



Delivering the Internet for All Africans

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Executive Summary

- Across Africa, the Internet is creating social and economic value, supporting entrepreneurialism and driving innovation.
- Significant digital divides remain—the wealthier, more educated, urban and male users are the prime beneficiaries of the Internet to date.
- Some countries have made significant progress; others can learn from this experience.
- Reducing the digital divide requires action in four areas—increased access to Internet infrastructure, higher affordability, more relevant local digital content and services, and more widespread digital literacy skills.

Africa is going digital. Mobile money transactions account for around 50% of GDP in Kenya and Tanzania. Rwanda's Safemotos taxi service uses motorbikes equipped with sensors connected to a smartphone app to enable customers to choose safe drivers, while Sendy in Kenya uses an Uber-style app to provide motorbike delivery services. Nigeria's Jumia offers Amazon-like e-commerce services in 10 African countries, and the Moroccan crafts platform Anou helps artisans sell their products, often abroad.

It's not just about consumer services. Angani in Nairobi is a provider of cloud computing services for businesses. In multiple sectors of the economy, African firms using the Internet are far more productive, and grow more quickly, than those that don't. Across the continent, Internet of Things applications are being used to monitor water quality, sanitation and in agriculture, and smartphones are reshaping health care for millions.

Little wonder that in five of the continent's largest countries—Nigeria, Egypt, Kenya, South Africa and Morocco—Internet penetration has grown at well over 30% a year since 2000 and is now at, or above, the global average. With examples like these, it's not hard to imagine Africa's future being a digital one.

But the future is not evenly distributed. More than 800 million Africans—including almost 500 million women—do not have Internet access. Only one in ten of the world's Internet users come from Africa, despite the continent accounting for one in six of the world's population. In countries such as Burundi, Chad, Madagascar and Niger penetration languishes at [below 5%¹](http://www.internetworldstats.com/stats1.htm), and well over 40% of Africa's population lives in

¹ <http://www.internetworldstats.com/stats1.htm>

countries in which Internet penetration is less than 25%—the point at which its benefits accelerate, driving growth and [increasing income levels](#)².

Many of Africa’s unconnected live in rural areas, without access to infrastructure, or they simply cannot afford access where it is available. The young and the urban are twice as likely to have [Internet access](#) than the old and the rural. The richest 60% are three times more likely to be connected than the bottom 40%³. [Women](#) are only half as likely to be connected than men⁴.

Others simply do not see the benefits of using the Internet, often because of limited relevant digital content or available services. More Wikipedia pages originate in Hong Kong SAR than the whole of Africa, even though the continent has 50 times as many Internet users—and more than 160 times the population. Many Africans are illiterate or lack the skills to use the services offered. But there are encouraging signs too—research by the WWW Foundation⁵ shows that [women](#) are more likely to use the Internet than men, if access is available. And in Maputo’s slums six times as many people are online than in Mozambique overall; in similar parts of Yaoundé it’s almost four times the Cameroonian national average.

Benefits of connectivity

Achieving many of the UN’s Sustainable Development Goals—reducing poverty, hunger and inequalities, or improving health and education—depends on having an accessible, affordable Internet and citizens with the skills to use it. The economic rationale for the necessary investments is clear too: In work commissioned by [ICANN](#), The Boston Consulting Group estimated that countries can—conservatively—increase GDP by 2-3% by reducing [e-friction](#), the barriers holding back their Internet economy⁶. The significant economic benefits accruing from reducing disease, inequalities and illiteracy increase this number considerably.

By reducing trade barriers, ensuring free cross-border data flows, removing prohibitive taxes, and integrating Africa more strongly into the global economy, e-friction can be reduced, and have a truly transformative impact on the continent. With high levels of unemployment and vulnerable employment, Africa needs these benefits

² <http://blogs.cisco.com/gov/gitr2015>

³ <http://www.worldbank.org/en/publication/wdr2016>

⁴ <http://webfoundation.org/about/research/womens-rights-online-2015/>

⁵ <http://webfoundation.org/about/research/womens-rights-online-2015/>

⁶ <https://www.bcgperspectives.com/content/articles/telecommunications-public-sector-which-wheels-to-grease/>

quickly to create the jobs and opportunities needed in a knowledge-based, service-oriented economy.

So what needs to be done?

Four areas of focus

Four areas need concerted attention: increased access to Internet infrastructure, significantly more affordable services, higher adoption rates through more relevant local digital content and services, and enhanced digital literacy skills in the population. These cannot be addressed in isolation. Leaders need to recognise that successful countries have taken a comprehensive, multi-stakeholder approach, and that there are many good practices to be learned from in Africa and elsewhere.

Understanding common economic, geographic or cultural similarities between countries or regions can help identify the truly relevant issues and successful solutions. Landlocked countries have different backbone infrastructure needs than coastal countries owing to their lack of direct access to undersea fibre-optic cables. Rural areas need different middle mile and last mile solutions than cities—perhaps involving the use of innovative technologies such as drones, satellites or balloons—to address the challenging economics of infrastructure deployment. The poorest, illiterate and least privileged require solutions that are tailored to their needs, which are distinct from those who are better placed on the income and education scales. Encouraging women and girls to use the Internet requires different approaches than men and boys. There is no single solution to Africa’s Internet challenges.

