBERS (m)	PENETRATION
Benin	5.1	45%
Burkina Faso	7.7	41%
Cabo Verde	0.4	67%
Côte d'Ivoire	12.5	53%
Gambia	1.4	67%
Ghana	18.9	67%
Guinea	5.9	45%
Guinea-Bissau	0.7	38%
Liberia	1.7	36%
Mali	11.4	62%
Niger	5.5	26%
Nigeria	86.0	45%
Senegal	8.4	53%
Sierra Leone	2.8	42%
Togo	2.9	38%

CENTRAL AFRICA

	UNIQUE SUBSCRIBERS (m)	PENETRATION
Cameroon	9.7	40%
Central African Republic	1.1	22%
Congo	2.8	58%
Congo DRC	21.0	26%
Equatorial Guinea	0.5	49%
Gabon	1.2	69%
Sao Tome & Principe	0.1	57%

EASTERN AFRICA

	UNIQUE SUBSCRIBERS (m)	PENETRATION
Burundi	3.8	32%
Eritrea	0.5	9%
Ethiopia	34.7	34%
Kenya	28.3	59%
Malawi	4.7	26%
Rwanda	6.3	52%
South Sudan	2.1	16%
Tanzania	23.7	42%
Uganda	17.0	41%

SOUTHERN AFRICA

	UNIQUE SUBSCRIBERS (m)	PENETRATION
Angola	9.0	34%
Botswana	1.6	69%
Lesotho	1.4	62%
Madagascar	5.9	23%
Mauritius	0.9	69%
Mozambique	13.8	47%
Namibia	1.2	45%
Seychelles	0.1	69%
South Africa	37.5	68%
Swaziland	0.7	52%
Zambia	9.0	53%
Zimbabwe	9.4	58%



1

Industry overview

1.1

Mobile growth: adoption still rising

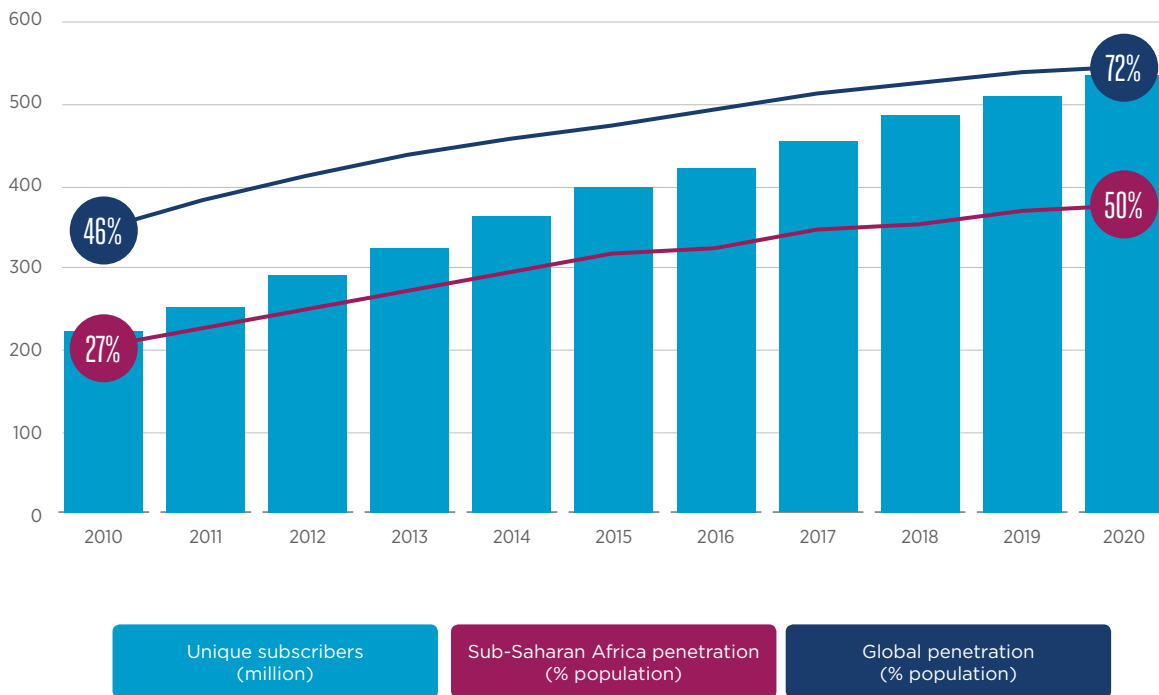
At the end of 2016, there were 420 million unique mobile subscribers in Sub-Saharan Africa. The region accounts for nearly 10% of the global mobile subscriber base, a share set to rise given that the mobile penetration rate of 43% is significantly lower than the global average penetration rate of 66%. Although annual subscriber growth has now slowed to single digits, Sub-Saharan Africa is still growing faster than any other region and will record a CAGR of 6.2% over the five years to 2020, compared to a global average of 4.2% for the same period. By 2020, there will be just over 500 million unique mobile subscribers in the region and the penetration rate will have risen to 50%.

There were 718 million SIM connections (excluding cellular M2M, which accounted for a further 13 million) in the region at the end of 2016, equating to a penetration rate of 74%. Multiple SIM ownership is declining, mainly due to fewer price arbitrage opportunities, better network quality and stringent SIM registration requirements. However, the region's SIM ratio will remain relatively high; the number of connections will rise faster than unique subscribers in the coming years, driven by the growing adoption of 4G data services for broadband connectivity. The region will have nearly 1 billion mobile connections by 2020, with a penetration rate of 85%.

Figure 1

Source: GSMA Intelligence

Sub-Saharan Africa unique mobile subscribers and market penetration



Considerable opportunities for subscriber growth arise from the large number of unconnected young adults across the region. More than 40%¹ of the population are below 16 years old in most countries in Sub-Saharan Africa and less than a fifth of these currently subscribe to a mobile service. Additionally, women in Sub-Saharan Africa were 17% less likely than men to own a mobile phone in 2016, with mobile uptake by females remaining below 40% in the region.² Future subscriber growth will, in part, be driven by individuals in these groups, with large and underpenetrated markets in the region

accounting for the majority of new subscribers. Specifically, DRC, Ethiopia, Nigeria and Tanzania will together account for nearly half the 115 million new subscribers expected by 2020.

A number of issues are affecting mobile adoption in the region. As well as the challenging network economics of connecting remote and rural areas where 60% of the population live, many potential mobile users are constrained by volatile economic conditions, low income and purchasing power, and social and political instability.

Smartphone growth driven by increasing affordability

The number of smartphone connections in Sub-Saharan Africa has doubled over the past two years to nearly 200 million, accounting for a quarter of mobile connections (excluding M2M) in 2016. Smartphone growth has been driven by increasing affordability: sub-\$100 smartphones, mostly from

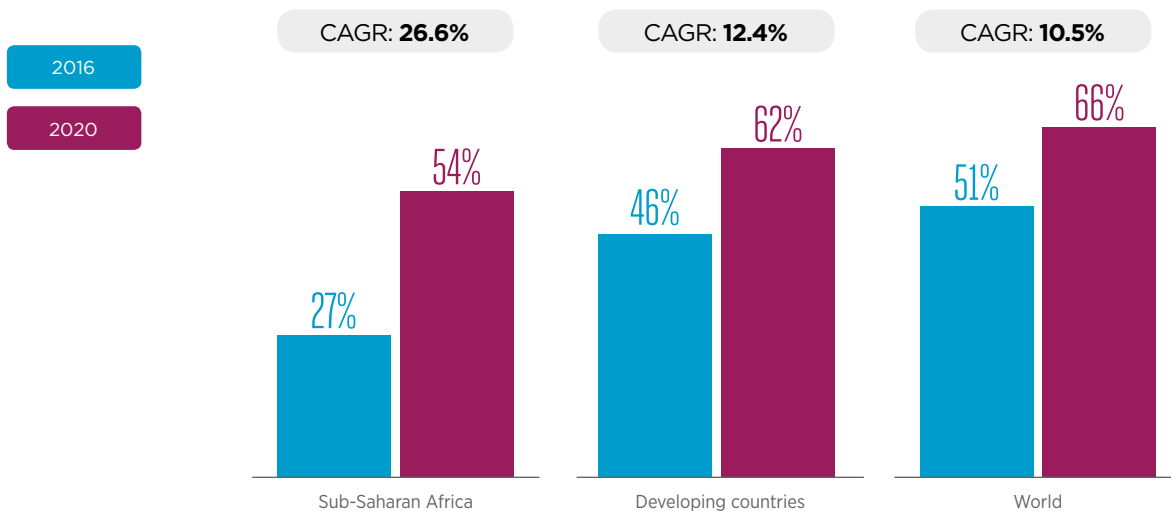
Asian manufacturers such as Gionee and Tecno, are now commonplace across the region, while many first-time smartphone users that cannot afford a new device rely on second-hand devices passed down by a relative or purchased at a reduced price from the budding recycled smartphone market.

Figure 2

Source: GSMA Intelligence

Smartphone adoption growing

(Percentage of connections)



Mobile operators are also offering smartphone financing schemes and own-branded smartphones to drive adoption and consequently data usage. For example, MTN Ghana saw a 66% increase in data revenue in 2016 following smartphone adoption growth of nearly 50% between Q2 and Q4 2016. In

the future, smartphone growth will in large part be driven by younger, more tech-savvy users, who will account for the majority of new mobile subscribers. Smartphone connections will rise to more than 500 million by 2020, with around 300 million new smartphones added over the next three years.

1. The World Bank data
 2. Calculations based on GSMA Intelligence data and Gallup World Poll

1.2 Technology shift: the transition to mobile broadband is accelerating

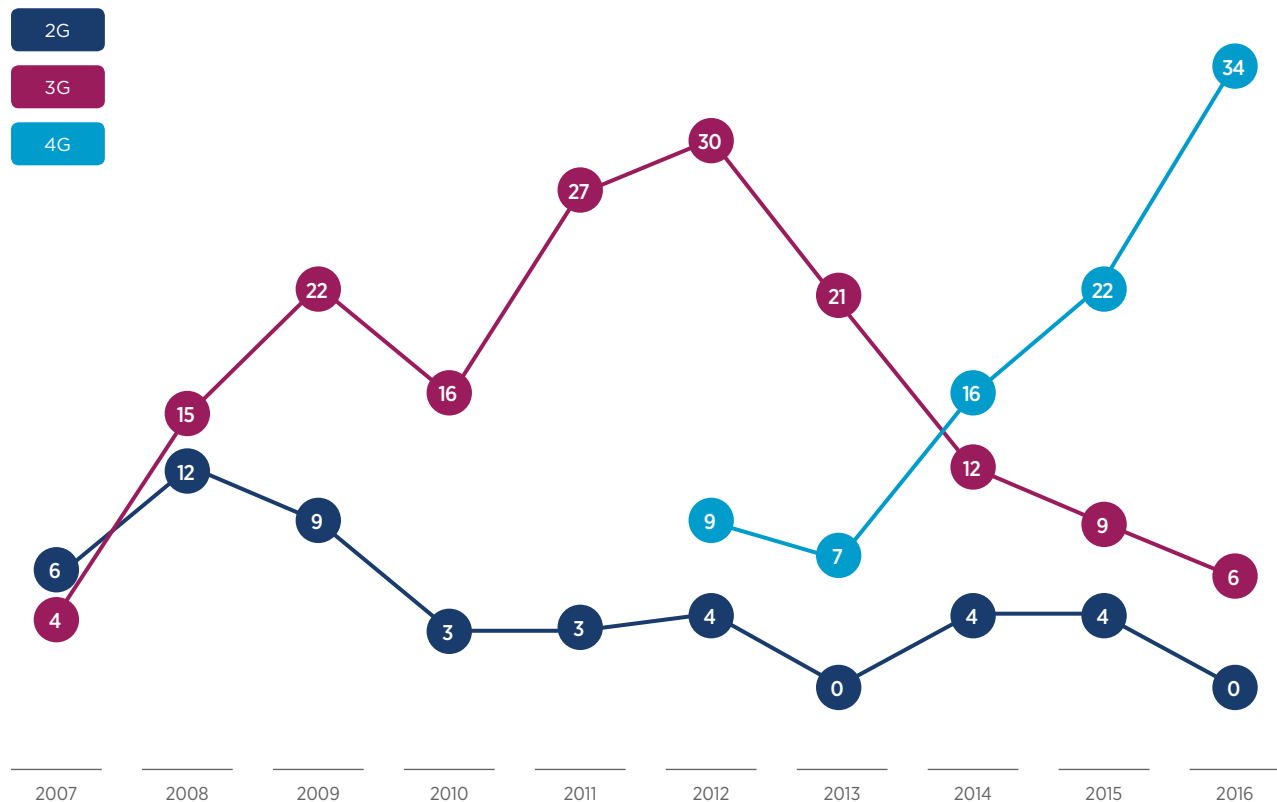
The transition to mobile broadband across Sub-Saharan Africa continues to gain momentum, driven by network deployment/expansion, more attractively priced data tariffs, and greater availability and affordability of smartphones. The number of mobile broadband connections will reach 500 million by 2020, more than double the number at the end of 2016, and will account for nearly two thirds of total connections in the region.

