Connected Society

Consumer barriers to mobile internet adoption in Africa

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GSMA Intelligence

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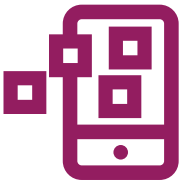
Executive Summary

Africa is the least developed region in the world for mobile connectivity and adoption. Of a total population of 1.2 billion, only 565 million (47%) are using mobile services. Internet adoption lags further behind, with only 303 million people (25% of the region's population) accessing the internet via mobile. Adoption rates are noticeably weaker in Sub-Saharan Africa, where mobile penetration is just 43% and mobile internet penetration just 23%. An important part of the mobile internet connectivity issue in Africa is low network coverage, which averages just 50% of the population for 3G (compared to a global average of 78%). The challenging terrain and low population densities work against commercially viable expansion into rural areas. But demand-side issues also need to be addressed. This research examines why 457 million people in the region could potentially access the internet via mobile, as they are covered by 3G networks, but are holding back from doing so.

To better understand the barriers to adoption of mobile internet services across Africa, we have analysed the results of the GSMA Intelligence Consumer Survey 2015. This survey includes data from 13 countries in Africa: Algeria, Cameroon, Democratic Republic of Congo (DRC), Côte d'Ivoire, Egypt, Ethiopia, Kenya, Morocco, Mozambique, Nigeria, Sierra Leone, South Africa and Tanzania. The survey involved face-to-face interviews with approximately 1,000 people in each country.

Our analysis reveals three key barriers to internet adoption in the region:

Lack of awareness and locally relevant content. This was identified as the biggest barrier (58% of respondents) in North Africa, particularly in Egypt. It was the second biggest barrier (36% of respondents) in Sub-Saharan Africa, and a particularly important issue in Cameroon, DRC, Nigeria and South Africa.



Lack of digital skills. This was identified as the biggest barrier by respondents in Sub-Saharan Africa (38% of respondents), particularly in Ethiopia, Tanzania and Sierra Leone. It also accounted for the second most important barrier in North Africa (39% of respondents).

Affordability. Despite the fact that Africa has the lowest income per capita of any region, affordability was only identified as the most important barrier in one out of 13 markets in our survey. Overall it was cited as a barrier by 36% of respondents in North Africa and 29% in Sub-Saharan Africa.

Through the consumer survey we have also analysed the gender gap in mobile phone ownership and internet usage. A gender gap in mobile ownership exists in six out of the 13 markets, and particularly the less mature mobile markets such as DRC and Ethiopia. However, in all the survey countries the gap in internet usage was greater than the mobile ownership gap, and was as high as 60% in Ethiopia and 75% in DRC.

Providing access to the internet can have a positive socio-economic impact – the internet could account for up to $300 billion of Africa's annual GDP by 2025. To reach this goal, effective collaboration between governments, mobile operators and the development community to overcome these barriers to digital inclusion is required. Governments can play a role by developing a local content ecosystem, incorporating ICT skills into the education curriculum for all age groups, and ensuring that taxation on mobile services does not impact their affordability. Mobile operators and other ecosystem players should support the creation of an entrepreneurship ecosystem, work to make mobile services more affordable, and use their networks to increase awareness of the benefits of the internet and promote gender equality in access and usage.

2. Market context and trends

The mobile market in Africa continues to grow rapidly, with the number of unique mobile subscribers growing at an average of 13% over the past five years. However, many remain unconnected, and just over 50% of the population in Africa, or 635 million people, do not subscribe to mobile services. Most of the unconnected live in Sub-Saharan Africa, where nearly 60% of the population – 550 million people – do not subscribe to mobile services. In North Africa, this is slightly lower, but is still above the world average, with nearly 40% of the population – 85 million people – not currently subscribed.

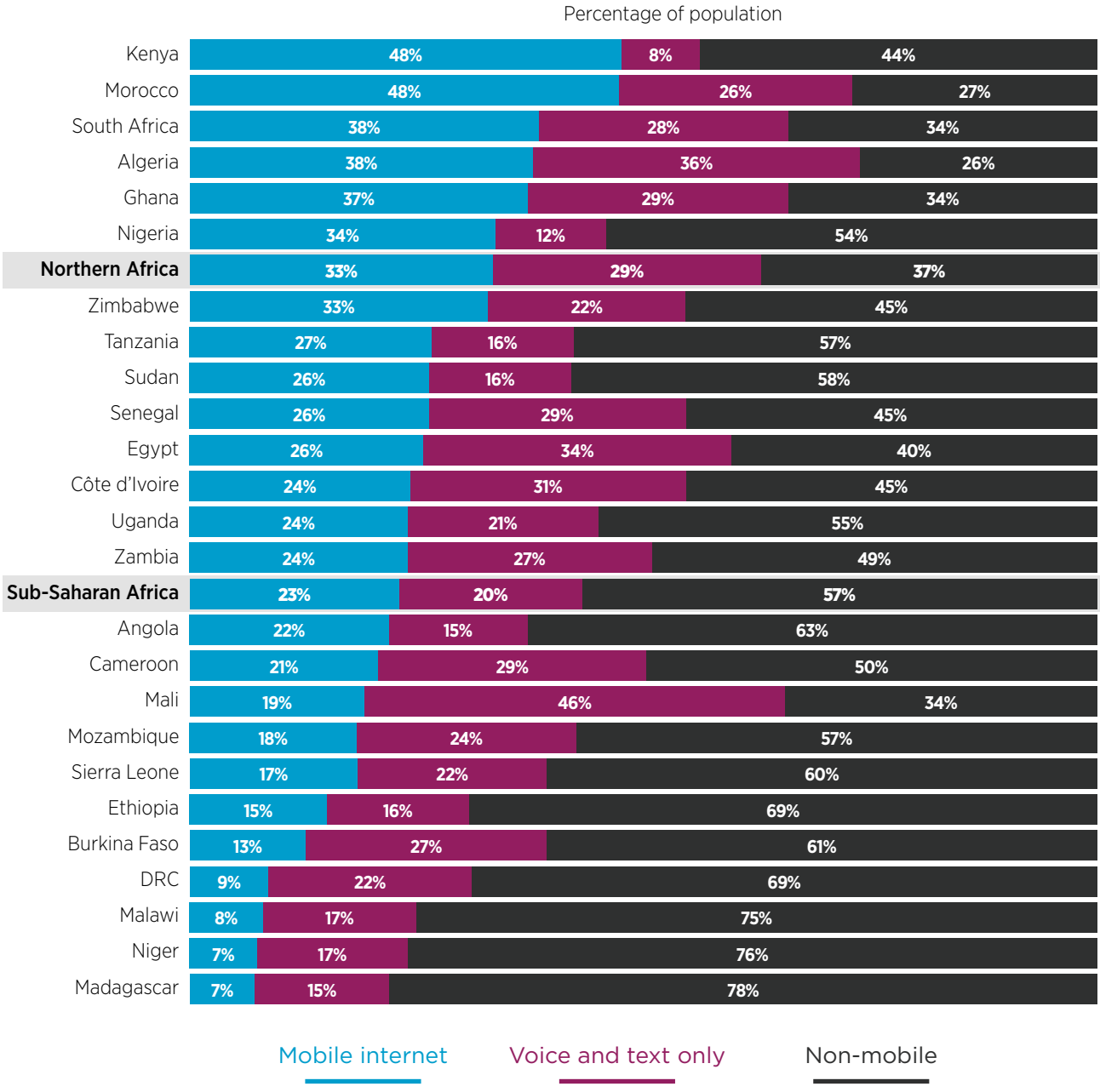
Given the low availability of fixed line access in Africa, mobile is the principal way most people in the region get online. Today, 50% of mobile subscribers are also internet subscribers, up from 26% in 2010. This is expected to increase to 75% by 2020. However, only a quarter of Africans – 303 million people – are mobile internet subscribers, meaning there is a significant growth opportunity for mobile operators. Increasing access to the internet could also lead to substantial socio-economic benefits for the region. McKinsey has estimated that by 2025 the internet could account for up to $300 billion of Africa's annual GDP, due to the transformational effects it can have on different sectors such as retail, agriculture, education and healthcare[1].

