



SUB-SAHARAN AFRICA

ERICSSON MOBILITY REPORT

NOVEMBER 2016

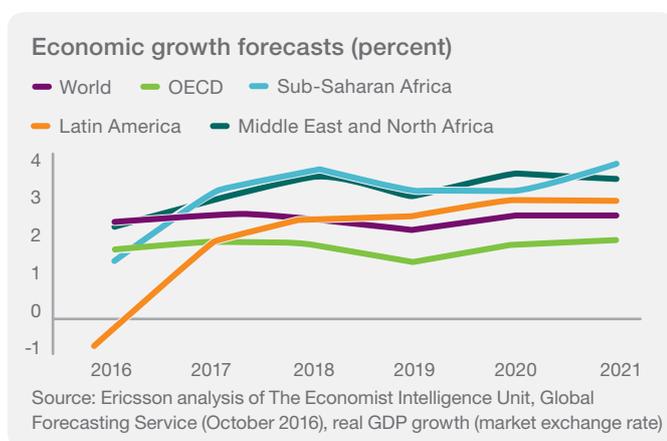
MARKET OVERVIEW

Key figures: Sub-Saharan Africa

	2016	2022	CAGR 2016–2022
Mobile subscriptions (million)	720	1,030	6%
Smartphone subscriptions (million)	260	800	21%
Data traffic per active smartphone (GB/month)	1	5	30%
Total mobile traffic (EB/month)	0.3	3.2	50%

The macro-economic environment

The Sub-Saharan African market continues to exhibit growth, despite a relative slowdown due to lower commodity prices. Between 2018 and 2021, the region's economy is projected to grow at a faster rate than the global average.¹ It remains a preferred destination for foreign investment.

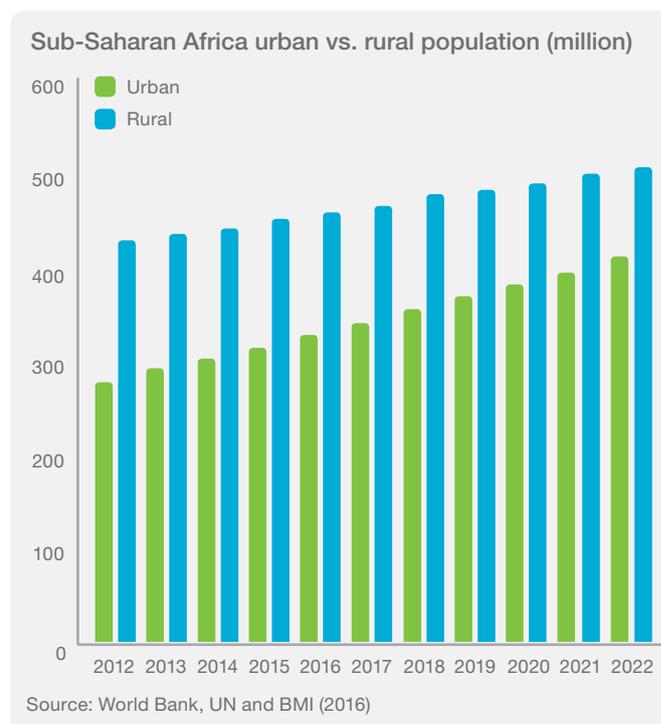


Driven by continued economic growth, the region's middle class continues to rise, leading to an increase in purchasing power. This has led to stimulating demand for a wide range of products and services in the market.

Projected population growth in the region will put a strain on the existing general infrastructure² in urban and rural areas; however, the expanding urban population is driving economic growth via higher formal sector employment, private consumption and investment in infrastructure across various sectors. While there is high mobile penetration in urban areas, there remains an underserved rural population that could be effectively catered for by using various models, such as government subsidies, network and spectrum sharing.

Mobile penetration set to reach 105 percent by 2022, passing the 100 percent milestone in 2021

Sub-Saharan Africa remains the region with the highest growth rate in mobile subscriptions globally. The penetration level in 2010 was just approaching 50 percent, and now forecasts indicate that close to 100 percent³ penetration will be achieved in 2021. This will be enabled by investments by mobile operators and other stakeholders in the industry. Growth is expected to continue, with subscriptions rising by a factor of 1.5 between 2016 and 2022.