3G will remain the dominant mobile broadband technology for the foreseeable future, but 4G adoption is rising rapidly as a result of increasing network rollout. There were 97 live 4G networks in 39 countries across Sub-Saharan Africa, covering 28% of the region's population, as of March 2017. By 2020, around 35% of the population will be covered by 4G networks, compared to a global average of 78%.

Figure 3

Source: GSMA Intelligence

Sub-Saharan Africa network launches by technology



Mobile broadband network coverage and penetration rates vary significantly across the region. In South Africa, for example, 3G is almost universal, while 4G networks now reach three quarters of the population. Consequently, the country has a mobile broadband penetration rate of more than 70%. This compares to less than 5% in Burundi, CAR, Niger and South Sudan

where the majority of the population are still underserved. The regional variation is mainly driven by macroeconomic factors (wealthier and more politically stable markets seeing more aggressive mobile broadband network deployment) and a policy environment that stimulates investment (enabling policies on spectrum, tax and service licences).

Demand for digital content driving mobile data traffic

More people across Sub-Saharan Africa are consuming digital content, particularly online video, via mobile devices. Real-time entertainment (both video and audio) accounted for 18.1% of downstream mobile internet traffic in Africa in 2015, up from 8.6% the previous year.³ The growing demand for digital content in the region is expected to increase mobile data traffic significantly in the coming years: the latest Ericsson Mobility report forecasts a twelvefold rise in the amount of mobile data used in Africa over the next five years.⁴

A number of homegrown platforms, notably IROKOTv, Buni tv and Bozza, have emerged in recent years to challenge the dominance of popular global platforms, such as YouTube and Facebook. Many of these local platforms are collaborating with mobile operators to grow their audience and enable technical features that improve affordability

and stimulate usage, such as offline streaming and free off-peak downloads. Airtel and Ericsson have launched the Nuvu subscription-based video-on-demand service in Nigeria, which has the ability to distribute content to consumers during off-peak periods at zero data cost.

For mobile operators, greater involvement in the digital content value chain could help maximise the benefits from data traffic growth, beyond basic data connection revenue. Data revenue accounts for less than a fifth of service revenue on average in the region and has come under pressure from intense price competition in recent years. In 2016, MTN Group reported 44% growth in revenue from digital content services, with the number of music and gaming subscribers rising to 4.0 million and 5.4 million, respectively.

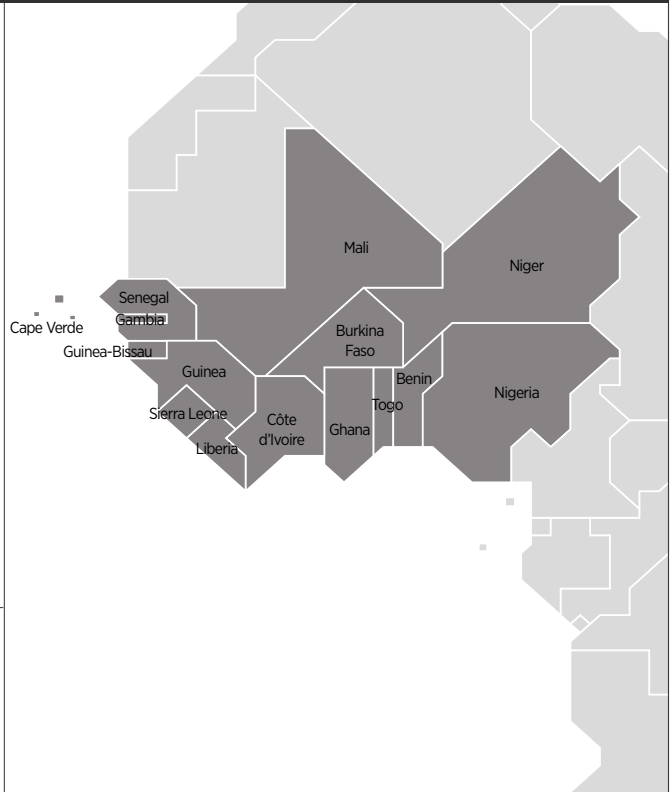
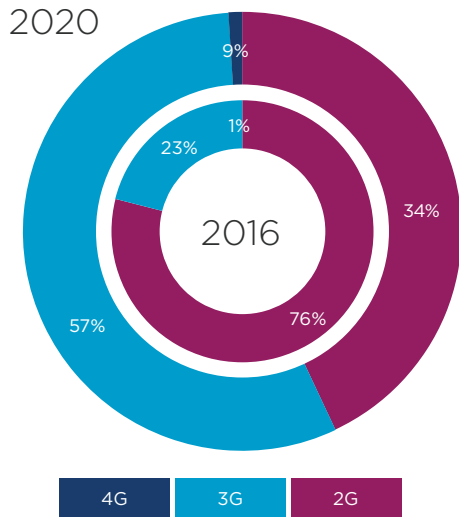
3. 2016 Global Internet Phenomena report, Sandvine, October 2016

4. Ericsson Mobility report, Ericsson, November 2016



ECOWAS (Economic Community of West African States)

TECHNOLOGY MIX



SUBSCRIBER PENETRATION

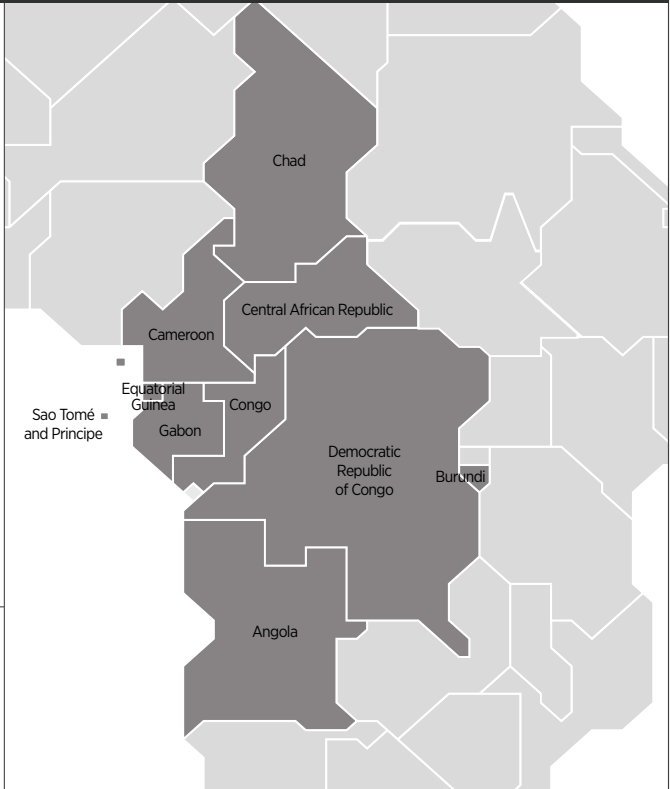
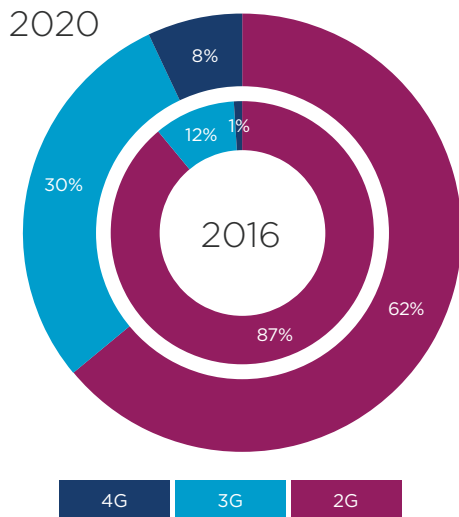
Year	2016	2020
Penetration	47%	54%

SMARTPHONE ADOPTION

Year	2016	2020
Adoption	27%	56%

ECCAS (Economic Community of Central African States)

TECHNOLOGY MIX



SUBSCRIBER PENETRATION

Year	2016	2020
Penetration	31%	39%

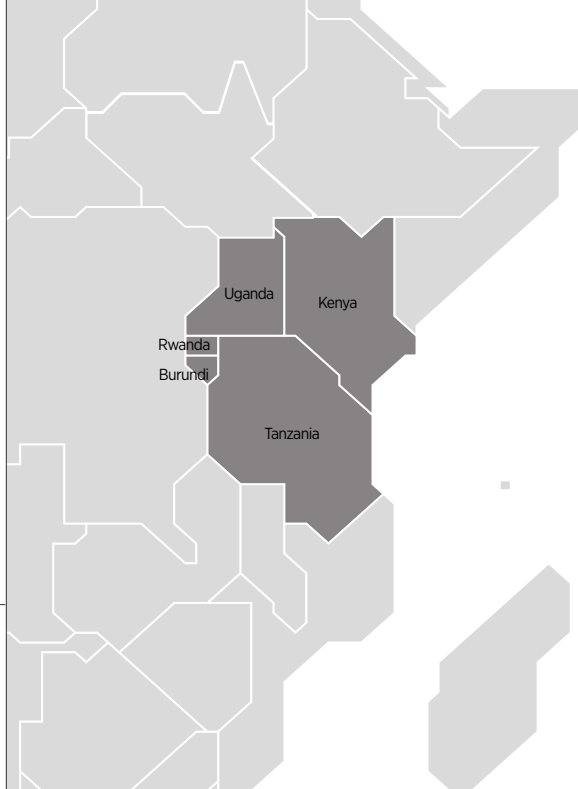
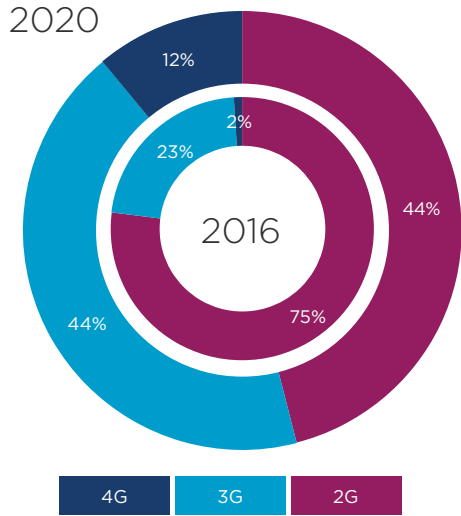
SMARTPHONE ADOPTION

Year	2016	2020
Adoption	23%	52%



EAC (East Africa Community)

TECHNOLOGY MIX



SUBSCRIBER PENETRATION

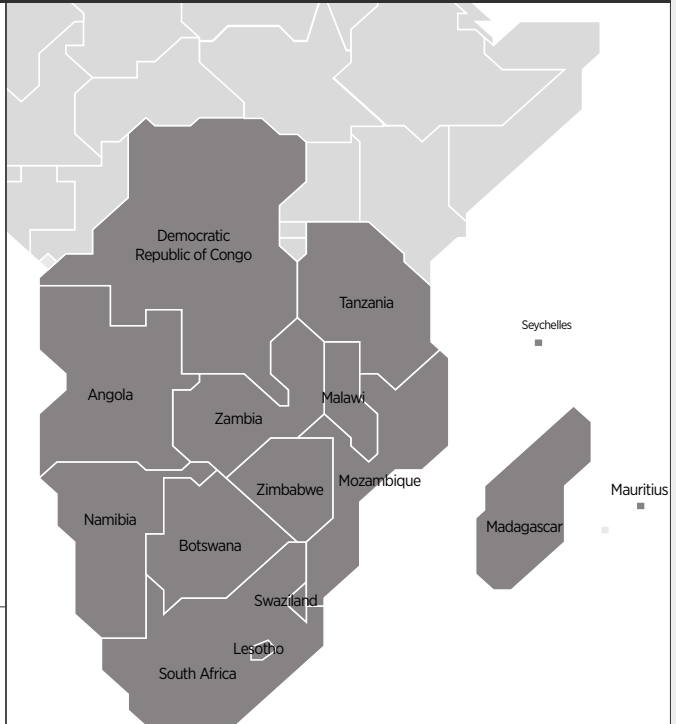
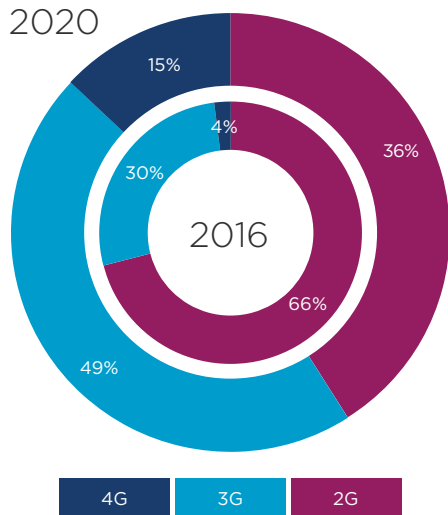
2016	2020
47%	53%

SMARTPHONE ADOPTION

2016	2020
21%	55%

SADC (Southern Africa Development Community)

TECHNOLOGY MIX



SUBSCRIBER PENETRATION

2016	2020
42%	48%

SMARTPHONE ADOPTION

2016	2020
28%	58%

1.3. Revenue: declining growth drives consolidation and service diversification

Total mobile revenues in Sub-Saharan Africa reached \$40 billion in 2016, an increase of 3.9% on the previous year. Revenue growth has been trending downwards since the start of this decade, driven by macroeconomic weakness in resource-rich markets such as Angola, Nigeria and South Africa and the growing uptake of IP-based services.

