

NTIS POLICY BRIEF

DRAFT

Towards improved access to broadband in support of Africa's transformation

1. Introduction

Broadband Internet has been categorized as one of the world's most important general-purpose technologies, with the capability to dramatically impact social structures and entire economies¹. In addition, broadband and ICTs can be a mechanism for social and digital inclusion for all, especially for disadvantaged and remote populations.

Several studies demonstrate that broadband penetration and broadband quality are important factors for economic growth. According to a World Bank study, it is estimated that for every 10% increase in broadband penetration in low and middle income countries result in a commensurate increase of 1.38% of the GDP². Studies also reveal the economic impact of broadband deployment directly through jobs created by deploying broadband infrastructure, and indirectly as a result of 'spill-over' externalities, such as increased productivity and new products and services i.e. through accelerated innovation³. There are many possibilities for developing content and mobile applications on broadband networks in Africa for transforming and improving people's living conditions. For instance, it is estimated that by 2020, there will be over 26 billion Internet-connected devices and over 4 billion global Internet users. General Electric predicts that investment in the Industrial Internet of Things (IIoT) will reach US \$ 60 trillion over the next 15 years, while McKinsey predicts that the Internet of Things market will grow at a compound annual

¹ The Global Information Technology Report 2016 – Innovating in the Digital Economy.

² Kim, Y., Kelly, T., and Raja, S. (2010). Building broadband: Strategies and policies for the developing world. Global Information and Communication Technologies (GICT) Department, The World Bank, January 2010.

³ Katz, R. L. (2012). Impact of broadband on the economy: Research to Date and Policy Issues. April 2012, ITU.

growth rate of 32, 6% by 2020⁴. General taxation of the mobile ecosystem is expected to raise \$480 billion by 2020 with additional 3 million new jobs created – bringing a total number of jobs in the mobile ecosystem to more than 20 million by 2020.

In this regard, African governments have considered broadband as a fundamental right, and that everyone should have access to and benefit from. As the role of hardware, software, and services becomes more important for African governments, businesses, and individuals, the high-speed broadband internet that enable them have become integral to daily life. Today, only 20% of Africans have Internet access. And there are only two years left to meet the broadband conditions target of 50%. Africa has broadband infrastructures gap, hence slower speeds, access and affordability to broadband services where they exist. At the regional level, there are also several challenges, among others, include energy access, harmonized policies and regulations, development and access of regional broadband infrastructures to drive market integration

In this context, this policy brief is drawn from a recent study by ECA on ‘Towards improved access to broadband in Africa’ and provides key policy recommendations for considerations by African policy- and decision-makers with aim for building broadband infrastructures and making broadband services accessible and affordable.

2. The State of Broadband in Africa

African Governments are increasingly leveraging broadband to provide online service where citizens can receive information and interact with public service administration. Broadband facilitates civic engagement and provides governments ease of performing certain functions such as tax collection, civic registrations, etc. where broadband enables government to citizens, government to government, government to business, etc. engagement.

Today, Broadband services are delivered using various technologies throughout the continent. No less than 18 submarine cables surround Africa and bring it incredible capacities of several tens of terabytes, whereas just 15 years ago, the whole continent had a few gigabits to share and some countries had only a few kilobits. In addition, more than 500,000 km of fiber optic cable now crisscross the interior of the continent, finally connecting countries to each other. The researchers⁵ find that these cables, led to somewhere between a 4% to 10% overall rise in employment on the continent.

4G -LTE has seen continuous growth across Africa: by end of 2017, 102 mobile operators have launched 4G-LTE services in 43 countries and at least another 88 mobile operators in Africa plan to launch 4G in the next two years⁶.

⁴ <http://www.forbes.com/sites/louiscolombus/2016/11/27/roundup-of-internet-of-things-forecasts-and-market-estimates-2016/>

⁵ <http://www.nber.org/papers/w23582.pdf>

⁶ <https://www.balancingact-africa.com/reports/telecoms-internet/4glte-network-projects-and-launches-in-africa-july-2017>

The growth of IXPs in Africa over the last year is remarkable. Benin, Botswana, Burkina Faso, Côte d'Ivoire, Rep. of Congo, Madagascar, Malawi, Mozambique, Rwanda, Sudan and Zimbabwe all established an IXP over the last twelve months to mid-2017. As a result, Sub Saharan Africa Broadband uptake grew 34% per year between 2008 & 2015. Penetration anticipated to reach 80% by 2020, up from 20% in 2015.

By facilitating access to economic opportunities and social welfare in developing countries, mobile broadband, for example, has been driving financial inclusion through mobile banking and mobile money in Africa, and it also supports new ways of delivering healthcare in many developing nations⁷. In fact, many incubation and tech hubs are operating in many countries such as iHub and NaiLab in Kenya, Hive CoLab and AppLab in Uganda, Activspaces in Cameroon, CTIC and Jokkolabs in Senegal, Kinu in Tanzania or Kenya and South Africa.