Infrastructure access is a prerequisite

Of Africa’s 900M mobile phone subscriptions, only [one in five](#) is 3G or better, and this percentage drops considerably in rural areas⁷. Massive investments are required to deploy advanced mobile technologies, especially in rural areas or regions far from the sea. Governments and policy makers can leverage the experience of countries that have built out their digital infrastructures:

- Define a long-term digital strategy, including a national broadband plan and the establishment of a transparent regulatory framework. This makes it easier to encourage investments in networks and other types of digital infrastructure.

⁷ <http://www.ericsson.com/res/docs/2015/ericsson-mobility-report-june-2015.pdf>

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- Promote competition, as it tends to encourage investment, drive innovation, and reduce prices. When YouMee, a provider of 4G/LTE Internet access entered the Cameroonian market, prices dropped considerably, and their collaboration with business and universities accelerated e-commerce services and online learning opportunities⁸.
 - Incentivize collaboration between network providers through support of network sharing to raise the attractiveness of investments, especially for remote areas.
 - Adopt flexible and experimental approaches towards technologies, services and regulation, especially when traditional revenue models come up short.
 - Seek cross-border collaboration in areas such as regulatory policy, spectrum allocation and trade to encourage investment and help drive demand. In East Africa's Northern Corridor the removal of mobile roaming charges resulted in a 950% increase in traffic between Rwanda and Kenya within a very short period of time⁹.

Affordability is a significant challenge

Building infrastructure is a big challenge; making its usage affordable is an even taller hurdle. According to A4AI's [Affordability Report](#)¹⁰, not a single emerging or developing country can claim to meet the UN's affordability benchmark of broadband priced at less than 5% of monthly income for those potential users surviving on less than \$2 a day. But several initiatives can bring costs down:

- Reduce taxes on devices and access. Smartphone prices continue to fall, and lower import duties and VAT can accelerate their affordability. Côte d'Ivoire's decision in 2015 to slash taxes on mobile phones from 27% to less than 7% is one positive example.
- Treat spectrum auctions as opportunities to attract investment and drive infrastructure deployment, rather than major revenue-generating opportunities: operators subsequently pass on spectrum costs to users.
- Consider zero-rated services as one approach to extend affordable access as they can help increase the awareness and value of Internet services.
- Promote Internet exchange points (IXPs), the physical infrastructure through which Internet service providers and content delivery networks exchange traffic, as a highly cost-effective way of enhancing local connectivity and

⁸ <http://www.wsj.com/articles/SB10001424052702304173704579263953771880822>

⁹ <http://www.worldbank.org/en/publication/wdr2016>

¹⁰ http://a4ai.org/affordability-report/report/#the_affordability_index

reducing costs. Of roughly 500 IXPs worldwide, only about 30 are in Africa¹¹. Similarly, encouraging the deployment of DNS root server instances helps reduce latency and promote resiliency¹².

Local digital content and services need encouraging

Making the Internet a relevant resource requires content, applications and services that are accessible to users, often in local languages. This is important for businesses and consumers alike. Research shows that small businesses that embrace the Internet grow faster, export more and employ more people than those that don't. Proven steps include:

- Remove hurdles facing small businesses in areas such as trade, tax and the recruitment of skilled employees.
- [Digitize government services](#) to increase citizen involvement, improve the quality of services and raise efficiency. Nigeria's electronic ID system revealed 62,000 ghost workers in the public sector, while Nairobi's water utility was able to significantly cut the time to fix outages based on customer feedback¹³.
- Promote tech hubs—involving government, academia and the private sector—to provide the infrastructure and entrepreneurial environment for the creation of new businesses. Kenya's iHub is one notable example, and there are well over 100 similar incubators across the continent.
- Promote content and registrations under local country code domains to encourage local content. Of the world's million most popular websites, a tiny portion is hosted in [Africa](#)¹⁴.

Skills need building

Often basic literacy holds back Internet adoption and use. In Sub-Saharan Africa over 40% of adults, half of women, and more than 30% of young people are [illiterate](#)¹⁵. Actions that can make a difference include:

- Drive for full school enrolment, especially for girls.

¹¹ <https://www.pch.net/>

¹² <http://root-servers.org/>

¹³ <http://www.worldbank.org/en/publication/wdr2016>

¹⁴ <http://royal.pingdom.com/2013/03/07/hosting-locations-2013/>

¹⁵ <http://www.uis.unesco.org/Education/Documents/literacy-statistics-trends-1985-2015.pdf>

- Create digital literacy programs for those no longer in the formal education system, including reverse mentoring of older people, to ensure that it is not only the young who are digitally literate.
- Promote centralized shared facilities to help expose communities to the benefits of Internet access, particularly in remote regions.
- Support the development of entrepreneurial skills through tech hubs and educational programs.

Each country or region will need to identify which problems affect it most severely and develop relevant solutions, based in part on what has worked elsewhere. A multi-stakeholder approach involving governments, the private sector, civil society and NGOs can be very effective in building consensus on the most effective policies and actions to adopt. A combined effort from players from across the spectrum is needed to deliver the Internet for all Africans.

Reducing poverty, hunger, inequalities, or improving health and education, require significant and lasting investments in Internet access and the skills needed to benefit from it. Some may balk at the magnitudes involved, but government leaders and policy makers should ask themselves what the costs of *inaction* are—the costs of *not* connecting the continent. These are high too—fewer jobs and slower economic development, a bigger digital divide, poorer education, worse healthcare and lower life expectancy. For farsighted leaders, the answer will be clear.

 More information is available at <https://www.icann.org/resources/pages/business>.

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