



Sub-Saharan Africa Mobile Observatory 2012

Executive Summary



Over the past decade, sub-Saharan Africa (SSA), a region formed by 47¹ diverse countries with a combined population of over 830 million, has experienced significant economic growth. The region includes seven of the 10 fastest growing economies in the world.

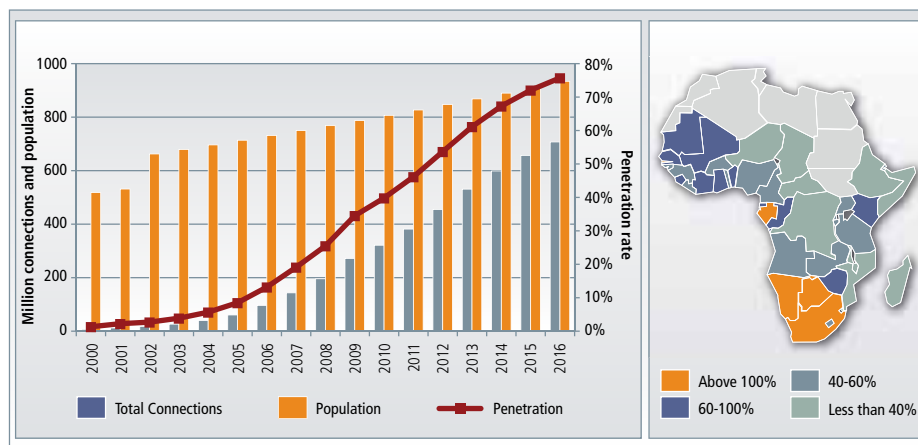
Mobile services have transformed African societies

Governments in SSA have successfully liberalised the telecommunications sector, and competition has increased service affordability. This has generated a remarkable rate of growth in the mobile market across the region, the highest worldwide.

Since 2000, the number of connections in SSA has grown by 44%, compared to an average of 34% for developing regions and 10% for developed regions as a whole. Mirroring the region’s economic expansion, growth in mobile can reasonably be expected to continue in the medium term. Operators in five key SSA markets (Nigeria, Tanzania, South Africa, Kenya and Ghana) invested US\$16.5 billion over the past five years and US\$2.8 billion in 2011. Most of this investment has been focused on expanding network capacity, increasing the number of base stations in these five countries by 250% between 2007 and 2012.

This investment is critical to the citizens of SSA, as mobile services effectively provide all forms of telecommunications, to an extent not seen in any other part of the world. In SSA in 2010, there were 28 mobile connections for each fixed line subscription.

Figure 1: Mobile connections, population and penetration in SSA since 2000; and map of mobile penetration, 2012



Source: Wireless Intelligence

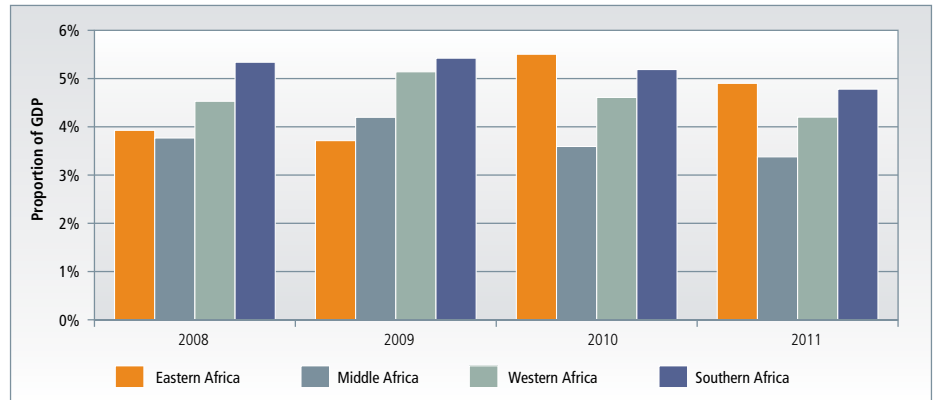
The economies of SSA have benefited considerably from the growth of the mobile sector. In 2011, it is estimated that mobile operators and their associated ecosystems:

- Had a direct economic impact of US\$32 billion, including paying US\$12 billion in taxes
- Were associated with the creation of 4.4% of the region’s GDP when adding the effects of mobile technology on workers’ productivity
- Created more than 3.5 million full-time equivalent (FTE) jobs across both the formal and informal sectors. While the telecommunications industry produces some of the highest paid formal sector employment in SSA, there are numerous other ways in which employment has flourished, including phone credit distribution networks, shops selling mobile phone airtime in small denominations, individual traders selling airtime cards in the streets, and small-scale (and often informal) shops selling, repairing and recharging mobile phones.
- Supported the development of more than 50 tech hubs, labs, incubators and accelerators. This includes Nokia’s dedicated research centre in Nairobi, focused on understanding the needs of African mobile users, in order to develop regionally specific products and content.