Although economic pressures are expected to ease in the coming years, revenue growth will remain subdued for the remainder of this decade due to the increasing cannibalisation of traditional voice and messaging revenues as subscribers shift to alternative platforms. IP messaging has become the top use case among smartphone users across the region; GSMA's GMEI found that up to 90%

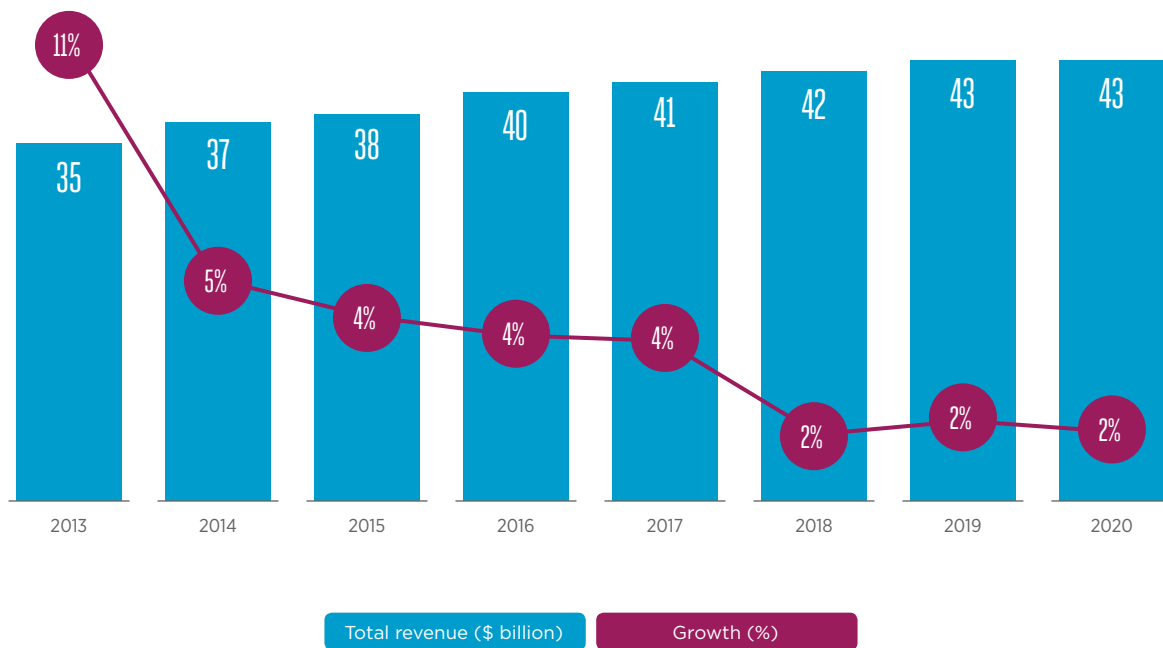
of smartphone users in Nigeria, South Africa and Tanzania use at least one IP messaging service, such as WhatsApp, BBM or Facebook Messenger, regularly. This is already having a material impact on revenue growth, with declining contribution from traditional voice and messaging services.

Uptake of IP services varies across the region, but the general trend is in the same direction: rising smartphone adoption and mobile broadband penetration rates are fuelling the shift to IP services. With traditional voice and messaging services accounting for more than 70% of service revenues for many operators in the region, this trend is expected to weigh on overall revenue growth for the foreseeable future.

Figure 4

Source: GSMA Intelligence

Sub-Saharan Africa mobile revenues





Slowing growth from traditional services underscores the need for mobile operators to implement new strategies to drive overall growth and ensure the long-term sustainability of their operations. Strategies already in play include consolidation and revenue stream diversification. In a number of fragmented markets in the region, with five or more service providers, artificially low prices are having a negative impact on revenue growth and profits. In these markets, consolidation can help create a sustainable structure and enhance operators' ability to invest in network infrastructure. In April 2016, Orange completed the full acquisition of Tigo DRC, doubling its share of the market, and in February 2017 Airtel and Tigo announced plans to merge their operations in Ghana.

In terms of revenue stream diversification, mobile operators are adopting new business models to increase the contribution of non-core communication services to overall revenues. In Kenya, Safaricom has expanded the use cases for mobile money platform M-Pesa, which contributed 27% of service revenues in FY16/17 at KES55 billion (\$550 million), to include financial products such as savings and credit. Vodacom has launched a series of IoT services across the region, including a Stock Visibility Solution, which provides real-time visibility of stock levels at primary healthcare dispensaries in South Africa. In 2016, Vodacom's IoT connections and revenue grew 28% and 21% to 2.3 million and ZAR556 million (\$42 million), respectively.

Capex weakens on currency fluctuation, but EBITDA margin remains stable

Mobile operators in the region have invested \$37 billion in their networks over the past five years, mainly in the deployment of high-speed mobile broadband networks: 88 3G and 91 4G networks were launched across the region during this period. Total spend fell slightly in 2016, partly due to a sharp rise in the previous year and the impact of local currency weakness on US dollar-linked equipment and services expenses. MTN Group reported an

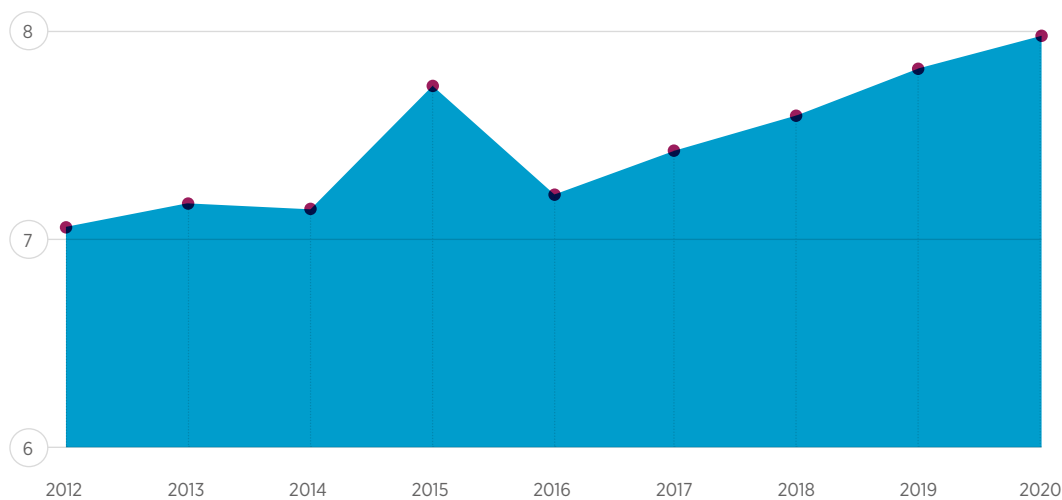
increase in capex for the year in local currency, but this was affected by double-digit average depreciation of local currencies in several key markets, including South Africa (16%) and Nigeria (19%) during 2016. However, investment levels are expected to rise from 2017, reaching a cumulative \$31 billion by 2020, as operators invest in advanced mobile broadband networks to cope with growing demand for data services.

Figure 5

Source: GSMA Intelligence

Sub-Saharan Africa mobile capex

\$ billion



Sub-Saharan Africa mobile EBITDA margin was 36.6% in 2016, compared to a global average of 34.7%. EBITDA margins have remained stable over the past five years, despite slowing revenue growth and regulatory actions. Some mobile operators, including MTN, have noted the impact of regulatory fines and other charges on their operating margins. One major factor that has helped support

EBITDA margins is the disposal of tower assets to independent tower companies, helping ease the cost pressures of owning and managing telecoms towers internally. Around 38% of Sub-Saharan Africa's 125,000 telecoms towers are owned by independent towercos⁵, most of them hived off in large-scale transactions over the past seven years.

5. "TowerXchange's analysis of the independent tower market in Africa and the Middle East", TowerXchange, May 2017

2

Mobile contributing to growth, innovation and social development

2.1 Mobile delivering jobs and growth

The mobile ecosystem consists of mobile network operators, infrastructure service providers, retailers and distributors of mobile products and services, 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

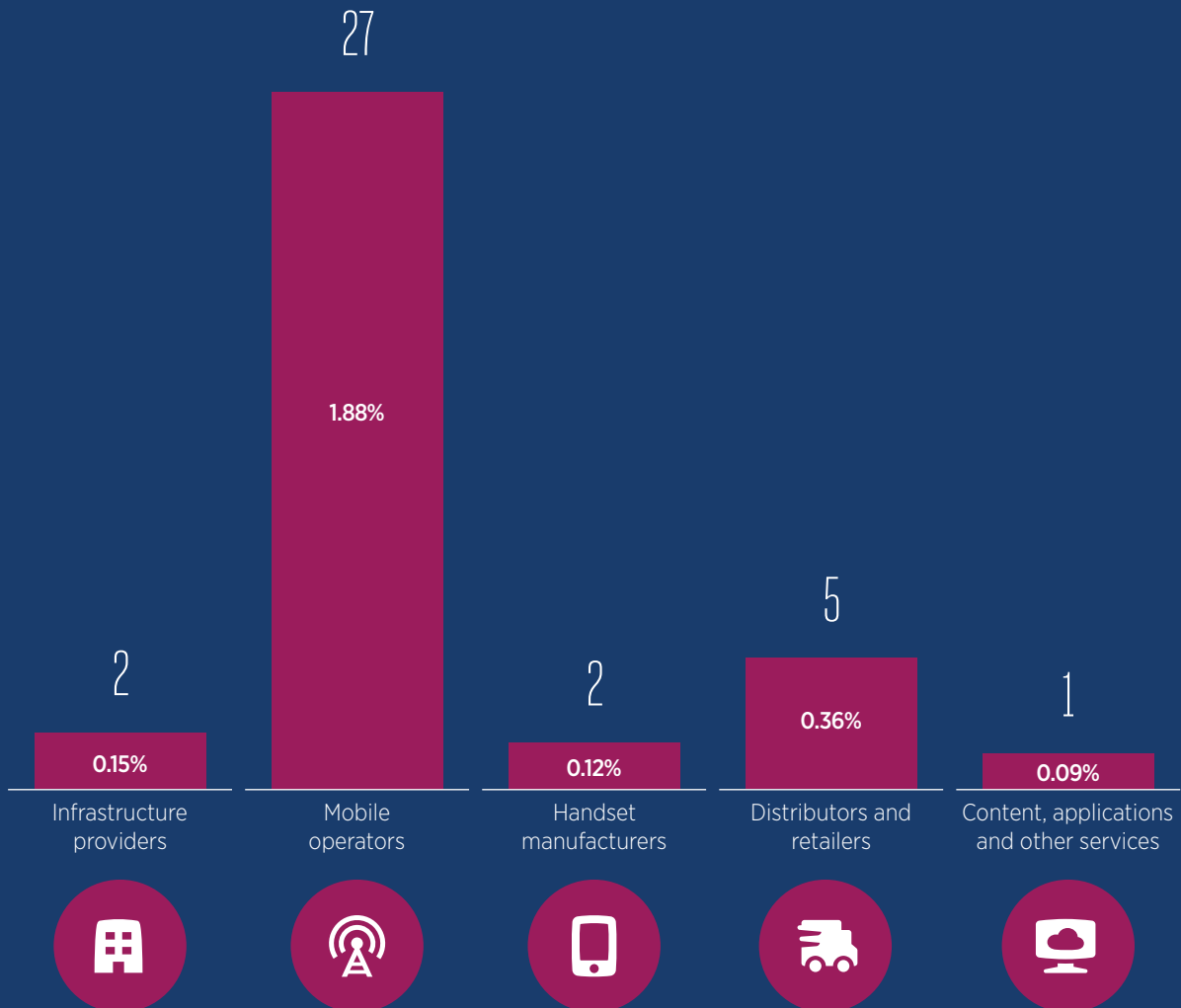
economy, including employee compensation, business operating surplus and taxes. In 2016, the total value added generated by the mobile ecosystem in Sub-Saharan Africa was around \$37 billion (or 2.6% of GDP), with network operators accounting for well over half of this.

Figure 6

Source: GSMA Intelligence

Direct GDP contribution of the mobile ecosystem

(2016 \$ billion, % 2016 GDP)



Note totals may not add up due to rounding.

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. For example, handset manufacturers purchase inputs from microchip providers, and content providers require services from the IT sector. Furthermore, some of the profits and earnings generated by the ecosystem are spent on other goods and services, stimulating economic activity in those sectors. We estimate that in 2016, this additional economic activity generated a further \$10.5 billion in value add (or 0.7% of GDP) in Sub-Saharan Africa.

The use of mobile technology also drives improvements in productivity and efficiency for workers and firms. There are three ways in which this takes effect:

- The first is the use of basic mobile voice and text services, which allows workers and firms to communicate more efficiently and effectively (reducing unproductive travel time, for example).
- The second is the use of 3G and 4G technology,

which allows workers and firms to use mobile data and internet services (for example, by improving access to market information in the agricultural sector). The impact of mobile internet is particularly significant in countries where fixed broadband penetration is relatively low, so is a key productivity driver in many African countries.