1. "Offline and falling behind: Barriers to Internet adoption", McKinsey, September 2014

Affordability is still a significant barrier to mobile usage and internet adoption in Africa, particularly for those at the bottom of the pyramid. However, falling device prices are encouraging rapid adoption of smartphone devices: 4% of connections in Africa were smartphones in 2010; this grew to 23% in 2015 and is expected to reach 57% by 2020. There are differences between North Africa and Sub-Saharan Africa (see Figure 2), where smartphones as a share of connections were 28% and 22% respectively in 2015 and are expected to increase to 64% and 55% respectively by 2020.

Figure 1

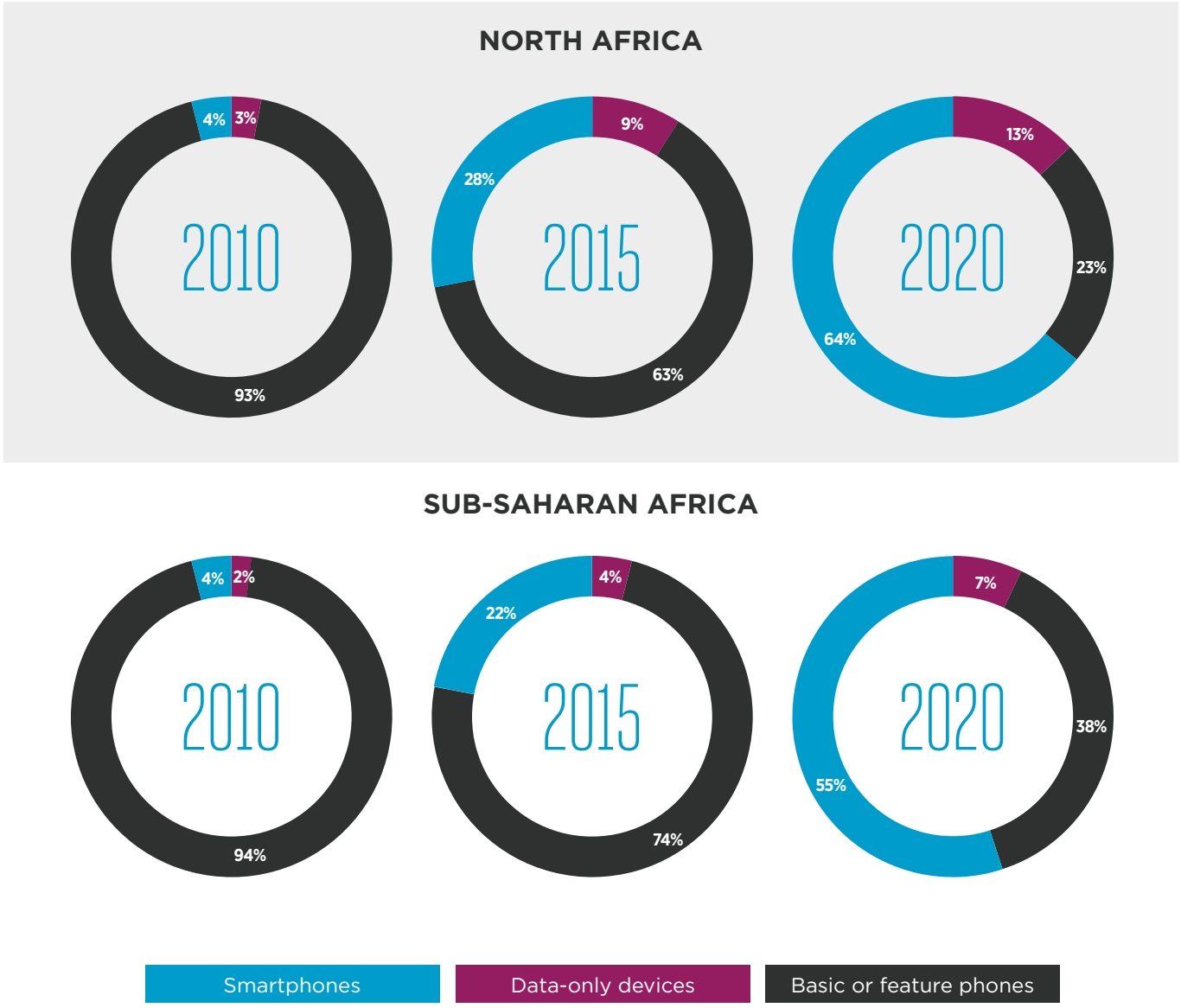
Breakdown of mobile internet, voice and text, and non-mobile subscribers at the end of 2015