¹ Mayotte and Reunion were excluded from the analysis because of lack of data; South Sudan and Sudan will be part of a forthcoming report on Middle East and North Africa.



Figure 2: Total economic impact in SSA as a proportion of GDP



Source: Deloitte analysis

Mobile has the potential to deliver the benefits of the internet across the region, but constraints must be addressed

Mobile broadband has the potential to further expand this transformative experience by bringing the internet to consumers in SSA. The lack of affordability, coverage and reliability of fixed networks across the region means that mobile broadband is the only way for the vast majority of consumers to access the internet.

The proportion of web browsing using mobile technology relative to that done across fixed lines is therefore the highest in the world. For example, according to Statcounter, in Zimbabwe 58.1% of web traffic is mobile-based, as is 57.9% in Nigeria and 44% in Zambia, compared to a global average of 10%. This growth of mobile broadband can only be expected to continue, particularly among lower income groups; overall, mobile internet traffic is forecast to grow 25-fold over the next four years.

Mobile broadband has the potential to further increase economic productivity through improved information flows, reduced travel time and costs, and ultimately improved business efficiency. 3G penetration levels are forecast to grow by 46% through 2016 as the use of mobile-specific services develops. SSA is the world leader in mMoney initiatives, and the region led the development of more than 50 such programmes in 2011, compared to 20 in East Asia and fewer elsewhere. Of particular note is the role of Kenya as the global leader in mobile money transfer services through M-PESA.

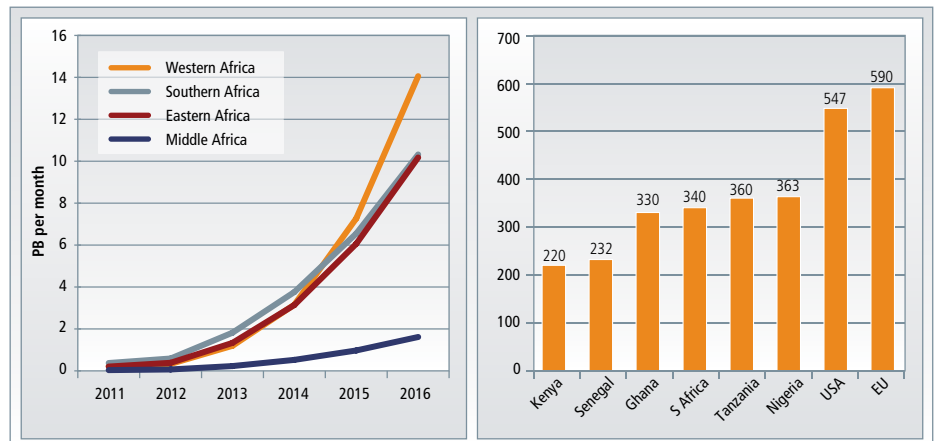
However, as this report describes, a number of constraints exist for the development of the sector and the expansion of mobile broadband.



Access to harmonised spectrum is critical to the development of mobile broadband

The development of mobile broadband is expected to lead to rapid increases in mobile traffic. This has already been experienced in South Africa, where mobile data usage grew on average by 490% per year between 2007 (when it was introduced) and 2010. Availability of mobile spectrum is essential for the successful development and operation of mobile broadband. However, the amount of spectrum allocated to mobile services in Africa is currently among the lowest worldwide, with some countries allocating as little as 80MHz and many between 200MHz and 300MHz. In comparison, developed-market allocations typically exceed 500MHz, with Europe aiming to allocate 1000MHz, for example. Governments in SSA risk undermining their broadband and development goals unless similar levels of spectrum are made available.

Figure 3: Estimated total mobile internet traffic in SSA, by sub-region (2011-2016); and assigned mobile spectrum for leading SSA countries, 2011 (MHz)



Source: Wireless Intelligence and Deloitte analysis

In particular, releasing the Digital Dividend spectrum and liberalising existing spectrum licences so that operators can use spectrum in the 900MHz and 1800MHz bands for 3G or LTE technology would provide operators across SSA with the capacity required to support mobile broadband networks. The Digital Dividend band, in the lower end of the radio frequency spectrum, has the ideal characteristics for delivering mobile broadband. Without additional spectrum, the potential of mobile broadband may be constrained by increased costs (and therefore higher retail prices) and reduced coverage, as network investment budgets will be unable fully provide the network coverage required.