- The third is the next generation of mobile services, in particular M2M and the Internet of Things. The impact of these is expected to be limited in Sub-Saharan Africa over the next five years as take-up will initially grow in other regions of the world. In the longer-term, however, we expect these services to drive significant benefits in the region.

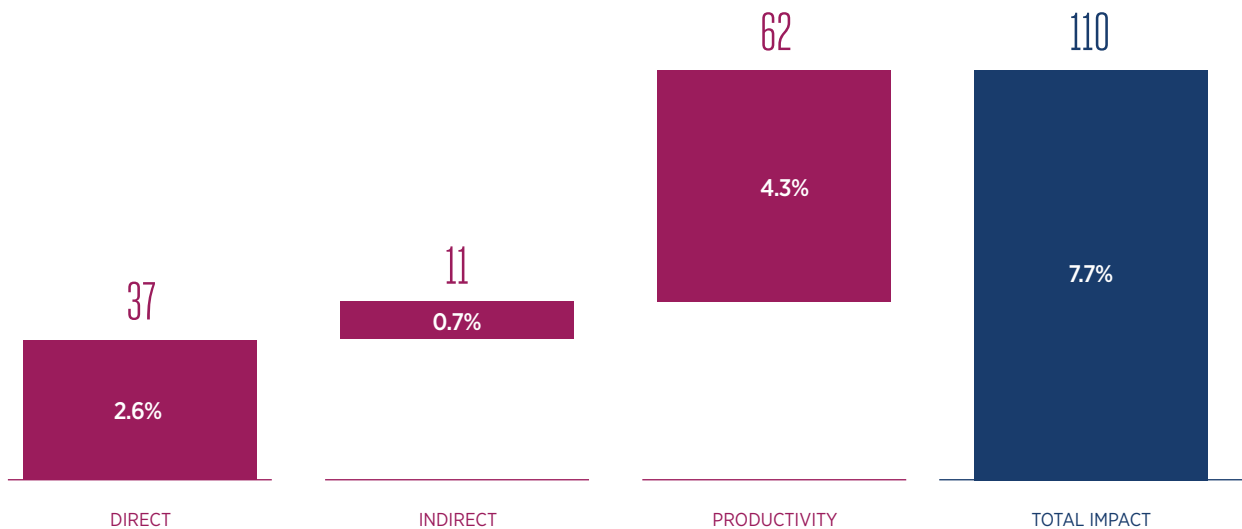
Productivity impacts in the Sub-Saharan African were worth approximately \$62 billion in 2016 (or 4.3% of GDP). Overall, taking into account the direct, indirect and productivity impacts, in 2016 the mobile industry made a total contribution of \$110 billion to Sub-Saharan Africa in value added terms, equivalent to 7.7% of the region's total GDP.

Figure 7

Source: GSMA Intelligence

Total (direct, indirect and productivity) contribution to GDP

2016 \$ billion, % 2016 GDP



Note totals may not add up due to rounding.

Employment and public funding

In 2016 mobile operators and the ecosystem provided direct employment to approximately 1.1 million people in Sub-Saharan Africa. In addition to this, economic activity in the ecosystem generates jobs in other sectors. Firms that provide goods and services as production inputs for the mobile ecosystem will employ more individuals as a result of the demand generated by the mobile

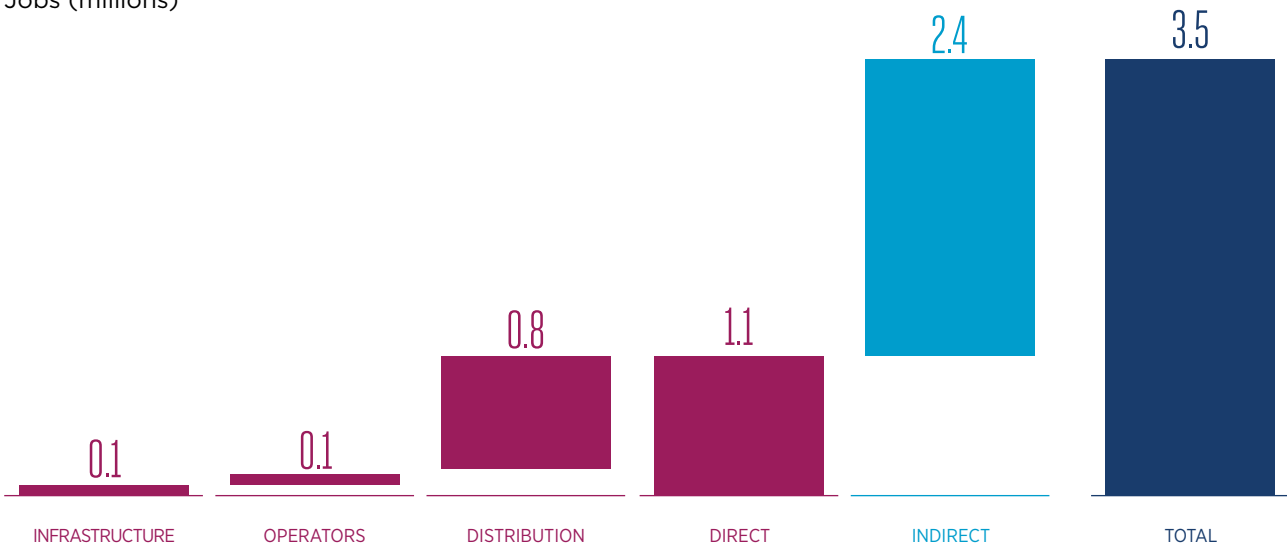
sector. Furthermore, the wages, public funding contributions and profits paid by the industry are spent in other sectors, which provide additional jobs. We estimate that in 2016, around 2.4 million jobs were indirectly supported in this way, bringing the total impact (both direct and indirect) of the mobile industry in Sub-Saharan Africa to 3.5 million jobs.

Figure 8

Source: GSMA Intelligence

Employment impact

Jobs (millions)



Note totals may not add up due to rounding.

The mobile ecosystem also makes a significant contribution to the funding of public sector activity in the region through taxation. For most countries, this includes both general and sector-specific taxation. The former comprises standard VAT, corporation tax, income tax and social security

from firms and employees, while the latter includes sector-specific consumer taxes such as mobile service VAT and excise taxes on mobile usage and/or handsets. The ecosystem made a tax contribution to the public finances of about \$13 billion in 2016.

Figure 9

Source: GSMA Intelligence

Contribution to public funding by the mobile industry in 2016

\$ billion



Outlook and trends in the period 2016–2020

Going forward, we expect the economic contribution of the mobile industry in Sub-Saharan Africa to continue to increase in both relative and absolute terms. In value-added terms, we estimate that the ecosystem will generate \$142 billion by

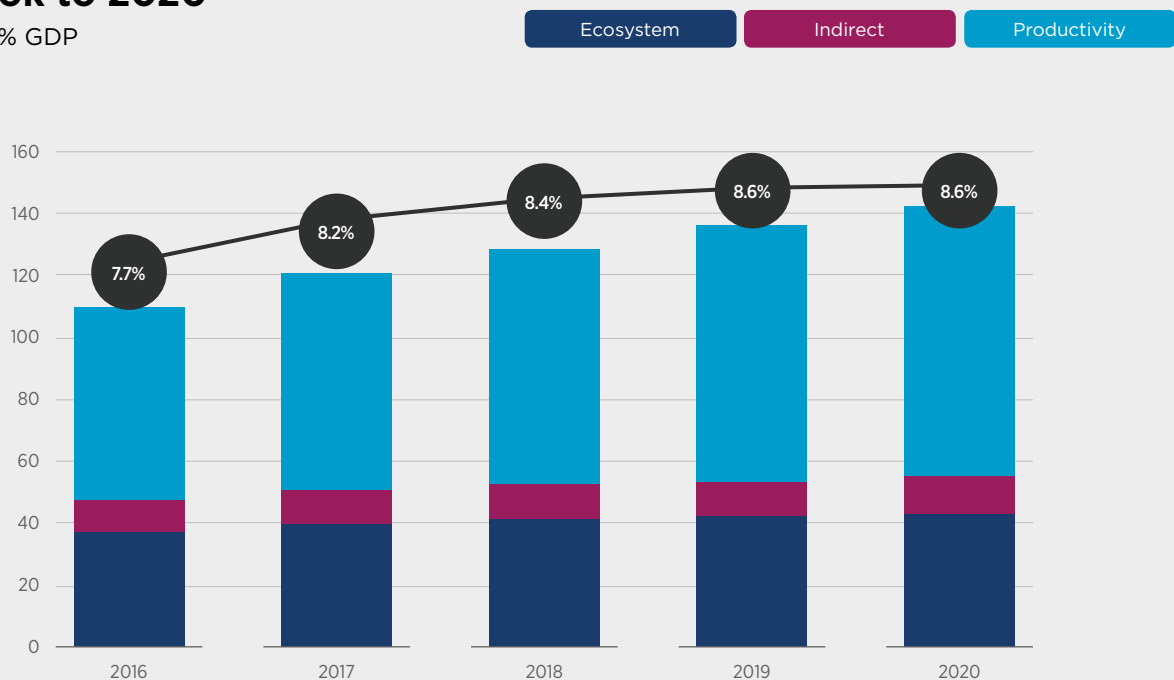
2020 (8.6% of GDP). The majority of this increase will be driven by improved productivity, particularly from the increasing adoption of mobile internet services.

Figure 10

Source: GSMA Intelligence

Outlook to 2020

\$ billion, % GDP



2.2 Global Mobile Engagement Index (GMEI)

2.2.1

About GMEI

The GSMA Intelligence Global Mobile Engagement Index⁶ (GMEI) measures the level of engagement of smartphone and non-smartphone users across a wide array of use cases and services, based on inputs from an annual global consumer survey, which covers 56 countries worldwide – representing 80% of the global population. A higher score means consumers are more likely to frequently engage in mobile services.

The index is based on the computation of two scores for each country surveyed: a usage score, measuring the average number of mobile use cases adult phone owners engage in; and a frequency score, measuring how often on average they engage in the use case. Based on the usage patterns of

56,000 people (1,000 respondents in each surveyed country), consumers have been divided into four segments to reflect their mobile engagement levels:

- **Aficionados** – highest recorded engagement across all use cases
- **Pragmatists** – high usage recorded across most use cases
- **Networkers** – moderate usage recorded across fewer use cases than the above groups
- **Talkers** – low usage recorded across all use cases with the exception of traditional communications such as voice.

Mobile engagement in Sub-Saharan Africa

The 10 Sub-Saharan Africa countries in the survey are in the second half of the global index, indicating a lower mobile engagement score than in developed markets and many other developing markets. This can be partly explained by the lower smartphone adoption rate and limited range of locally relevant non-core communication services available to mobile phone users in many markets across the region. South Africa (32nd) and Ethiopia (56th) are the highest and lowest ranked Sub-Saharan Africa

countries, respectively. The difference reflects the varying levels of smartphone adoption: smartphone user engagement is typically twice the level of that for non-smartphone users in the region, but there are exceptions in some countries, such as Kenya and Tanzania, where mobile money functionality is available and is still mostly used via SMS and USSD, which is driving engagement levels among non-smartphone users.

6. GMEI 2017: Global Mobile Engagement Index, GSMA Intelligence, February 2017

Table 1

Source: GSMA Intelligence

GMEI ranking of countries in Sub-Saharan Africa

(Ranking of 56 countries surveyed worldwide)

Rank	Country	Engagement score	Rank	Country	Engagement score
32	South Africa	2.3	47	Cameroon	1.3
42	Kenya	1.5	48	Nigeria	1.3
43	Mozambique	1.5	52	Sierra Leone	0.9
45	Tanzania	1.4	55	DRC	0.6
46	Côte d'Ivoire	1.4	56	Ethiopia	0.5

NB: Score accounts for smartphone and non-smartphone users and is weighted based on unique subscriber penetration

Mobile money drives engagement in Sub-Saharan Africa

The widespread adoption of mobile money services in Sub-Saharan Africa is a key driver of mobile user engagement for consumers using both smartphones and feature phones. Financial services are among the top 10 use cases for non-smartphone users, who are benefitting from being able to access mobile money services on feature phones and 2G networks, which still account for the majority of mobile connections in the region. Remittance is

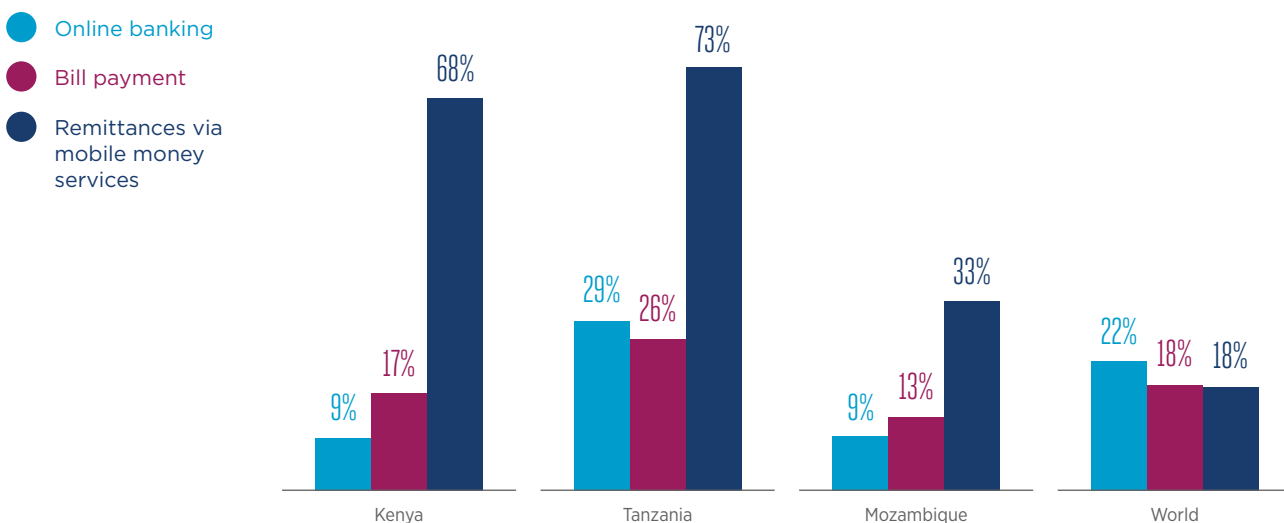
the most common mobile money feature in Kenya, Mozambique and Tanzania (see Figure 11). According to the GMEI, around four in every five mobile phone owners (over 18 years old) in Kenya and Tanzania use mobile money to send or receive money to/from friends, relatives or business associates. Another popular feature is paying bills, with mobile money providing greater efficiency and convenience than online banking services for many users.