¹ The Economist Intelligence Unit, Global Forecasting Service (October 2016)

² World Bank, "Africa Still Poised to Become the Next Great Investment Destination" (June 2015)

³ Refers to SIM penetration, not unique subscriber penetration as a percentage of total population

Affordability is driving the increase in mobile broadband uptake in Sub-Saharan Africa

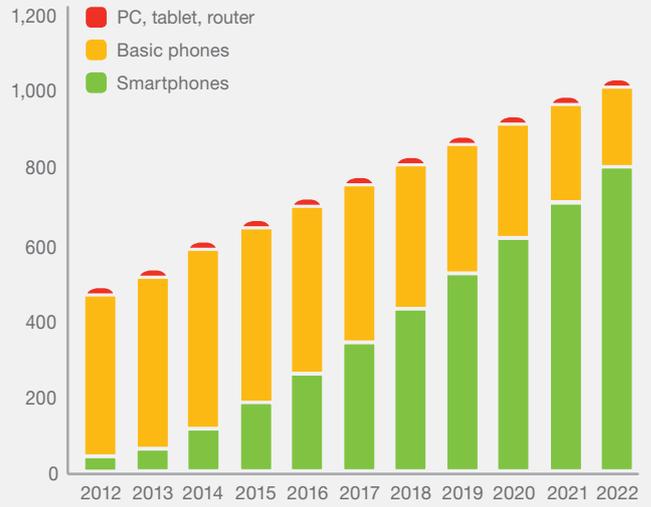
Rising youth population to drive uptake of mobile broadband services

Access to mobile broadband in Sub-Saharan Africa has been rising steadily, with a current penetration rate of around 35 percent. Today, the average South African subscriber spends three hours on social media every day. In Nigeria there are over 7 million active daily users of Facebook, 97 percent of whom access the service on mobile devices.⁴

Sub-Saharan Africa is home to one of the world’s youngest populations. With 57 percent of the population below the age of 15 in 2016, the expectation is that the behavior of this segment will be a key driver in the increasing adoption of mobile services. For example, in Nigeria, university students are the demographic most likely to spend time online, as well as access the internet via hand-held devices.⁵

Affordability is also driving the increase in mobile broadband uptake in Sub-Saharan Africa. Alongside declining data prices, which is stimulating traffic, there is an increase in the accessibility of smartphones due to lower prices as a result of subsidies and access to purchase plans. This is reflected in various models by local operators, handset providers and financial institutions. For example, a leading operator in

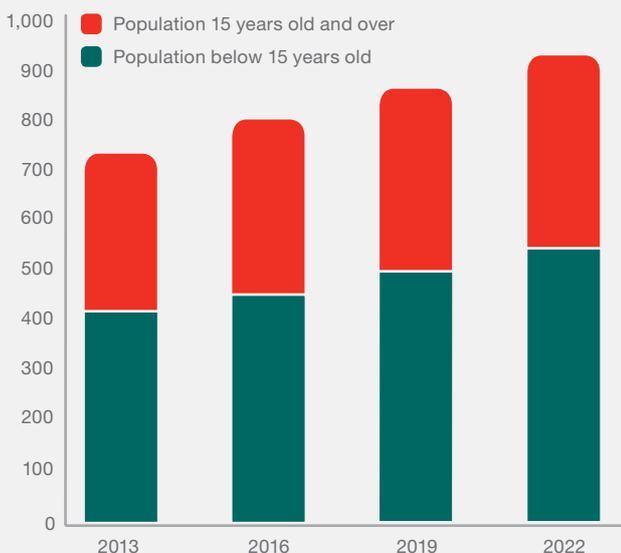
Mobile subscriptions in Sub-Saharan Africa by device (million)



Nigeria, the largest mobile market in the region, currently has 2 smartphones retailing at below USD 50.

It is expected that there will be a greater proliferation of low-cost smart devices in the region, as hardware manufacturers looking to capitalize on the opportunity set up by manufacturing plants in countries such as Nigeria.

Demographic split, Sub-Saharan Africa (million)



Source: World Bank, UN and BMI (2016)



⁴ Facebook Africa Statistics, Johannesburg (September 2015)

⁵ Ericsson TV and Media Report (2015) Base: Nigeria

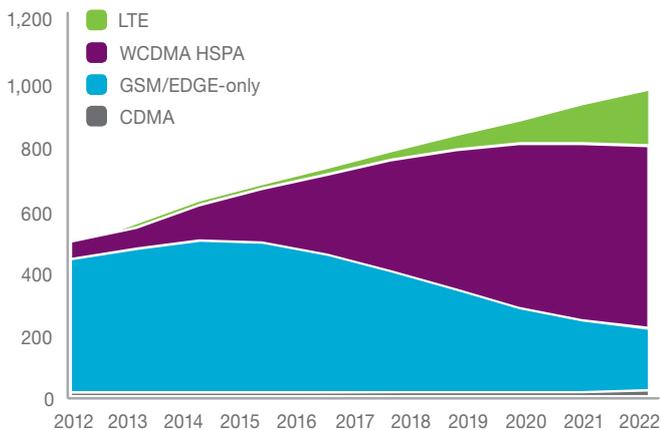
MOBILE SUBSCRIPTIONS

It is forecast that the region will have 55 million net additions in 2016. Between 2016 and 2022, mobile subscriptions in the region will grow at a compound annual growth rate (CAGR) of 6 percent, to over 1 billion subscriptions – leading to a penetration rate of 105 percent