The importance of allocating sufficient harmonised spectrum to mobile is made clear by the potential economic effects. A recent GSMA study estimates the economic benefits of releasing additional spectrum² in the 800MHz and 2600MHz bands. It considers the supply-side effects of spectrum availability using a detailed bottom-up analysis in the five key countries and Senegal. Across these countries, releasing spectrum in the 800MHz and 2600MHz bands is estimated to potentially increase GDP by an extra US\$22.6 billion between 2015 and 2020, including an additional \$US4.9 billion in tax revenue. Additional spectrum would increase the number of connections in these countries by approximately 80 million by 2020, and an additional 10 million jobs would be created in these countries. If this analysis were extrapolated to include the release of spectrum in the 700MHz band and operators were free to use a portion of existing 1800MHz spectrum allocations for LTE services in the short term, further economic benefits could be realised. While some assumptions are required over traffic levels and the ratio of jobs created to GDP, this spectrum release has the potential to provide incremental benefits:

- Increase GDP by an extra US\$11 billion between 2015 and 2020, including an additional US\$ 2.3 billion in tax
- Create an additional 39 million connections, giving an average increase of 7% in mobile broadband penetration across these countries
- Create additional employment of 4.9 million

In summary, the combined effect of releasing the Digital Dividend (700MHz and 800MHz) and 2.6GHz bands and refarming the 1800MHz band would have a US\$ 33.6 billion impact on GDP between 2015 and 2020, leading to the creation of 14.9 million jobs in the top six markets.

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Mobile data usage impacts economic growth in the medium term by increasing the productivity of users. A recent Deloitte and GSMA study using data provided by Cisco Systems found that, on average, a doubling of mobile data use leads to an increase in GDP per capita of 0.51 percentage points. Extrapolating these results onto the future of SSA, GDP could increase by US\$ 40 billion over the next four years, representing approximately 0.5% of the total GDP for the region during that period, assuming spectrum and other constraints to the roll out of the technology are addressed.

Liberalising spectrum has the potential to provide an effective short-term solution, allowing operators to deploy technology for mobile broadband while they wait for appropriate spectrum to be released. This trend has been observed in the United States and Europe in recent years, where operators have successfully 'refarmed' spectrum in the 900MHz and 1800MHz bands, previously used for GSM, to provide UMTS and LTE services. As well as making more spectrum available for mobile, it is important that spectrum allocations align with internationally harmonised bands. If the same band plans are used internationally, the components of mobile devices can be standardised. This approach can lead to a significant fall in the cost of devices and therefore reduce retail prices and increase consumer take-up. It has been estimated that failure to achieve spectrum harmonisation in the region can increase device costs by up to US\$9.3, representing up to 18% of an affordable smartphone's cost.

Taxation should not stifle the development of mobile broadband

Africa has the highest taxation as a proportion of the total cost of mobile ownership among developing regions worldwide. In particular, taxes on handset and mobile devices are much higher than in any other region, constraining citizens' access to mobile services. Of particular concern are a number of sector-specific taxes on mobile terminals and usage, and special taxes on mobile usage have increased notably in recent years. Recently, Kenya, the world leader in mobile banking services, announced a new 10% tax on money transaction services, threatening an initiative that is in the vanguard of the country's economic and social development.

² GSMA, "The benefits of releasing spectrum for mobile broadband in Sub-Saharan Africa", 2011.

Standardised rights of way are required to support network deployment

Approval processes for tower and fibre deployment are a substantial obstacle to investment by the mobile community in SSA. This is already a critical issue, and it will intensify with the growth in mobile data traffic. Complex and uncoordinated national and local regulations and approval processes, especially with regard to rights of way, could be simplified.

Standardisation of rights-of-way access within each country, as well as regionally, could boost investment. This would be aided by the creation of centralised information points where network investors can access information on rights-of-way procedures and permissions.

A transparent, predictable and supportive regulatory regime is required

Mobile broadband requires significant investment from operators to acquire spectrum, upgrade and extend their existing networks, and potentially support customer device acquisition. A key factor that investors consider when deciding to invest in telecommunications is whether a modern, transparent and predictable regulatory regime is in place. To ensure investment in the sector continues and to attract foreign investment, increased transparency and certainty in regulatory frameworks is vital.



A collaborative approach between government and operators can maximise the benefits of growth

A collaborative approach can maximise the benefits of mobile-industry growth in sub-Saharan Africa, including substantial economic and social development, helping to lift populations out of poverty and extend social and digital inclusion. As mobile services surpassed fixed telecommunications in SSA, so too may mobile broadband overtake basic mobile services for sectors of the population that are currently unconnected.

Crucial to extending mobile broadband to all regions and all sectors of population is the allocation of mobile spectrum, and in particular the Digital Dividend, to mobile operators. In the short run, refarming existing spectrum will ensure that the advantages of LTE are felt quickly. As affordable smartphones, including models designed for the African market, become available in the coming years, mobile broadband provision could be further supported by reducing consumer taxation and by promoting and protecting mobile operators' network investments.

Affordable mobile broadband has the potential to bring significant advantages to African citizens of all income and education levels, and a host of new services in all areas, from banking to health and education, has the potential to transform the way African people communicate and live their lives. This is likely to trigger further social and economic development in the region. By working in partnership, mobile operators and governments can continue the remarkable success story of this industry in the region and extend its unique benefits across all African citizens.



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