Source: GSMA Intelligence

Figure 2

Share of connections (excluding M2M) by device type

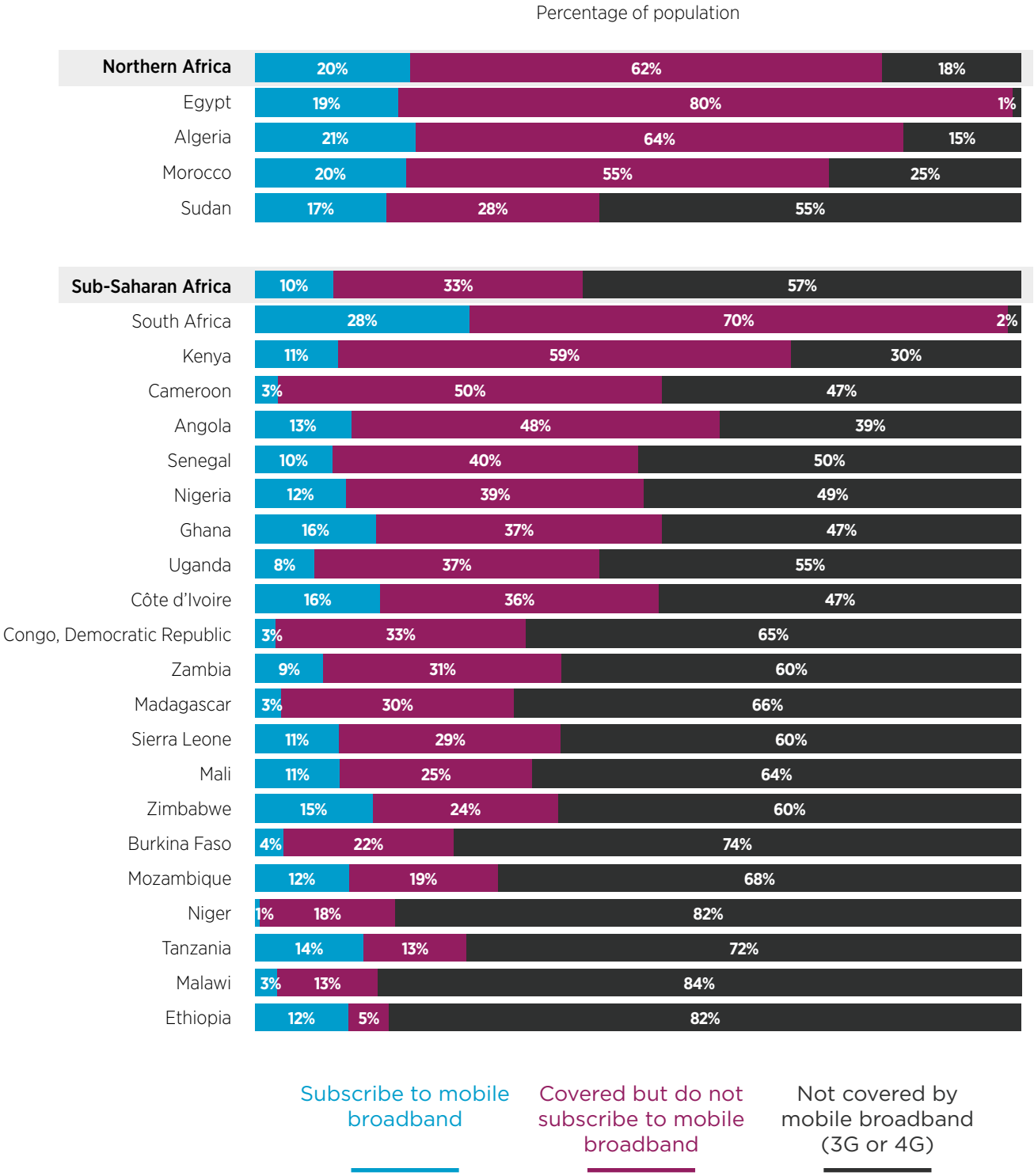


Source: GSMA Intelligence

Although mobile internet adoption is growing, over 50% of internet users still connect to the internet via a 2G network. While low-speed internet connectivity plays an important role in introducing new adopters to the benefits of mobile internet, it is broadband access via 3G and 4G networks that really unlocks the full potential of the digital economy. In Africa, 3G network coverage is only 50% of the population, meaning that nearly 600 million people are not within reach of high-speed mobile internet connectivity. However, of those who are covered, only a small percentage today subscribe to mobile broadband services: 10% in Sub-Saharan Africa, or 100 million people, and 20% in North Africa, or 45 million people. That leaves 457 million people, of which 70% are in Sub-Saharan Africa, who are covered but do not subscribe to mobile broadband.

Figure 3

Around 320 million people in Sub-Saharan Africa and 140 million in North Africa covered by mobile broadband but do not use it



Source: GSMA Intelligence

3 Consumer perspective on internet adoption

To better understand the consumer barriers to internet adoption, we analysed the results of the GSMA Intelligence Consumer Survey 2015. The survey covers 54 countries globally, including 13 countries in Africa: Algeria, Cameroon, Côte d'Ivoire, Democratic Republic of Congo, Egypt, Ethiopia, Kenya, Morocco, Mozambique, Nigeria, Sierra Leone, South Africa and Tanzania. In each country approximately 1,000 people were interviewed face-to-face, and were selected so that they were representative of the urban-rural and gender splits of the population. Those who had never used the internet[2] were asked what was stopping them.

A lack of awareness and locally relevant content was considered the most important barrier to internet adoption in North Africa and the second biggest barrier in Sub-Saharan Africa – 58% and 36% of non-internet users respectively felt it was a barrier.

Mobile services remain unaffordable for many given the low levels of income in Africa. This was considered a barrier by 36% of non-internet users in North Africa and 29% in Sub-Saharan Africa.

A lack of digital skills was identified as the biggest barrier to internet adoption in Sub-Saharan Africa and the second biggest in North Africa.

A significant gender gap exists in internet usage: women have far lower access to the internet than men across the continent.

Network coverage was not perceived as an issue in most countries, reflecting the increasing availability of mobile networks. However, mobile broadband (3G or 4G) coverage remains low in most parts of Africa.