Technology evolution

There has been a strong demand for mobile broadband services in the region; a trend expected to carry on as operators continue to invest in networks. WCDMA/HSPA subscriptions will grow by 15 percent annually between 2016 and 2022, as basic GSM/EDGE-only connections decline. Though LTE subscriptions will also show strong year-on-year growth, WCDMA/HSPA will remain the dominant mobile broadband access technology in Sub-Saharan Africa through 2022.

Mobile subscriptions in Sub-Saharan Africa (million)



LTE development

Service providers across the region have begun to deploy LTE, which will not only support more traffic, but also faster speeds, lower latency and lower energy use. Today there are over 40 live LTE networks in 25 countries across Sub-Saharan Africa.⁶

LTE subscriptions growth in Sub-Saharan Africa are forecast to be strong. However, it will follow a more modest trajectory than WCDMA/HSPA due to challenges such as low subscriber purchasing power in the less-wealthy markets and delayed digital TV migration. Allocation of low band spectrum – that is, below 1 GHz – will enable wider coverage in a more cost effective manner, as today most LTE deployments are re-farmed from allocated bands. Some operators have opted to concentrate on extracting maximum value from their WCDMA/HSPA networks before venturing into LTE network rollout.

15%

WCDMA/HSPA subscriptions will grow by 15% annually between 2016 and 2022



GSM/EDGE will remain a viable technology in Sub-Saharan Africa in 2022, with over 15% of the total connections



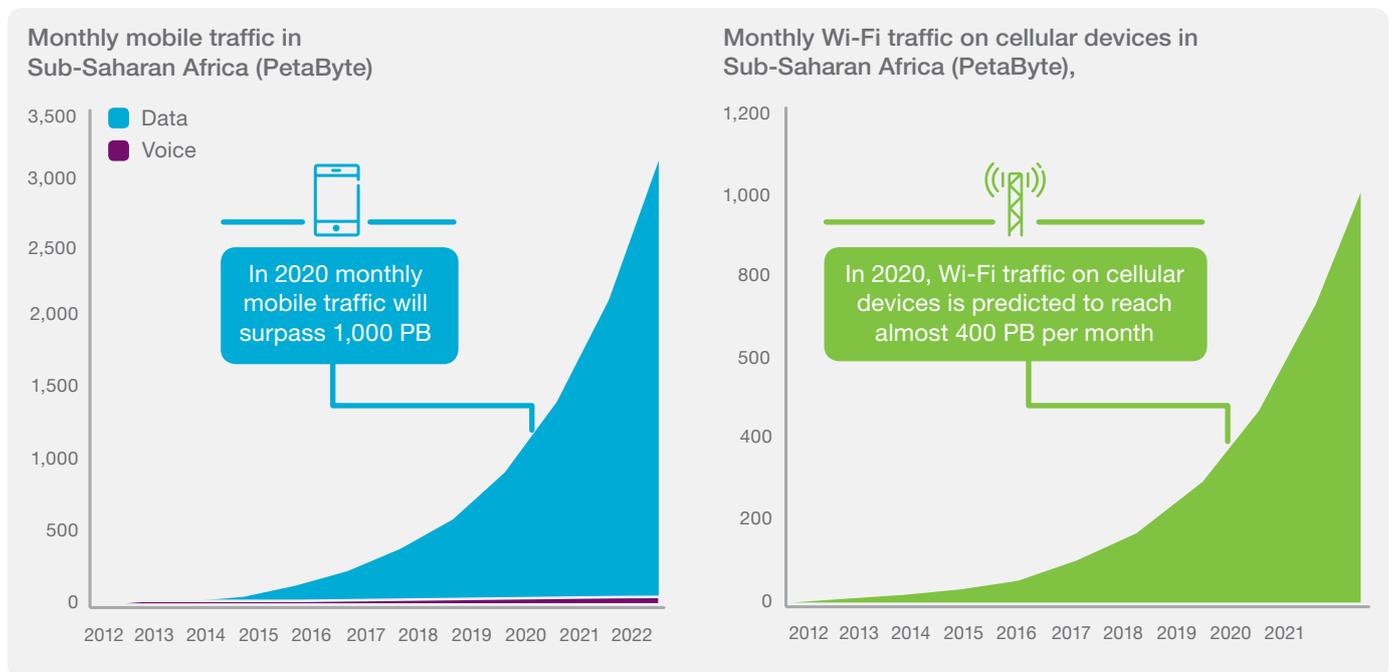
⁶ GSA (July 2016)