Figure 11

Source: GSMA Intelligence

Mobile money use cases

Percentage of respondents (smartphone and non-smartphone users) performing activity at least once per month over mobile



Sub-Saharan Africa moving to higher levels of mobile engagement

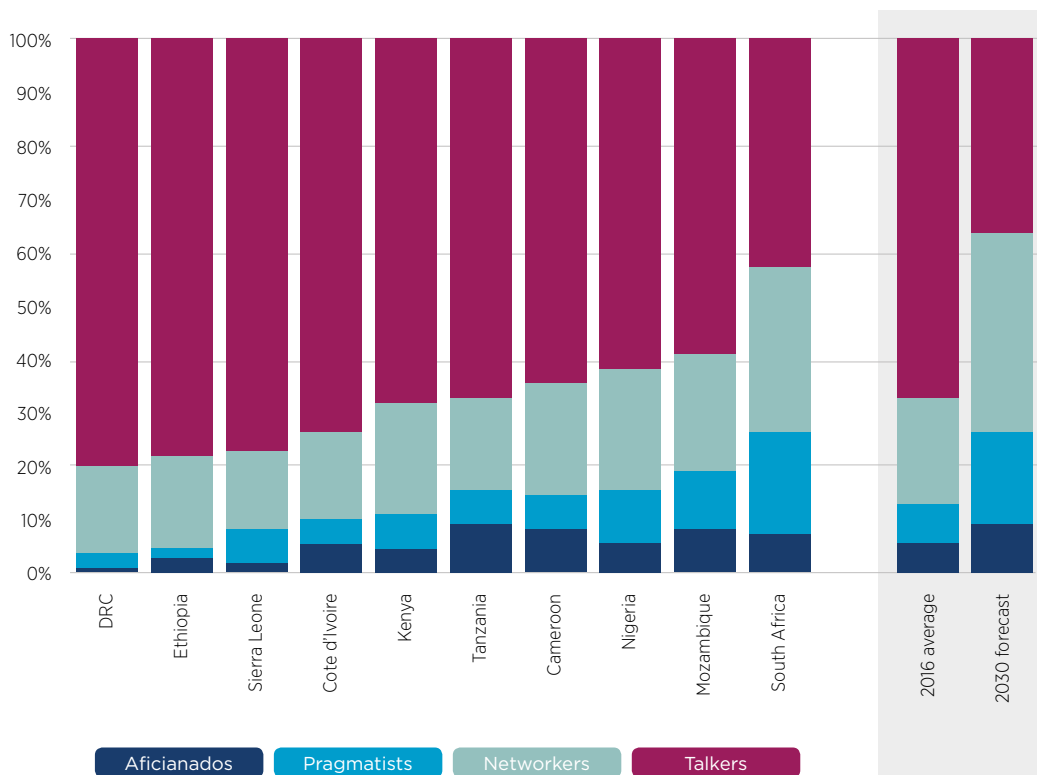
Sub-Saharan Africa's relatively low average GMEI score partly reflects the lack of locally relevant content for many consumers in the region. Language is a key constraint; just over 40% of the population of the 13 countries in the GSMA Intelligence Consumer Survey speak the main languages of the internet, such as English, French and Portuguese.⁷ Two-thirds of mobile phone users in Sub-Saharan Africa are Talkers, who primarily use their devices for traditional voice and messaging

services. Many older (40+) and non-smartphone users in the region fall into this category. However, the coming years will see a rapid transition to higher levels of engagement, particularly Networkers, underpinned by growing access to mobile data services and smart devices as well as a youthful population that almost entirely relies on mobile to explore the internet (browsing, reading the news) and communicate (IP voice/messaging, social networks).

Figure 12

Source: GSMA Intelligence

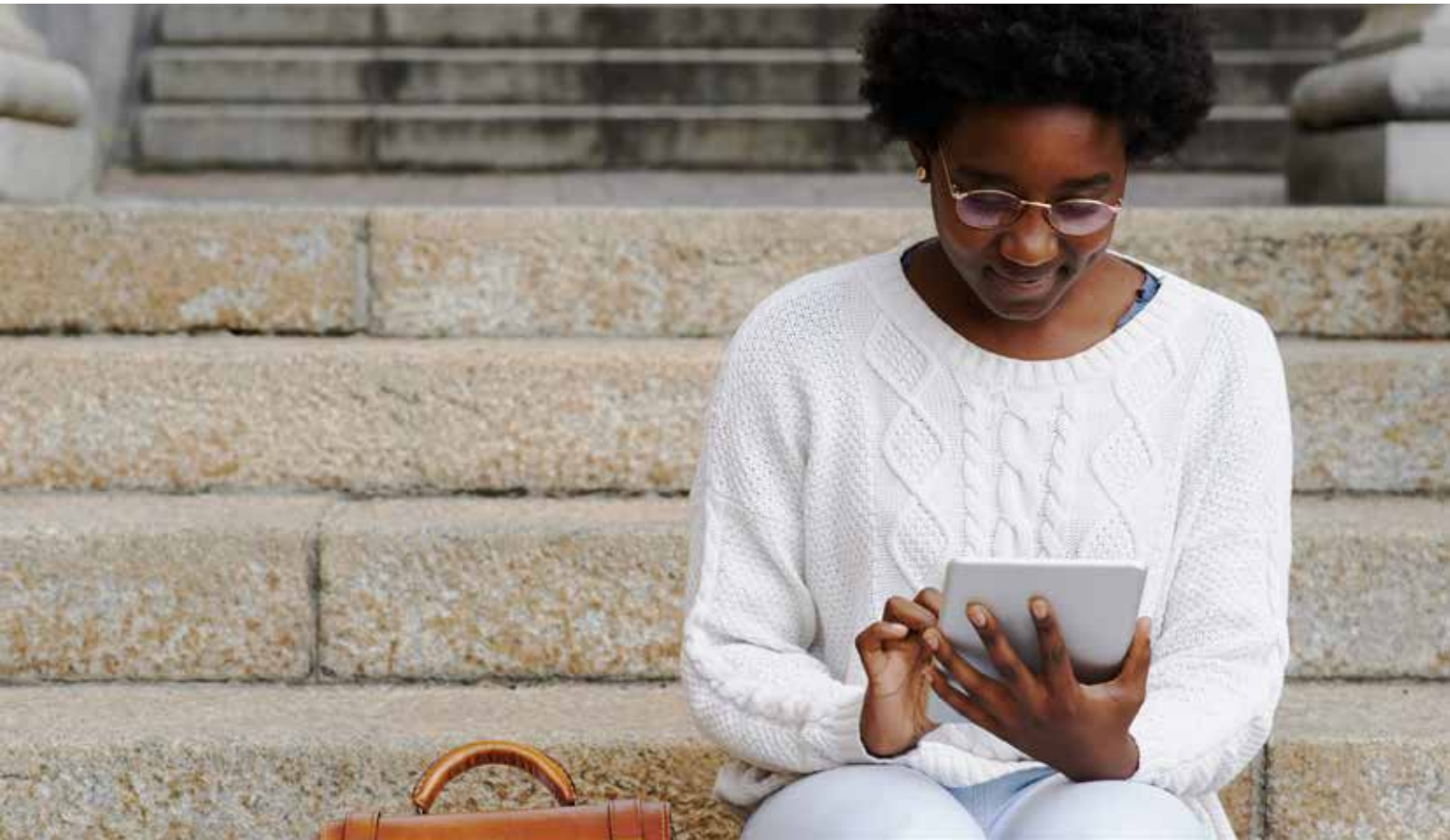
Mobile phone users in Sub-Saharan Africa by category



There will be more Networkers in the region than any other category of user by the end of the next decade. Aficionados and Pragmatists will also double over the period to 2030 as more non-communication services become available as a result of rising mobile-based innovation and the use of mobile technology to address social challenges in the region, such as low access to health services and education, inefficiency of the agricultural sector as

a primary source of food security and employment, low effectiveness of monitoring and response in situations of humanitarian disaster, and financial exclusion. Côte d'Ivoire, Kenya, Mozambique and Tanzania will record the most radical change over this period, driven by rising 4G and smartphone adoption, improved mobile broadband affordability and greater digital literacy.

7. Consumer barriers to mobile internet adoption in Africa, GSMA, July 2016



2.3

Mobile as a platform for innovation across Sub-Saharan Africa

Mobile technology connects more people globally than any other communications technology, a fact even more pertinent in Sub-Saharan Africa where mobile internet is the first and only form of connectivity available to most users. Mobile networks now cover more than 90% of the total population in the region, with more than half also covered by high-speed mobile broadband networks. The wide reach of mobile networks, relative to other technologies, and continued growth in subscriptions have made mobile technology the preferred platform for creating, distributing and consuming digital content and services.

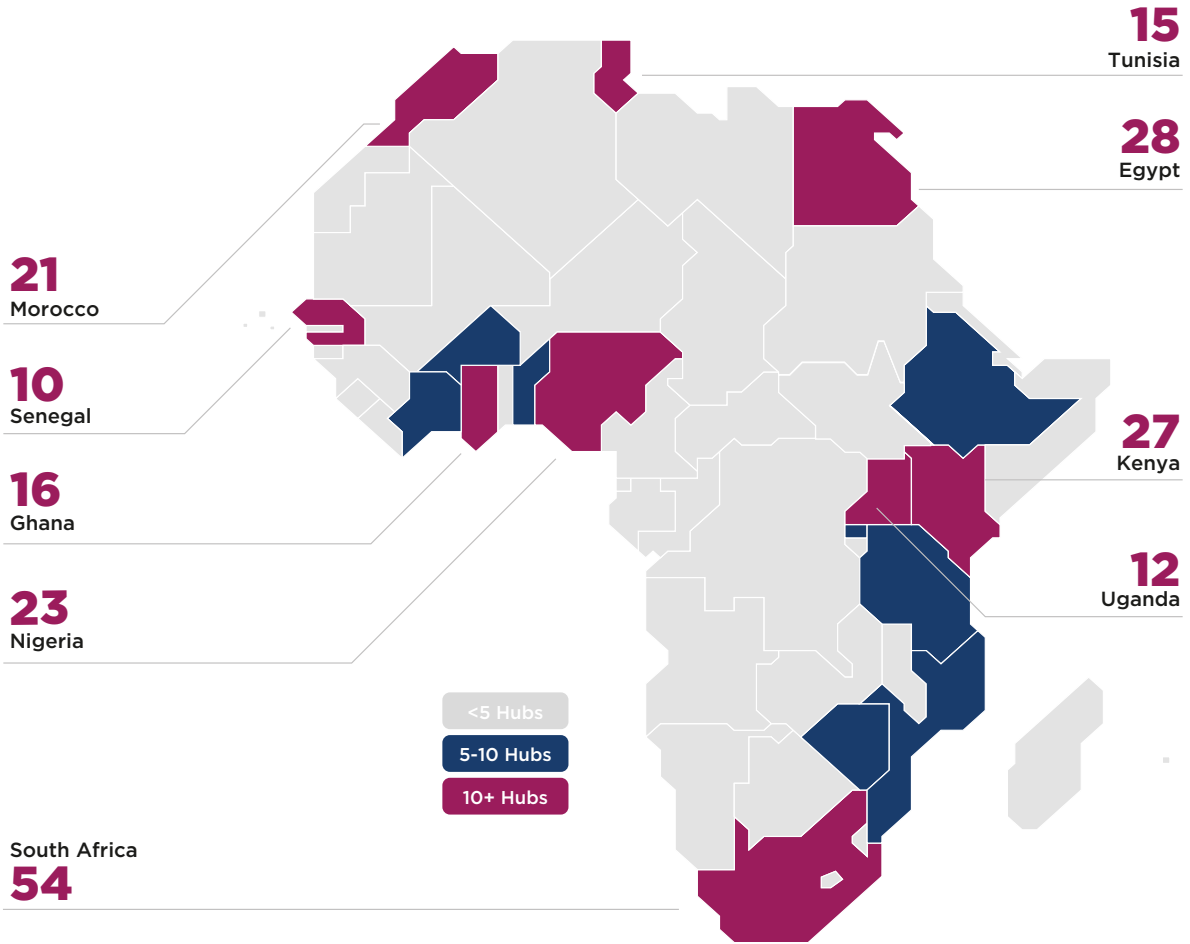
Opportunities in mobile-based innovation continue to attract talent and investment to the region's nascent tech start-up ecosystem. Recent research⁸ by the GSMA Ecosystem Accelerator programme found that there were 314 active tech hubs across Africa as of July 2016 (see Figure 13). South Africa, Kenya and Nigeria still account for a large share of tech hubs in Sub-Saharan Africa, but several other countries, notably Ghana, Senegal and Uganda, are now into double figures in number of active tech hubs.