2. Internet in this section refers to the internet in general, not just mobile internet

Table 1

Lack of awareness and locally relevant content, lack of digital literacy and skills, and affordability among top barriers for non-internet users

Barrier	Lack of awareness and locally relevant content	Lack of digital literacy and skills	Affordability barrier	Lack of network coverage	Security and trust barrier	Other
Cameroon	43%	28%	27%	6%	7%	32%
DRC	45%	28%	21%	5%	1%	31%
Ethiopia	18%	62%	9%	8%	1%	17%
Côte d'Ivoire	35%	30%	17%	5%	1%	32%
Kenya	46%	37%	25%	4%	2%	22%
Mozambique	34%	27%	39%	6%	8%	30%
Nigeria	53%	32%	24%	1%	5%	25%
Sierra Leone	21%	60%	54%	5%	1%	23%
South Africa	57%	24%	46%	6%	6%	11%
Tanzania	20%	45%	43%	13%	1%	23%
Sub-Saharan Africa	**36%**	**38%**	**29%**	**6%**	**3%**	**25%**
Algeria	46%	25%	13%	14%	2%	10%
Egypt	70%	38%	52%	12%	20%	17%
Morocco	51%	53%	33%	2%	2%	8%
North Africa	**58%**	**39%**	**36%**	**9%**	**9%**	**12%**

High perceived barrier — Low perceived barrier

Note: Represents the share of respondents that identified factor as a barrier to mobile internet adoption. Respondents could chose more than one answer
Source: GSMA Intelligence Consumer Survey 2015

Content is not catering for the rich variety of cultures and languages across the continent

In Sub-Saharan Africa, lack of awareness and locally relevant content was the second biggest barrier overall (36% of respondents), particularly in Cameroon, DRC, Nigeria and South Africa. It was identified as the biggest barrier in North Africa (58% of respondents). This result was particularly strong in Egypt, where 70% of users consider it an issue.

The strength of the finding in North Africa in part reflects the absence of Arabic language content. While there is an increasing availability of content in Arabic, there is a need for more content relevant to the population. Given the similar cultures and common language and religion in North Africa, content providers have an opportunity to increase the amount of locally relevant content more easily than in Sub-Saharan Africa, which has a huge variety of languages and cultures. There, just over 40% of the population in the survey countries speak the main languages of the internet, such as English, French and Portuguese, meaning there is a language barrier when it comes to content.

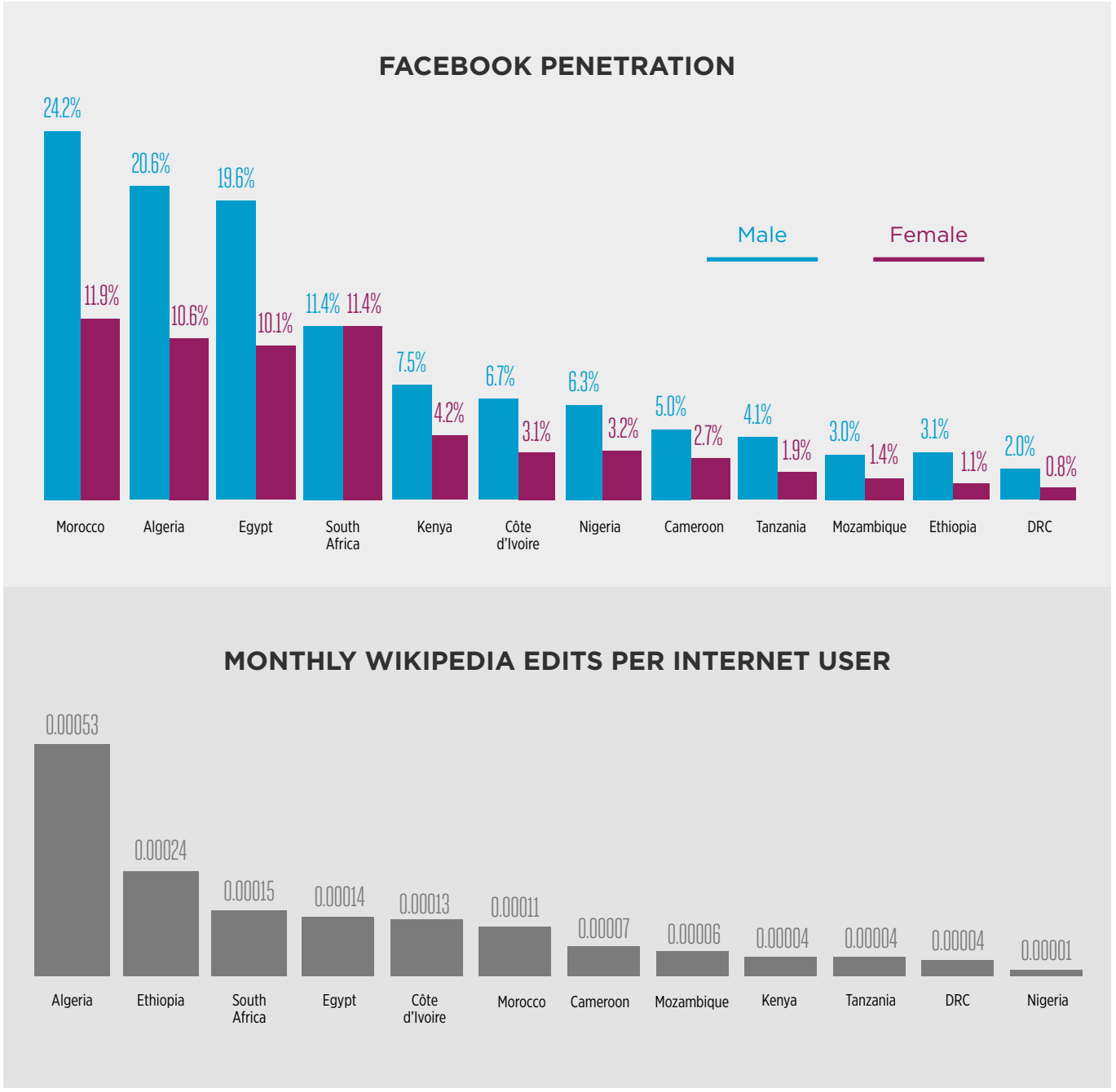
Two metrics are useful proxies for local content creation: Wikipedia edits and Facebook penetration. Both suggest that levels of local content creation in North Africa and Sub-Saharan Africa are low. Engagement with Wikipedia in Africa is among the lowest in the world. Facebook penetration is below 40% in all the survey countries, with levels below 12% in all of Sub-Saharan Africa apart from South Africa.

The start-up ecosystem in Africa is growing rapidly, with investments in start-ups in 2015 of over $185 million.[3] African tech centres such as South Africa, Kenya and Nigeria are the favoured destinations for investments currently, but Egypt, Ghana and Tanzania are growing as key hotspots. However, the region is still behind other countries in terms of entrepreneurship development and support systems. To fully realise the potential of entrepreneurs in Africa, it will be important to develop this further. At present, government support and access to finance and mentoring is limited.