MOBILE TRAFFIC

Mobile data traffic continues to grow, and is showing no signs of slowing down. It is forecast to grow by around 55 percent annually between 2016 and 2022

Mobile traffic growth in sub-Saharan Africa will remain strong in the next few years, driven by increasing subscriptions, wider network coverage and the continued reduction in prices of both devices and services offered.

Mobile data traffic volume will increase more than ten-fold between 2016 and 2022



Access to video content continues to increase

This growth continues to be driven by the rapid rise in access to relevant video content, with new players who provide and aggregate local content finding initial success in larger markets including Nigeria and South Africa. The global launch of the video content provider Netflix in January 2016, along with content generated and shared on social media platforms such as Facebook and Twitter, has contributed to growth in data usage. Access to video content has therefore served as the third lever, after improved network coverage and smartphone availability, for the strong growth of mobile data traffic.

However, strong growth of mobile data traffic in Sub-Saharan Africa is impeded by several factors, including limited digital skills constraining the optimal utilization of smart devices and content, limited awareness of available content due to, amongst other reasons, the relative low literacy levels in some parts of the region, and affordability.

Wi-Fi traffic on cellular devices will rise

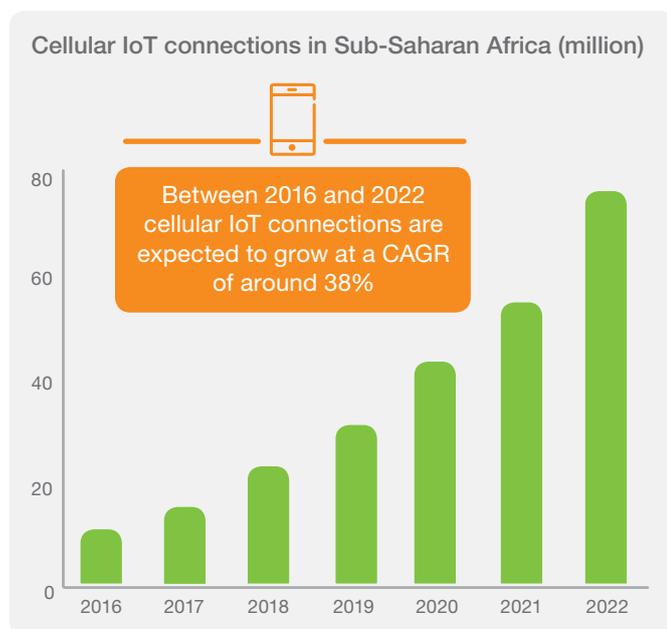
The rapid increase in mobile data traffic in Sub-Saharan Africa is driving operators to explore methods of optimizing network capacity, one of which is complementing traffic on Wi-Fi networks. Operators are offering Wi-Fi to consumers either as stand-alone or bundled with existing packages, and are extending Wi-Fi calling services to subscribers with devices bearing this capability.

Through this model, the operator is able to retain high levels of customer experience on online services. It also enables operators to potentially increase data revenues – and overall ARPU – through various bundling options to their subscribers. The CAGR of Wi-Fi traffic on cellular (SIM) capable devices is forecast to exceed 70 percent between 2016 and 2022.

REALIZING IOT IN AFRICA

Internet of Things (IoT) provides the means to deliver efficient, innovative solutions that meet socio-economic challenges and transform business models to unlock growth in Sub-Saharan Africa

While Nigeria and South Africa will continue to have the highest number of connected devices, IoT is taking shape in the rest of the region, especially in East Africa. The number of cellular IoT connections in the region is expected to grow at a CAGR of around 38 percent from 2016 to 2022, as governments and industries in the region begin to explore IoT solutions to solve region-specific challenges.



Transforming the way we live

Smart, sustainable cities have the ability to transform every aspect of life and accelerate the achievement of development goals.

In South Africa, Kenya, Rwanda, Uganda, Malawi and Ghana, smart city solutions, from using IoT to curtail water scarcity in large informal settlements to intelligent transport solutions, are increasingly being investigated to find answers to the challenges of urbanization. Centralized planning of smart initiatives and utilizing real-time data can be crucial in this respect, but integration and cross-industry collaboration are needed to unlock greater value.