8. "A few things we learned about tech hubs in Africa and Asia", GSMA, August 2016

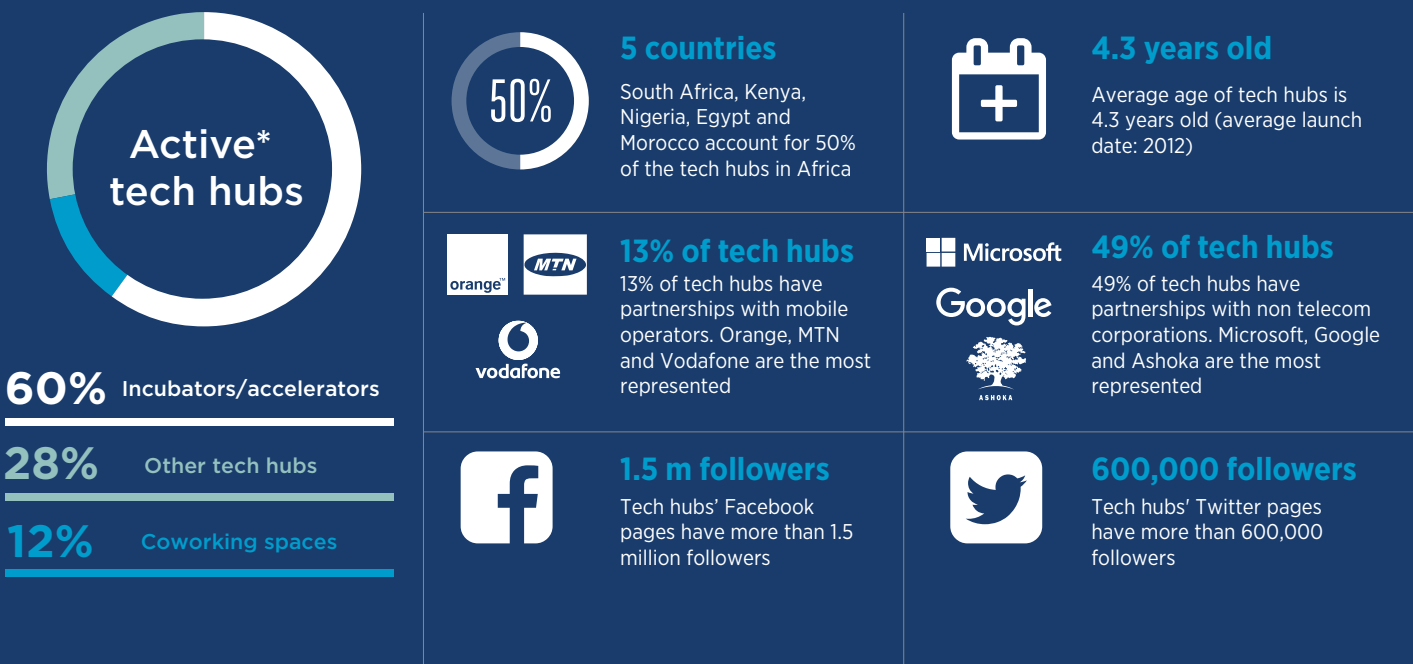
Figure 13

Source: GSMA

Tech hubs in Africa



314 active* tech hubs in 93 cities in 42 countries



* Tech hubs are defined as active when they show recent online activity (website or social networks) or have been reported as active by local experts interviewed. 314 were selected out of 422 screened.







The GSMA, through the Ecosystem Accelerator programme, actively supports the growth and development of the tech start-up ecosystem through the GSMA Ecosystem Accelerator Innovation Fund and is facilitating partnerships and collaboration between start-ups and mobile operators. The first round of funding concluded in

early 2017, with six out of the nine grantees from Sub-Saharan Africa (see Table 2). Grantees receive up to £250,000 in funding and up to 15 months of support (mentorship, facilitation of relationships with mobile operators, and access to networks) from the Ecosystem Accelerator programme. The second round of funding opened in June 2017.⁸

Table 2

Source: GSMA Intelligence

GSMA Ecosystem Accelerator Fund grantees in Sub-Saharan Africa

	Kytabu Kenya	Kytabu is a leasing application for textbooks that are downloadable from any internet-enabled device from the online library or preinstalled on a Kytabu tablet.
	Optimetriks Kenya, Tanzania and Uganda	Optimetriks is developing solutions for customers to provide feedback and data for companies operating in Africa to better serve their needs.
	PrepClass Nigeria	PrepClass is a tutoring marketplace that connects learners and tutors through an online platform.
	SafeMotos Rwanda	SafeMotos' mobile-based platform increases road safety and enables more transparent interaction between motorcycle taxi drivers and customers.
	Twiga Foods Kenya	Twiga Foods provides improved market access to farmers by buying fresh produce from them while ensuring a constant, hassle-free supply chain for roadside vendors.
	UX Mozambique	UX's product Biscate connects workers in the informal sector (plumbers, painters, mechanics etc.) to customers through USSD and web technologies.

Several other international organisations and investors are also providing support for start-ups and tech hubs. For example, in April 2017, the World Bank Group launched an accelerator programme for African digital start-ups to help up to 20 secure between \$250,000 and \$1.5 million each in early stage capital.

Across the region in 2016, 77 tech start-ups raised over \$366 million¹⁰, growth of 33% on the previous year. The number of start-ups that received funding also increased by 40% in 2016. The growth in the volume and value of funding in 2016, despite economic pressures in some major countries, underlines the resilience of the sector.

9. See: gsma.com/eainnovationfund

10. "VC funding raised by African tech startups totals record breaking US\$ 366.8 million in 2016", Partech Ventures, February 2017

Opportunities for further collaboration between mobile operators and tech start-ups

Mobile operators play an increasingly central role in the tech start-up ecosystem through various collaborative ventures with innovators and tech hubs (e.g CIPMEN-Orange partnership in Niger and the ActiveSpaces-MTN venture in Cameroon). Tech start-ups can leverage the scale, resources and other assets, such as APIs and distribution networks, that mobile operators have to enhance the functionality and reach of their solution. This could help mitigate the route-to-market challenges for start-ups by providing the platform, customer relationship and resources to drive their mobile innovation to scale. Meanwhile, mobile operators can benefit from local innovation and the agility of start-ups in creating new services amid rapid digital disruption in several industries, such as education, transportation and utilities. Successful collaborative ventures between operators and start-ups in the region include the following:

- **Eneza Education** delivers educational lessons and assessments through online channels. The start-up initially collaborated with Safaricom in Kenya and now serves nearly 2 million students across Ghana, Kenya, Tanzania and Zimbabwe. Partnerships with mobile operators, including Econet, MTN and Tigo, in these markets and others are vital to realising its goal of 50 million students across the region.
- **mTick**, a transportation start-up, provides a platform for buying and reserving inter-regional bus tickets in Côte d'Ivoire. It has collaborated with Orange, Moov and MTN to allow users to book their travel tickets on mobile apps or via USSD and pay for them through mobile money and carrier billing services, enabled through APIs. The easy payment collection process has improved efficiency and reduced prices for customers.
- **Nova Lumos** partnered with MTN Nigeria to distribute pay-as-you-go home solar systems through MTN's sales network. Lumos leverages MTN's retail distribution and agent network, and call centres to reach potential customers, especially in remote areas. Additionally, Lumos customers can pay for their solar power through MTN's carrier billing service.
- **Zazu Africa** is an end-to-end digital marketplace that connects farmers directly to buyers. After launching operations in South Africa and Zimbabwe, Zazu collaborated with MTN to expand into Zambia, leveraging the operator's APIs and distribution network.

Looking ahead, there is scope for mobile operators and start-ups to explore more ways to work together, based on the premise that mobile operators have reached the scale that start-ups lack, while start-ups have the local innovation that mobile operators need. This has the potential to advance the digital economy across the region. To achieve this, however, mobile operators need to increase their engagement with the wider start-up ecosystem and establish the right channels, with the appropriate resources, for engagement and collaboration. Start-ups also need to build a robust business case for collaboration, reflecting each party's strengths and needs, and the potential for mutual benefit.

2.4 Mobile delivering greater inclusion and addressing social challenges

Large swathes of the population in Sub-Saharan Africa, especially in rural areas where more than half of the region’s population live, still lack access to services such as health, education, electricity, clean water and financial services. Mobile has emerged as a vital tool to extend key services to underserved communities, complementing the efforts of governments and their development and private sector partners.

2.4.1

Digital inclusion – bringing the unconnected online

Mobile internet penetration in Sub-Saharan Africa doubled over the past three years to 26% by the end of 2016, with 120 million new mobile internet subscribers added over the period. Mobile technology is the only available platform for the majority of the population to get online; mobile

networks cover a wider area than any other technology in the region. Over the next four years, an additional 155 million people are expected to subscribe to a mobile internet service, bringing the total to 411 million and a penetration rate of around 38% by the end of 2020.

Figure 14

Source: GSMA Intelligence

Mobile internet subscriber penetration



Despite the remarkable growth, two thirds of the region’s population will remain offline at the end of the decade. A disproportionate share of unconnected individuals will come from underserved population groups, including women and those on low incomes, which still face significant barriers to mobile internet adoption. According to the ITU, women in Africa were 23% less likely than men to have access to the internet in 2016.¹¹ This gender gap in internet access is underpinned by a persistent disparity in mobile phone access for men and women.

The GSMA Connected Society programme works with and on behalf of the mobile ecosystem to facilitate four key enablers – infrastructure, affordability, consumer readiness and content

– that support greater adoption of the mobile internet. In Tanzania for example, the GSMA facilitated an active infrastructure-sharing initiative between Airtel, Millicom and Vodafone to test the sustainable provision of mobile broadband services to around 70,000 new users in rural areas via six 3G pilot sites. The GSMA expects to launch similar projects in other markets over the next three years, including Chad and DRC. Mobile operators have also taken steps to enhance digital skills and content; for example, Vodacom offers free online educational content in partnership with South Africa’s Department of Basic Education, while Smart Telecom delivers online content to feature phone users in Tanzania, Uganda, Burundi and Sierra Leone using the ONEm platform.

2.4.2

Financial inclusion – mobile money beyond transfers and payments

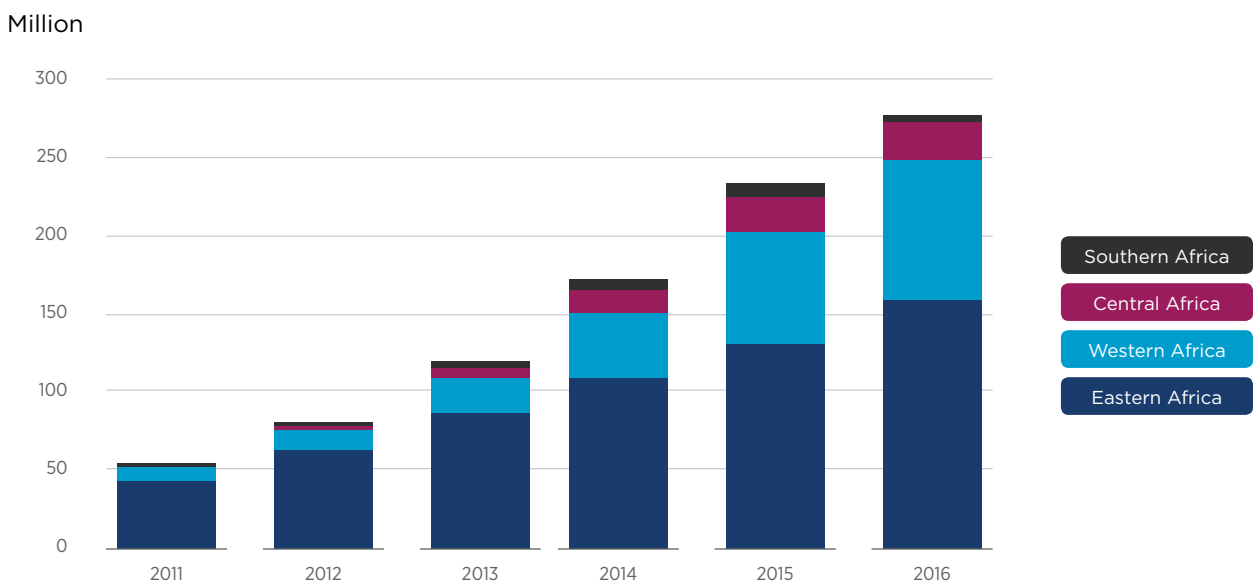
Mobile money continues to expand across Sub-Saharan Africa and has been a key tool in advancing financial inclusion across the region over the last decade. There were 140 live services in 39 countries across the region as of December 2016, accounting for nearly 280 million registered accounts and

around 1.5 million registered agents. More than 40% of the adult population in seven countries – Gabon, Ghana, Kenya, Namibia, Tanzania, Uganda and Zimbabwe – now use mobile money regularly (90-day activity basis).