3. "African tech startups raised funding in excess of $185.7m in 2015", Disrupt Africa, January 2016

Figure 4

Engagement with information sites and social media is low in the survey countries



Source: Wikimedia, Facebook

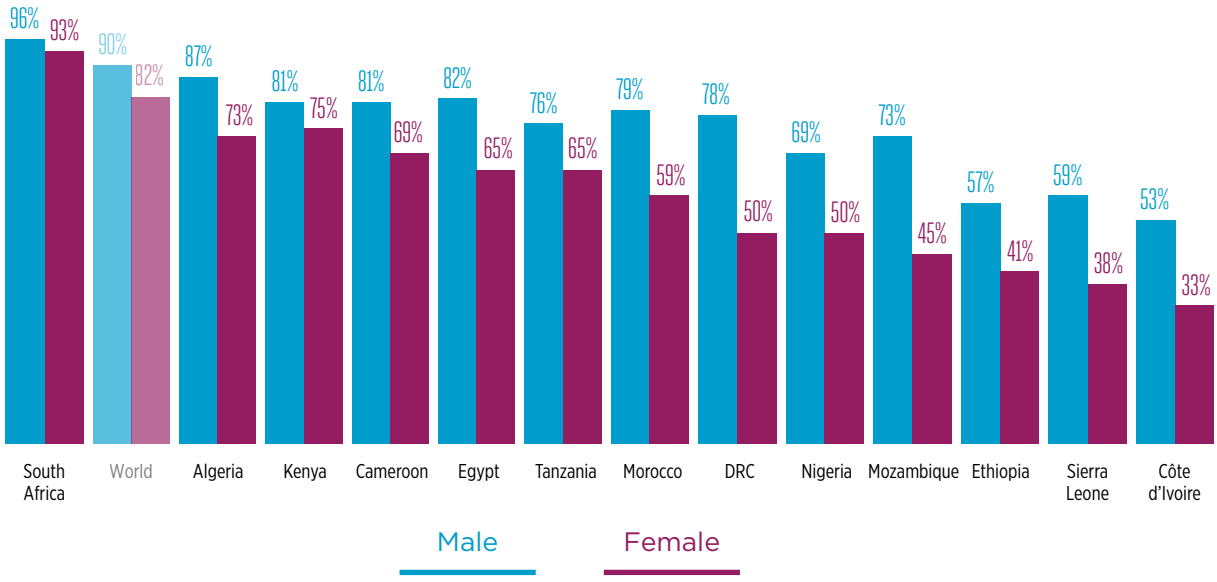
A lack of digital skills represents significant barrier to internet adoption

Lack of digital literacy and skills is the biggest barrier identified by respondents in Sub-Saharan Africa (38%), in particular in Ethiopia, Tanzania and Sierra Leone. In North Africa, 39% of non-users identified this as an issue, making it the second largest barrier. Clearly, low education levels and infrastructure are an issue here. On most education indicators, such as literacy rates and primary and secondary school enrolment rates, Sub-Saharan Africa scores worse than any other region in the world. Literacy and secondary school enrolment rates are lower than the world average in nearly all the survey countries.[4]

In addition, most countries in Africa do not include specific objectives or a subject on basic computer skills in the school curriculum. Generally it is only a feature of higher education levels, where enrolment rates are relatively low. ICT infrastructure in schools is also limited. For example, in Ethiopia only 11% of primary schools and 42% of secondary schools have computer laboratories, in Cameroon 1% and 33%, and in South Africa 26% and 39% respectively.[5]

Figure 5

Literacy rates in Africa are predominantly below world average



Source: CIA Factbook

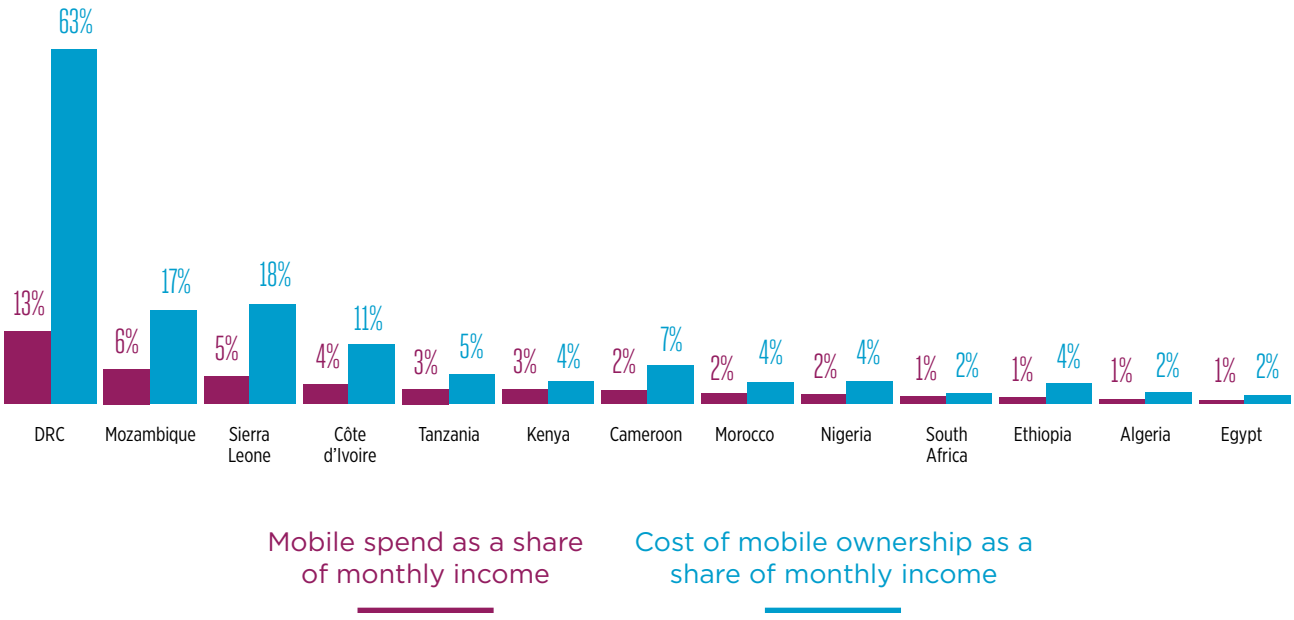
4. South Africa excepted in both cases; Algeria has a higher than average secondary-school enrolment rate
5. UNESCO Institute for Statistics

Affordability barrier reflects high cost of mobile ownership in the region

The cost of handsets and mobile services was identified as the third biggest barrier in both North and Sub-Saharan Africa, by 36% and 29% of non-internet users respectively. Sub-Saharan Africa has the lowest income per capita in the world: just over 40% of the population lives on less than $1.90 a day and over 65% on less than $3.10 a day. As a result, mobile services remain unaffordable for many in the survey countries. The average cost of mobile ownership, which includes both the cost of the device and the cost of mobile services (voice, SMS and data) as a share of monthly income in Africa is 11%, far higher than other regions. Taxation is an important factor here: in countries with a cost of mobile ownership above 5% (commonly seen as an upper limit), such as DRC, Mozambique, Sierra Leone and Tanzania, taxation is above the world average.