With at least 55 percent of the urban population in the region living in informal settlements⁷, smart villages provide a solution to manage the rate of urbanization and improve the standard of living. In Tumba, Rwanda, the first phase of a smart village has been launched. The provision of WCDMA/HSPA connectivity will benefit basic education institutions, small area trading centers, security offices and health centers. Through harnessing the potential of smart solutions and the link between cities, villages and countries, IoT can connect villages to opportunities in cities and provide an improved standard of living.

IoT can improve the standard of living by bridging the gap between opportunities in the city and villages

In addition, by promoting IoT solutions, governments can encourage deeper cooperation through data sharing by leveraging of cities' infrastructure in neighboring countries which may have closer access to ports and railway networks. While in its infancy, this can be seen in the Smart Africa initiative, a partnership between 11 African countries which promotes intelligent solutions to achieve greater economic growth and job creation.

Transforming industries

IoT brings efficiencies and cost reduction to industries, but also has the potential to bring together fragmented industries to develop scale for new products and markets, as well as open up revenue streams. Industry applications can drive revenues, especially in retail, but applications relating to regional specific challenges are also evident.

In agriculture, micro-insurance companies have deployed IoT devices to monitor weather patterns, providing small-scale farmers with insurance in Kenya. The IoT devices allow for automated payment of insurance claims through mobile money. IoT is also being used to tackle poaching in support of conservation in Kenya and South Africa and being explored as a solution to reduce costs and safety concerns with deep mining in South Africa.

⁷ United Nations, UN-Habitat: World Cities report (2016)

UNLOCKING THE POTENTIAL OF IOT

IoT has the power to promote growth and transform every aspect of life in Sub-Saharan Africa. However, regulatory authorities, mobile operators and stakeholders will need to work together to unlock its potential

Connectivity and spectrum allocation

Reliable connectivity is essential for collecting and routing data between devices. As the quality of connectivity and the type of connectivity vary greatly within and between countries, coverage gaps and differences in technology will need to be closed. In addition, the cost of network roll-outs and allocation of spectrum for LTE will determine the ability for IoT to take-off in the region. Higher costs associated with network roll-outs and expensive licenses for LTE could potentially limit IoT applications in the region by making them unaffordable. Regulatory authorities and mobile operators will need to work together to ensure full coverage and affordability to unlock the growth potential of IoT.

Collaborative IoT ecosystem required

Many of the major challenges of unlocking the potential of IoT stem from the complexity of the stakeholder ecosystem. Building partnerships across the ecosystem of policy makers, consumers (private and business), device/infrastructure providers, connectivity providers, content and platform service providers, as well as third party application developers will be essential. Failure to understand and fully develop the links across the various stakeholders in the ecosystem could stunt the growth of IoT in the region. For example, expensive devices without payment plans or high data costs for small-scale farmers may reduce the opportunity for IoT in the agricultural sector.



The true potential of IoT will emerge when data sharing across industries and borders starts to take place

Mobile operators as IoT platform providers

IoT revenue streams from different industries have begun to emerge across the region and mobile operators are taking advantage of these revenue streams; at least three leading operators in the region have launched global roaming for IoT, either through leveraging their market presence or through partnerships.

However, the true potential of IoT will emerge when data sharing across industries and borders starts to take place. Mobile operators in the region are well positioned to bridge the gap between industries, allowing them the possibility of becoming the IoT service provider of choice. By utilizing current assets such as their distribution footprint and ability to reach millions of private and business users in both urban and rural locations, they can provide the necessary scale for IoT platforms by bringing together an ecosystem of users.

This will need to be underpinned by building a network of partnerships in the IoT ecosystem. By strategically investing in enablers such as cloud, billing systems and using their customer knowledge for analytics and partnerships with third party service providers, they can provide end-to-end solutions. Ultimately, mobile operators will need to create an environment to build upon the synergies and data created to ensure the value for partners in the IoT ecosystem. In addition, they will need to balance short-term profitability with building this future revenue stream through good quality network coverage that provides affordable IoT solutions for the region.

IoT provides an opportunity for mobile operators to bring new products and services to underserved markets, opening up new possibilities for growth within the region. This will require collaboration between all users in the ecosystem to ensure affordable solutions.

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Our services, software and infrastructure – especially in mobility, broadband and the cloud – are enabling the telecom industry and other sectors to do better business, increase efficiency, improve the user experience and capture new opportunities.

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