Figure 15

Source: GSMA Mobile Money programme

Registered mobile money accounts in Sub-Saharan Africa



11. ICT Facts and Figures 2016, ITU

Expanding ecosystem enables more complex financial products

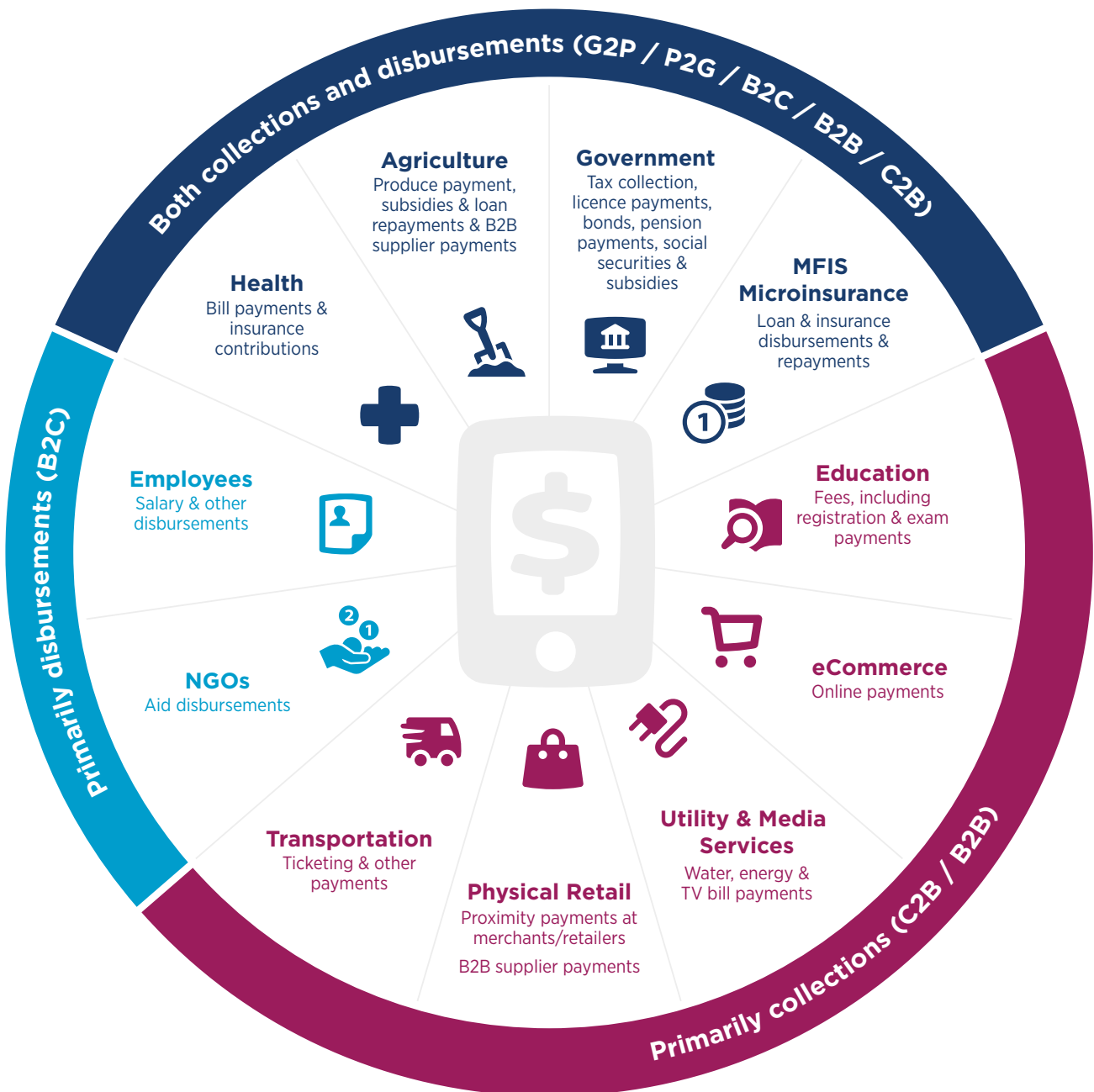
Access to a transaction account is a first step towards broader financial inclusion. Mobile money providers can provide supporting foundations and offer solutions to other sectors of the local economy, including government and public services, transportation, agriculture, utilities, education, and health (see Figure 16), by digitising payments and creating efficiencies. Developing successful

partnerships is crucial to integrating mobile financial services into other sectors. For example, the GSMA estimates that the digitisation opportunity for business-to-person and government-to-person payments in the agriculture sector in Sub-Saharan Africa could result in direct revenues of \$309 million and \$18 million respectively for mobile money providers by 2020.

Figure 16

Source: GSMA

The expanding mobile money ecosystem



In recent years mobile money has developed from traditional payments such as domestic remittances and airtime top-ups to provide access to more complex financial products, such as savings, credit and insurance. The expanding mobile money ecosystem offers new opportunities to governments, businesses and individuals. For example, in March 2017 Kenya launched M-Akiba, a government bond sold exclusively via mobile money that allows small investors to buy bonds, with tax-free interest of 10%, for as little as KES3,000 (\$30), compared to the minimum investment of KES50,000 for individuals to buy government bonds previously.

One of the most pronounced effects of mobile money has been that millions of individuals and businesses that have never had access to credit are now able to generate a transaction history,

borrow money and pay it back through their mobile phone. Mobile credit is particularly prevalent in Sub-Saharan Africa, driven by ease of accessibility of the loans, high demand from the middle-income population, its instant nature, and a relatively mature mobile money industry. The Commercial Bank of Africa disbursed KES40 billion (\$400 million) in loans in Kenya in 2015 through M-Shwari, with a non-performing loan ratio of 2%¹² (compared to 4.3% globally and 5.4% for SSA).¹³ A similar product, M-Pawa, was introduced in Tanzania in 2014. As of May 2016, M-Pawa had 4.8 million accounts, with TZS39 billion (\$17.9 million) disbursed to entrepreneurs, most of whom were women or the young.¹⁴ Kenya Commercial Bank (KCB) has also disclosed that mobile loans applications now stand at 80,000 per day. KCB's M-Pesa loan book reached KES17 billion in 2016, compared to KES4.3 billion the previous year.

12. "Kenyan Lender CBA to Take Mobile-Bank Service Deeper Into Africa", Bloomberg, September 2016

13. "Bank nonperforming loans to total gross loans (%)", International Monetary Fund, Global Financial Stability Report, World Bank Group

14. "Tanzania: Vodacom M-Pawa Loans Reach 4.2 Billion - in May", Tanzania Daily News, June 2016

2.4.3

Enabling innovative business models to address social challenges

Mobile is enabling innovative business models that help overcome barriers to providing affordable and self-sustainable social services. Delivering services with a high social impact in the region is usually constrained by the inability of end users to pay high access costs and a lack of basic infrastructure. However, investors and social enterprises are leveraging the large area coverage

of mobile networks and key mobile services, such as messaging, mobile money and M2M, to deliver scalable and commercially viable services. This presents an opportunity for governments, development organisations and private sector players to generate greater social impact using mobile-enabled solutions, as demonstrated in the case studies that follow.



Living Goods

Background: Living Goods supports a network of more than 3,000 health entrepreneurs, known as Community Health Promoters (CHPs). CHPs visit households to teach families how to improve their health and wellbeing, and sell products for simple treatments, safe delivery kits, fortified foods, clean cook stoves, water filters and solar lights. Living Goods hopes to lower child mortality and create livelihoods for enterprising women, who work as independent agents, by combining best practices from public health and business.

Mobile-enabled solution: Living Goods introduced a customisable mobile platform that can be used via a simple user interface to improve key elements of the programme and complement the efforts of CHPs. The platform is accessible via Android smartphones and integrates key functions, including the registration of households and the tracking of visits by CHPs, to improve overall efficiency and service delivery.

Figure 17

Source: Living Goods

Living Goods



Improve performance management

- Track key metrics, e.g assessments, pregnancies, follow-ups
- Assess performance against targets
- Customised views for field supervisors and management
- GPS location-enabled for optimising operations
- Cloud-hosted dashboards available anywhere, anytime

Improve performance in the field

- Increase treatment accuracy
- Improve consistency and quality
- Register pregnancies
- Automate daily task list with real-time data

Improve patient compliance & health behaviour

- Personalised welcome message with CHP name and phone number
- SMS messages to pregnant women tied to expected due date
- SMS reminders to complete treatments
- Important nutrition information to support pregnant women and growing children

Improve supply management system

- Tracks movement of goods ensuring all branches are properly stocked
- Data analytics to monitor performance of goods allowing for more effective product portfolio management



Impact: A five-year randomised control trial showed a 27% reduction in under-five mortalities and an increase of up to 72% in home visits for nursing mothers in the first seven days of the post-natal period. Drug prices also fell by 17% at clinics and drug stores near where Living Goods operates, while the prevalence of fake drugs fell by 50%, suggesting positive competitive pressure. CHPs performing disease outbreak surveillance, reporting, control and management could also lead to cost savings in health services, including a reduction in the number of patients who need to travel to understaffed health facilities for treatment (Sub-Saharan Africa accounts for 25% of the global disease burden but only 3% of health workers).

“Living Goods solves two of our biggest challenges in the healthcare sector: how to keep vital medicines in stock, and how to compensate and retain community health workers”

Dr. Ruhakana Rugunda, Prime Minister, Uganda

Mobile-enabled solar pay-as-you-go (PAYG)

Globally, close to two thirds of the 1.2 billion off-grid population are covered by mobile networks and could theoretically directly benefit from mobile-enabled utility services. Five of the 10 countries with the largest energy addressable markets – DRC, Kenya, Nigeria, Tanzania and Uganda – are in Sub-Saharan Africa. Mobile-enabled PAYG solar enables access to financed clean energy solutions, with entrepreneurs partnering with mobile operators for mobile money integration and in some cases branding, marketing and distribution.

The PAYG solar model combines innovations around the Internet of Things, cloud computing and mobile financial services to provide flexible payment

terms while collecting intelligence on users and the systems they are using. It creates a credit history through mobile payments for customers with no formal financial history. It also enables predictive maintenance through M2M connectivity and better understanding of customer power consumption profiles. Fundamentally, mobile-enabled PAYG providers are good partners for mobile operators looking to expand and stimulate their customer base in underserved and rural locations, drive revenue growth and reduce churn. For example, PEG in Ghana has become the biggest business for MTN bill pay services, outside of key government services and urban utilities.¹⁵

15. Based on data collected at the end of 2015



Fenix International

Background: Fenix International designs, manufactures and distributes mobile payment-enabled home solar systems to off-grid residents in emerging markets. Fenix operates in Uganda in partnership with MTN Uganda. Around 80% of the population in Uganda lack access to electricity, and largely rely on kerosene and fire wood for lighting.

Mobile-enabled solution: Fenix ReadyPay Solar operates through a mobile-enabled PAYG model, which allows customers to pay for solar products in instalments over a period of up to 36 months (for example, customers pay \$0.15 per day over 36 months for an entry-level solar home system valued at \$160). The micro payments, which are facilitated by MTN Mobile Money, make the products affordable for low-income families.

Impact: ReadyPay owners have moved away from unhealthy lighting sources to cleaner, renewable solar energy. Fenix serves around 110,000 households, with approximately 660,000 people, from the 1.2 million watts of solar installed across the country.¹⁶ In addition, repaying their solar home system allows customers – excluded from formal financial institutions – to make timely repayments and build up a positive credit score, providing access to new financial services and additional product upgrades.

ReadyPay has generated more than 2.5 million mobile power payments, amounting to more than \$20 million. Partnering with Fenix to distribute ReadyPay has helped MTN drive mobile money adoption, increased use of mobile services and improved brand perception. In Uganda, Fenix has become one of the largest bill pay accounts by transaction volume for MTN. A survey of Fenix customers¹⁷ showed that 13% were new to MTN Mobile Money and signed up for accounts when they purchased the ReadyPay Solar system.

16. As of March 2017

17. Fenix International: Scaling Pay-as-you-go Solar in Uganda, GSMA, December 2015



The GSMA Mobile for Development (M4D) Utilities Innovation Fund aims to test and scale the use of mobile to improve or increase access to energy, water and sanitation services. The M4D Utilities Innovation Fund is in its third phase, following two previous phases that have impacted over 2.5 million direct beneficiaries in underserved populations across four continents, including Africa, since 2013. Some notable grantees in the region and their operator partners include M-KOPA and Safaricom

(Kenya), Mobisol and MTN (Rwanda), and Fenix and MTN (Uganda). The third round opens in July 2017, with seed grants (up to £150,000) and market validation grants (up to £300,000) to successful grantees.