Figure 5

Cost of mobile ownership (after tax) as a share of monthly income



Source: GSMA Intelligence, World Bank, ITU
Note: Mobile broadband is based on a 500 MB prepaid plan. Handset cost is based on an entry-level smartphone (Nokia 215). Monthly income is expressed as GNI per capita PPP. Mobile spend is ARPU

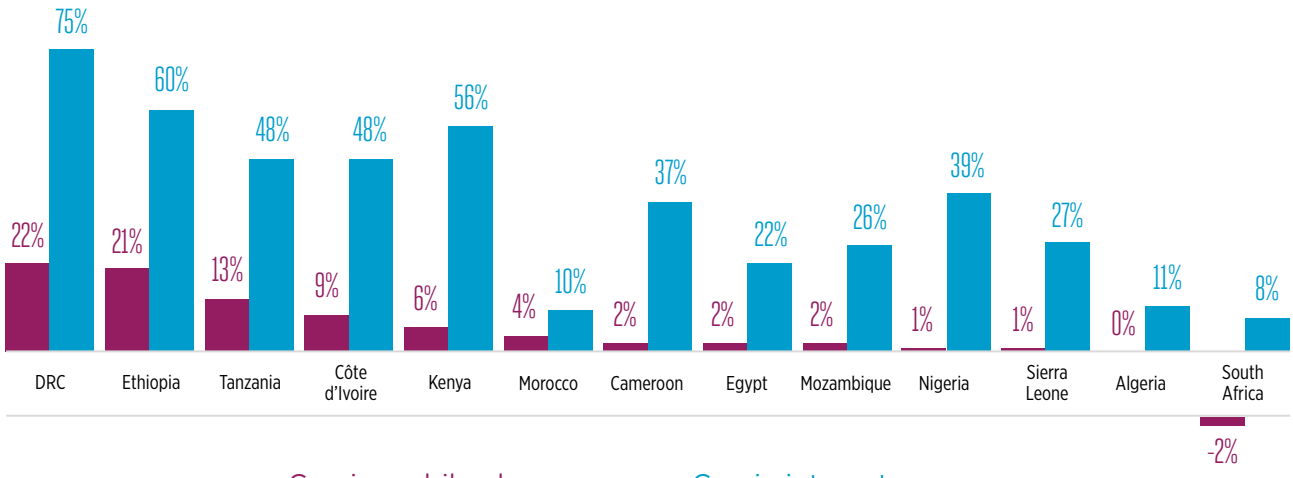
Women have far lower levels of access to the internet than men across the continent

The survey also enabled us to analyse the gender gap[6] in mobile phone ownership and internet usage. There is a gender gap in mobile ownership in six out of the 13 markets, and particularly less mature mobile markets such as DRC and Ethiopia. According to a GSMA Connected Women study[7], women in Africa identified cost as a major barrier to mobile phone adoption. Cost is a big barrier for women as they tend to be less financially independent than men. In the survey countries, the share of women in wage employment in the non-agricultural sector is less than 45%, and is as low as 17% and 18% in Algeria and Egypt respectively.

However, in all countries the gap in internet usage is much greater than that for mobile ownership. The gender gap in internet and mobile internet use is driven by various barriers, which women typically experience more acutely than men. One reason for this is the lower level of education and technical literacy among women (see Figure 5). According to GSMA Connected Women, only 25% of female mobile owners in DRC and 51% in Kenya reported that they could use mobile internet without any help, versus 42% and 63% of men respectively. Safety and harassment issues related to mobile internet use were also identified as a major issue, particularly for women. In Egypt, for instance, 55% of women versus 42% of men reported that harassment from strangers is a barrier to them owning or using a mobile phone.

Figure 7

Gender gap greater in internet usage than mobile phone ownership



Source: GSMA Intelligence Consumer Survey 2015

6. GSMA Connected Women defines the 'gender gap' as how less likely a female is to own a mobile phone (or use a mobile service) than a male. Gender gap in ownership (%) = ((male phone owners (% of male population)) – (female phone owners (% of female population)) / (male phone owners (% of male population))
7. Bridging the gender gap: Mobile access and usage in low and middle-income countries, GSMA, 2015