For more information see <http://www.gsma.com/mobilefordevelopment/programmes/m4dutilities/innovation-fund-2>

2.4.4

Supporting the UN Sustainable Development Goals

In September 2015, the UN introduced the Sustainable Development Goals (SDGs) – a 17-point plan to end poverty, combat climate change and fight injustice and inequality by 2030. Mobile connectivity will play a central role in the realisation of the SDGs in Sub-Saharan Africa, helped by the fact that the digital divide is narrowing faster than funding and infrastructure gaps. There are more than 700 million mobile connections in the region, enabling various services that directly impact the SDGs; for example, mobile money is helping reduce

poverty and inequality while M2M, with more than 13 million connections in the region, is enabling smart city and off-grid utilities solutions.

The GSMA and mobile operators in the region are working together to deploy mobile-enabled solutions that deliver greater inclusion in cities and remote communities, enable access to essential services such as health and education, create employment and income opportunities, and empower people with the tools to reduce poverty and inequality.



Financial inclusion End poverty in all its forms everywhere

MOBILE OPERATOR INITIATIVES

With more than 400 million registered users, mobile money facilitates access to financial services, many of which contribute to building the resilience of the poor by reducing their vulnerability to economic, social and environmental shocks and disasters.

CASE STUDY

By providing the poor with the financial services they need to make investments and manage unexpected expenses, the mobile money industry is helping to eliminate extreme poverty. Recent estimates found that access to M-Pesa has lifted 194,000 households in Kenya out of poverty since its inception in 2007.¹⁸



Agriculture End hunger, achieve food security and improved nutrition, and promote sustainable agriculture

MOBILE OPERATOR INITIATIVES

Agriculture contributes 17% of GDP and employs more than half of the labour force in Sub-Saharan Africa. Mobile is uniquely positioned to deliver the critical information quickly that rural smallholder farmers need, enabling them to make better decisions and investments that boost their productivity and profit.

CASE STUDY

In June 2015, Vodafone Ghana launched the Vodafone Farmers' Club – a package of agricultural VAS (farming advice, weather updates, market prices) delivered via SMS and IVR. The service is provided in partnership with VAS provider Esoko. By December 2016, more than 200,000 users had registered. Regular users of Farmers' Club are 1.7 times more likely to report a change in their land management practices than non-users.

18. The long-run poverty and gender impacts of mobile money, Science, December 2016

3 GOOD HEALTH AND WELL-BEING



Health

Ensure healthy lives and promote well-being for all

MOBILE OPERATOR INITIATIVES

Mobile can increase the quality, reduce the cost and extend the reach of healthcare to benefit millions. There are currently more than 1,000 mobile health services in developing countries targeting families through the provision of health content and diagnostics services.

CASE STUDY

Airtel Malawi has launched the 321 VAS that provides access to maternal and child nutrition information as well as other public service information, in the local language. Airtel 321 users have demonstrated on average a 14.5% increase in knowledge around appropriate breastfeeding practices and a 22% improvement in breastfeeding behaviours.

4 QUALITY EDUCATION



Education

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

MOBILE OPERATOR INITIATIVES

Mobile operators are working to support students and teachers in integrating mobile technologies into the classroom, enabling access to greater learning opportunities in urban hubs and remote locations.

CASE STUDY

Tigo introduced a mobile learning service EduMe in Rwanda and Tanzania, giving subscribers the opportunity to learn English and other subjects. EduMe combines listening, reading and speech training through text lessons, quizzes and audio lessons in an interactive way.

5 GENDER EQUALITY



Women empowerment

Achieve gender equality and empower all women and girls

MOBILE OPERATOR INITIATIVES

Mobile can help empower women, helping them feel more connected, safer and with access to information and life-enhancing opportunities, such as health information, education and financial services.

CASE STUDY

In 2016, Tigo Rwanda launched a RWF50 million (\$60,000) Tigo Women Entrepreneurship Fund to provide start-up capital and training to women from across the country to become Tigo Cash agents. Tigo aims to have more than 1,200 women agents through this fund by the end of 2017.

6 CLEAN WATER AND SANITATION



Water and sanitation Ensure access to water and sanitation for all

MOBILE OPERATOR INITIATIVES

Mobile-enabled solutions can improve the efficiency of water and sanitation services and extend their reach, bridging the gap in universal access to water and safe sanitation.

CASE STUDY

Wonderkid Multimedia provides an Integrated Mobile Utility Management solution for four water utilities in Kenya. This ICT platform uses mobile services to support mobile meter reading, self-reading of meters and complaint management, which overall improves efficiency and maintenance.

7 AFFORDABLE AND CLEAN ENERGY



Energy Revitalise the global partnership for sustainable development

MOBILE OPERATOR INITIATIVES

The mobile-enabled solar pay-as-you-go model has been enabling access to clean energy solutions since the early 2010s. Solar home systems use mobile payments and M2M technology to provide reliable and clean energy.

CASE STUDY

Through a partnership with MTN Rwanda, Mobisol installs mobile-enabled solar home systems in Rwanda, with a focus on entrepreneurial systems for customers to generate income. Mobisol's use of mobile money for payments and M2M technology for remote control and monitoring demonstrates the power of mobile for pay-as-you-go solar to increase energy access for the underserved.

16 PEACE, JUSTICE AND STRONG INSTITUTIONS



Identity Provide legal identity for all, including birth registration

MOBILE OPERATOR INITIATIVES

The transformative potential of mobile technology has been identified as a key opportunity for accelerating the scale and reach of inclusive, digital identities that can empower citizens, protect privacy and stimulate economic and social development.

CASE STUDY

Tigo Tanzania, together with UNICEF and the local government, has developed an SMS-based application that makes the birth registration process more efficient, cost-effective and accessible for parents. Since its launch in 2013, the app has successfully registered nearly 1.5 million children and has now been scaled across seven regions.

3

Regulation and competition in a digital age

Digitisation is driving rapid technological progress and growth, generating significant benefits for consumers in both developed and developing regions of the world. Prices for digital services are falling rapidly, with almost 280 million people now connected to the internet across Sub-Saharan Africa. The mobile revolution is also rapidly bringing connectivity to remote areas across the region. Digital technology and the economic activity that it enables deliver broad economic and social benefits to populations across the region.

Although digital convergence is benefitting consumers, it also creates regulatory challenges. Rapid innovation, in terms of technology and business models, together with the growing

importance of economies of scale and scope, is blurring the boundaries between once-distinct markets and regulatory regimes. The net result is a complex and dynamic digital ecosystem in which both consumers and businesses face regulatory uncertainty.

To realise the benefits of new technologies while navigating economic transitions, governments should pursue policies that incentivise investment and promote development of digital economies. Forward-looking governments will encourage network investment that improves connectivity, and update regulatory regimes for current market conditions.

3.1 The need for regulatory modernisation

If regulatory policies and institutions fail to adapt to changing conditions, markets can become distorted in ways that harm competition, slow innovation and ultimately deprive consumers of the benefits of technological progress. Policymakers all over the world, including many in Africa, are now recognising these challenges and working to implement reform that will protect competition and consumers without impeding social and economic progress.

The three key principles for creating a new framework are as follows:

a) Regulations and regulatory institutions should be redesigned around the concept of functionality, rather than legacy technologies or industry sectors.

b) Regulation should be dynamic rather than static, focusing on ex post enforcement of broad rules rather than detailed, ex ante prescriptions.

c) Reform efforts should be broad-based and bottom-up in the sense of re-evaluating from a clean slate the need for regulation, its goals and the means by which those goals are accomplished.

Building the foundations of mobile connectivity and services to enable a digital society requires collaboration between governments and the mobile industry, with the former supporting industry-led initiatives with policies and programmes that create the right incentives for innovation and an enabling environment for extending connectivity to underserved areas.

Moves to regulatory modernisation underway in the region

The GSMA has been supporting policymakers in a number of countries to update regulation in a number of key areas.

In the DRC a draft Telecom Bill is being reviewed by the National Assembly, which if approved would be a significant step in terms of regulatory modernisation.

In Nigeria, the NCC held a 'Consultative Forum on Spectrum Trading' in late 2016, following which the NCC committed to produce new guidelines on the issue of spectrum trading. The NCC is also looking to remove legacy regulations in the licensing spectrum framework and move the regulatory framework further towards reliance on ex post competition principles.

3.2 The importance of government leadership

A recent report by the GSMA highlighted the importance of government leadership and action in building digital economies.¹⁹ There are a number of examples from across Sub-Saharan Africa of

government initiatives, including the development of supportive regulatory regimes and using government policy and programmes to push digitisation through industry and society.

PAYING SCHOOL FEES WITH MOBILE MONEY IN CÔTE D'IVOIRE

Five government policies were critical to the success of Côte D'Ivoire's mobile payment programme.

- **A willingness to invest in digital.** Côte D'Ivoire's education ministry (MENET) is committed to investing in digital platforms and technical capabilities. It was open to exploring new technologies and innovative business models. Its database is now updated frequently, giving detailed insight into the needs of students and the impact of the initiatives that serve them. This investment has deepened the digital capabilities of the government and has provided a solid foundation for further digitisation of other government payments.
- **Government leadership and collaboration.** Strong government leadership and effective project management were vital to the success of the project. MENET worked to achieve buy-in and coordinated collaboration between private sector stakeholders. This effort brought all players to the table to agree key actions and held them to agreed timelines to ensure efficient running of the service year on year.
- **Win-win business model.** The successful implementation of an attractive and sustainable business model for all parties was critical. The government sought to work with all mobile money providers in the market, rather than any one preferred supplier. This guaranteed a level playing field for all providers and that the maximum number of people could access the service. All parties had a vested interest in the success of the project and by combining resources such as marketing budget and aligning key messages, they elevated awareness-raising efforts. The government agreed to pay mobile operators a fee for each payment processed to cover the costs of providing the service, which meant the service was sustainable for the operators.
- **Enabling regulatory environment.** Côte d'Ivoire had an enabling regulatory framework for mobile money, which meant that no new approvals or laws were required to move to mobile payments. The enabling environment also meant that there were no taxes on mobile payments imposed by the government, so these did not need to be factored into the business model.
- **Long-term political vision.** Long-term vision and buy-in from high-level government stakeholders gave the project time to be developed and demonstrate success. Building on this project, the Ministry of ICT has recently engaged in a new initiative with support from the GSMA to drive collaboration across line ministries to digitalise new government payment flows.

19. Embracing the Digital Revolution: Policies for Building the Digital Economy, GSMA, February 2017

As well as helping to build digital societies, collaboration between the mobile industry and government bodies can help to accomplish the UN's SDGs. A recent report by the GSMA looked specifically at Côte d'Ivoire and examined in more detail the areas where the mobile industry's activities could help both accomplish the goals of the SDGs as well as support the continued social and economic development of the country.²⁰

Several programmes of the government's National Development Plan 2016-20 are aligned with the

SDGs, which were adopted by Côte d'Ivoire, as well as all other 192 member states, in September 2015. The GSMA is supporting national governments and the mobile industry in accomplishing the SDGs by holding a number of national dialogues, the first of which was held in Côte d'Ivoire. The importance of mobile-enabled digital solutions for progressing development objectives - particularly in health, energy, education, agriculture and financial services - and the need for impactful public-private sector partnerships were reiterated by all participants.

3.3

Competition policy in the digital age

The existence of a regulatory regime that encourages change and supports innovation underpins much of the effort to bring about digitisation, especially in developing countries. Reliance on competition law rather than regulation (when appropriate) would help to create the conditions for continued expansion of networks and affordable services.

The digital economy requires adapted competition law enforcement. However, the GSMA's Competition Policy Handbook highlighted how telecoms

operators are subject to a lot more scrutiny and regulation than their competitors in the digital economy. This is particularly true in developing regions such as Africa, where regulatory intervention is often directed at mobile operators.

A recent report by the GSMA reviewed the legal and policy framework in Sub-Saharan Africa with regards to competition policy, and identified five features that are a precondition of 'best practice' in competition policy.²¹

20. Country overview: Côte d'Ivoire, GSMA, April 2017

21. Competition Policy in the Digital Age, Case Studies from Asia and Sub-Saharan Africa, 2016, GSMA, December 2016

Table 3

Source: GSMA

Five features of best practice in competition policy

- ① A properly functioning competition authority and properly functioning regulator – independent of government, properly staffed and resourced.
- ② Economic regulation must address market failures based on evidence from up-to-date market reviews. Regulators must be clear about the reasons for and impact of regulation in all cases.
- ③ Ideally competition law should be enforced by a competition authority. If the regulator has sectoral competition law powers, the need for cooperation between agencies is greatest.
- ④ Both competition authority and regulator understand the interplay between their respective jurisdictions and work together to address the issues identified.
- ⑤ There is appropriate, meaningful cooperation between competition authorities and regulators at the supranational level too.

The report surveyed 50 countries across Sub-Saharan Africa in terms of their adoption of these five key features. Fourteen countries were found to have an established system of competition law, with competition authorities active on average for eight years in the countries where they operate.

Resourcing of the competition authority was found to be an issue in some cases, but the position has improved in recent years. The countries that belong to the West African Economic and Monetary Union (WAEMU) have adopted a centralised system of application of the competition rules.

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