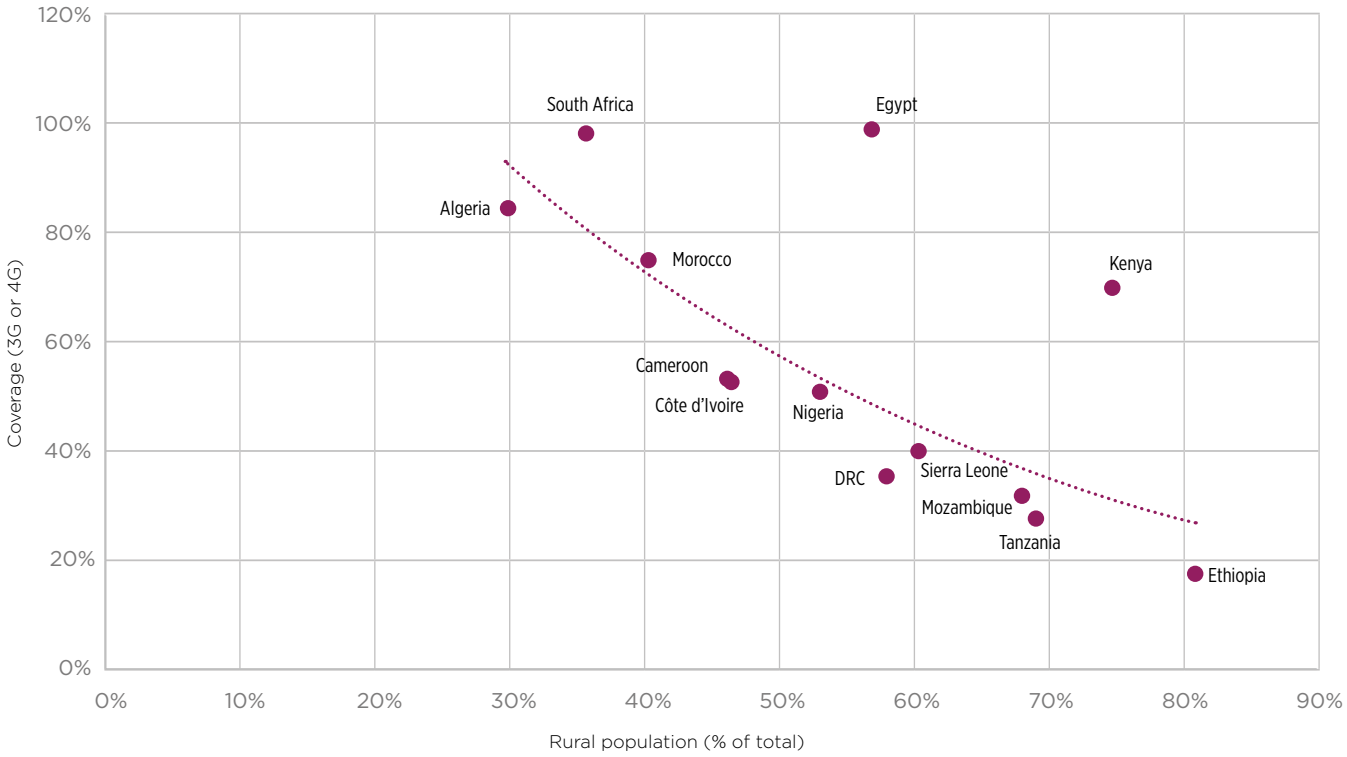
Mobile broadband coverage remains low in most parts of Africa

Coverage is not perceived to be a major barrier to internet adoption by non-internet users in Africa. This reflects the increasing levels of mobile coverage across the continent. Two notable exceptions were Tanzania and Ethiopia, where a higher proportion of respondents felt coverage was an issue compared to the rest of Sub-Saharan Africa. These countries have a large proportion of people living in rural areas, which are harder to cover.

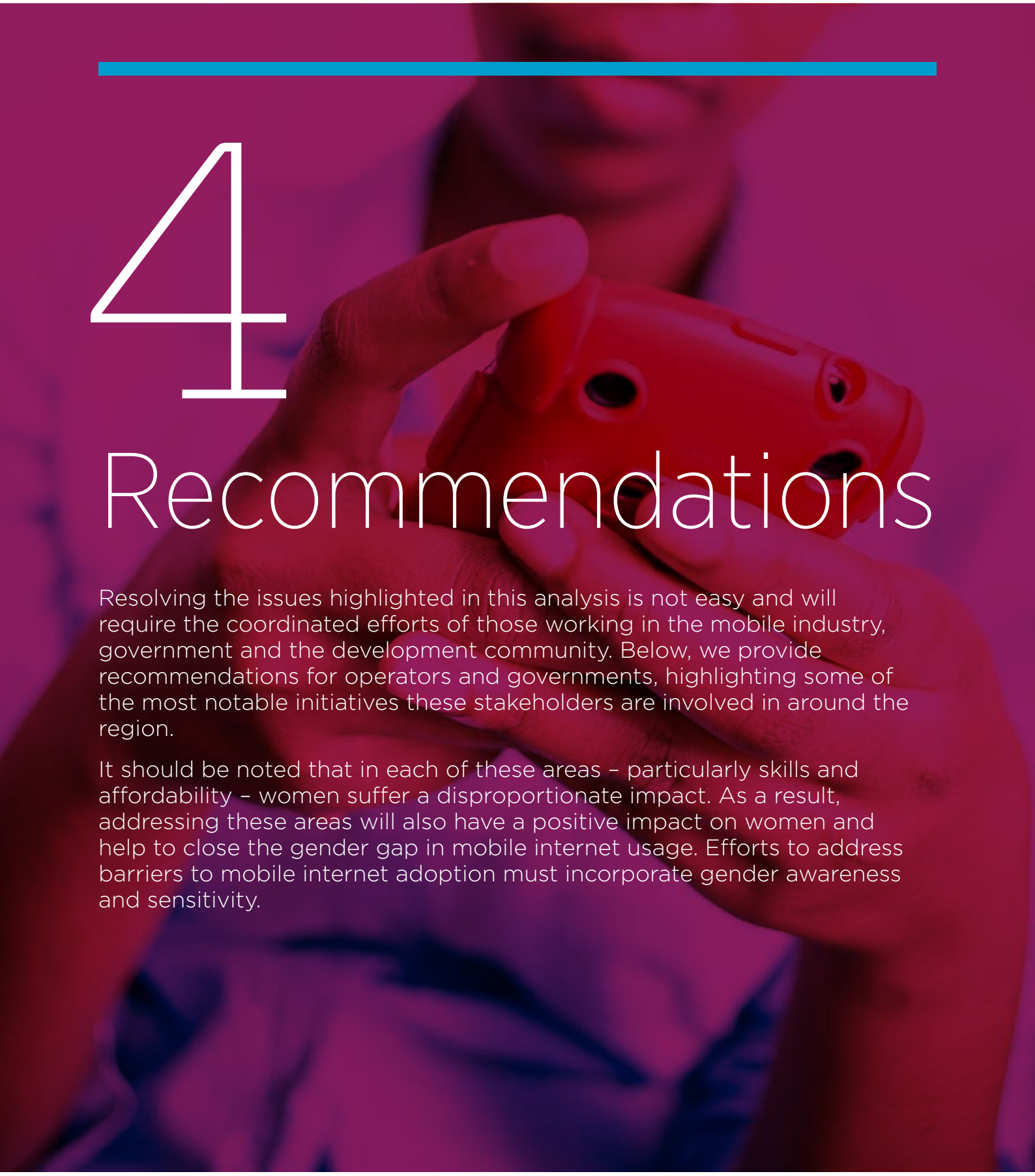
However, mobile broadband coverage is still an issue in many countries in Africa, particularly in Sub-Saharan Africa (see Figure 3). There are significant variations between countries: in South Africa and Egypt coverage is over 90% of the population, while in Niger, Malawi and Ethiopia coverage is below 20%.

Figure 8

Coverage affected by high share of rural population



Source: GSMA Intelligence, World Bank



4 Recommendations

Resolving the issues highlighted in this analysis is not easy and will require the coordinated efforts of those working in the mobile industry, government and the development community. Below, we provide recommendations for operators and governments, highlighting some of the most notable initiatives these stakeholders are involved in around the region.

It should be noted that in each of these areas – particularly skills and affordability – women suffer a disproportionate impact. As a result, addressing these areas will also have a positive impact on women and help to close the gender gap in mobile internet usage. Efforts to address barriers to mobile internet adoption must incorporate gender awareness and sensitivity.

1

The internet ecosystem needs to address the lack of locally relevant content in Africa

The mobile industry, wider internet ecosystem and government need to work to ensure that relevant content is available in languages that people understand.

- Mobile operators can provide local talent with opportunities to incubate and scale start-ups and innovations, opening up their APIs to developers or investing directly in local companies.
- Governments need to recognise the importance of developing a local content ecosystem in creating a thriving digital economy. Providing a progressive policy environment is essential, including a national digital agenda or strategy. Finally, through the provision of e-government services, governments can incentivise users to engage with the internet. However, at present most of the survey countries rank below the world average in terms of service provision, with Algeria and DRC ranking among the lowest countries in the world.[8]

Co-Creation Hub generating relevant local content in Nigeria

Co-Creation Hub (CcHUB) was established as the first start-up hub in Nigeria in 2011[9], contributing to the country's growing digital innovation ecosystem with support from MTN and Nokia, among others. CcHUB supports next-generation technology entrepreneurs through nurturing innovative digital solutions to local market problems. It reports that, to date, 50+ start-ups have benefited from receiving pre-seed funding and mentoring through CcHUB's pre-incubation programme. In 2014, CcHUB expanded with a seed investment programme to follow the pre-incubation phase, with funding opportunities for entrepreneurs ranging between $10,000 and $25,000 per start-up[10]. One of the start-ups unearthed by CcHUB is the widely recognised civic organisation BudgIT, which has become a trusted digital advocacy centre for government spending accountability and has been consulted by more than 750,000 Nigerians to date[11].

8. UN Online Service Index
9. Seedstars World, 2014
10. "Co-creation Hub Nigeria (CcHUB) Launches $500,000 Seed Investment Program", CcHub Press Release, 2014
11. http://yourbudgit.com/about/

2

Investment required in digital skills training to ensure non-users can get online

Governments, mobile operators and NGOs all have a role to play in increasing awareness about the benefits of the internet and improving the digital skills of users.

- Governments should bring ICT into schools and other educational establishments to ensure that their populations have the skills necessary for the modern economy.
- Operators can use their agent and retail networks to introduce new customers to the mobile internet. The value of familiarising customers with digital services has already been demonstrated in other areas, such as digital financial services. For mobile operators, this will help drive an increase in data consumption. However, operators do not have the skills or capacity to solve this problem alone. There is also a clear role here for NGOs – working in partnership with operators and independently – to provide more in-depth training.

Intel addressing the gender gap in digital skills in Sub-Saharan Africa

'She will Connect' was launched by Intel Corporation in 2014 as an initiative addressing women's lack of awareness and skills in using the internet across Africa, and is currently running pilots in South Africa, Nigeria and Kenya. The training encourages learning through peer networks and via safe online forums, as a way for participants to keep learning together beyond the training period and inspire each other to discover relevant content. The target is to reach 5 million women and girls with internet training across the region by 2020.[12] As of March 2016, 800,000 had benefitted from the programme across the pilot countries.[13]

12. Accelerating Digital Literacy: Empowering women to use the mobile internet, GSMA, 2015
13. "East Africa: Intel Celebrates Kenyan Women Through Mentorship", AllAfrica, March 2016,

3

Governments and the mobile industry have a mutual interest in working together

Mobile operators are increasingly working towards lowering mobile internet tariffs in Africa. They will need to continue to work to ensure that data packages are affordable for all segments of the population.

Government policies – such as taxes, fees and levies – directly impact the prices paid by end users. Governments should ensure that taxation of mobile services is aligned with best-practice principles: taxation should be broad based, easily understandable and enforceable, and should not disincentivise industry investment. By doing this, they can promote digital inclusion, increase productivity and generate economic growth, while also benefitting from increased tax revenues.

Kenya: increased mobile access and use through VAT exemption

In 2009, the Kenyan government exempted mobile handsets from VAT, which had previously been implemented at 16%. Mobile operators and other handset dealers immediately passed this exemption directly to consumers. As a result, the Kenyan market saw growth in handset sales of 200%, outpacing growth elsewhere in Africa. This contributed to increased market penetration from 50% to 70%. Combined with wider market price reductions, the VAT exemption helped to increase access to a wide range of mobile services, with mobile usage increasing by 113%.[14]

14. Mobile telephony and taxation in Kenya, GSMA, 2011

4

Governments need to create an enabling regulatory and policy environment

Policymakers can support operators' efforts to expand mobile broadband coverage in a range of areas. Key ways in which they can do this are as follows:

1. Ensure that taxation and spectrum fees are not overly burdensome, leading to underinvestment on the part of operators.
2. Offer preferred access to the state public infrastructure (e.g. encourage their energy and transport agencies to provide preferred access to mobile operators to lower backhaul capex).
3. Simplify the planning permission process to ensure operators can build sites without having to deal with excessive and complicated bureaucracy.
4. Ensure that regulation has kept pace with developments in infrastructure sharing, which has matured considerably over the last decade, particularly in developed countries.

Growth in broadband connectivity through South Africa Connect

In 2013 the South African government launched a new broadband policy, South Africa Connect. The ZAR98 billion ($6.6 billion) initiative is targeting 90% internet coverage by 2020, and universal coverage by 2030[15]. To meet the rise in demand for bandwidth-intensive services, improvement of the country's last mile and backbone fibre-optic infrastructure is a particular priority.

South Africa currently has 180,000 kilometres of state-owned fibre-optic cable in place, and mobile operators are increasingly investing in new infrastructure and improving their existing networks, which helps to extend coverage beyond wealthier and urban centres[16]. Since the launch of South Africa Connect, the country's mobile internet penetration rate has increased from 25% at the end of 2013 to 40% in Q1 2016, with 80% of subscribers using 3G or 4G mobile internet.[17]

15. "Telkom must fund government's broadband plans: report", MyBroadband, 2015
16. "South Africa to extend ICT reach", Oxford Business Group, 2016
17. GSMA Intelligence

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