As Africa looks forward to sustainable development embracing green growth strategies, broadband also contributes to a more energy efficient future in which broadband-connected homes and businesses are able to monitor and reduce their electricity consumptions which in turn help to achieve energy savings, etc.

However, despite the progress in establishing conducive environment for broadband networks deployment, African countries faced several challenges to strengthen enabling environment for broadband infrastructure and network development. Barriers include limited fixed infrastructure, high cost and insufficient backbone networks. Broadband connections and services are not available in many localities and unaffordable to the majority of the citizens where available. Among others, some of the challenges in realizing improved broadband access in the continent include:

- **National broadband plans:** The introduction of broadband plans in a number of African countries is relatively recent, with most of them starting from 2009⁸. Prior to 2009, most plans focused on information society issues, with broadband coming to the fore from 2009 onwards.
- **Business models and pricing:** Broadband services is still too expensive for many African countries. Africa represents the least affordable broadband service in the world with the average fixed-broadband price in Africa is about 64.% of GNI per capita compared with 1.7% of average income in developed countries and 31% of average income in developing countries⁹. In more than two thirds of African countries the cost of the mobile-cellular basket represents more than 5 per cent of GNI p.c., and the service thus remains unaffordable for large segments of the population. For example, in several countries, monthly broadband packages cost more than national minimum wage. In Nigeria, for example, the \$80 average cost of monthly broadband packages is nearly double the national

⁷ ITU (2012). The state of broadband 2012: achieving digital inclusion for all. A report by the Broadband Commission, September 2012.

⁸ ITU World Telecommunication/ICT Regulatory database, Broadband Commission for Digital Development

⁹ The State of Broadband: Broadband catalyzing sustainable development September 2016 : <http://broadbandcommission.org/Documents/reports/bb-annualreport2016.pdf>

minimum wage of \$50 (18,000 naira). Broadband prices in Africa's largest economies vary from low in Egypt (\$12) to high in Angola (\$139.29). According to the 2017 Affordability Report by the Alliance for Affordable Internet (A4AI)¹⁰ Africa, compared to other world regions has the most expensive broadband connection in the world. Burkina Faso is the most expensive country in the world for broadband subscription, with an eye watering monthly cost of \$962.41¹¹

- **Regulation-:** According to the ITU Measuring the Information Society 2014 report, regulatory action is needed in Africa to open the international gateways to competition and to facilitate backhaul (e.g. by setting a reference offer for the leased lines of the incumbent that provide connectivity to the landing station) which could lower barriers to entry in the market, and stimulate competition in broadband services. In terms of harmonization policies and regulation, despite the several initiatives by RECs, the level of transposition or implementation of these policies and regulation at the Member State level is relatively slow and inconsistent.
- **Infrastructures:** Africa is the only region where mobile broadband penetration remains below 20%. In many countries national backbone & cross-border infrastructure is still relatively limited, as a result most Internet traffic between African countries is exchanged in Europe, North America or Asia. According to the International Telecommunications Union (ITU), about 92,000 km of optical fiber link, including 25,000 km of international submarine cable routes is needed to bridge regional and international broadband gaps, which represents an investment of US \$ 1.6 billion for regional links.

3. Policy Priorities for Broadband

In order to create an improved access to broadband in the continent, the following key policy recommendations are provided for considerations by African policy- and decision-makers:

Broadband policies and strategies: As observed, many African countries have not updated their national ICT and broadband policies and this is a major obstacle in enhancing broadband infrastructure and network development. They have to review or develop a comprehensive policy framework and national broadband plan incorporating both the demand and supply of the broadband ecosystem for enhancing broadband access in collaboration with all relevant stakeholders, including civil society and the private sector.

Harmonisation of policy and regulatory frameworks: To encourage harmonization of broadband policy and regulatory frameworks at sub-regional and regional level, Member States, therefore should demonstrate at the national level through serious measures and actions to implement RECs decisions to achieve the regional interconnectivity and universal access plans. They shall also take all necessary legislative and regulatory measures for the adoption of the

¹⁰ <http://a4ai.org/mobile-broadband-pricing-data>

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https://docs.google.com/spreadsheets/d/1oH5Ham4Yn8x80ma0j_Z5SnOcQyUIsbPtmcc0fvUEeI/edit#gid=216699028

Protocol for Policy and Regulatory Framework for NEPAD ICT Broadband Infrastructure Network for Africa.

Pricing and Regulations: One of the key determinants of the widespread uptake and use of ICT services has been price. A small number of countries could meet the Broadband Commission's 5 percent of GNI p.c. On one hand, this is due to the lack of availability of broadband through the well-developed backbone networks and access networks and on the other hand the lack of competition through appropriate regulatory mechanisms. However, experience from elsewhere indicate that fixed-broadband markets have been opened up to a much larger degree of competition to the benefit of customers. To this end, African governments and RECs need to promote the open access principle to the existing infrastructure of incumbents, utilities, etc. including enhancing interconnection both at national and regional level through the development of IXPs to improve the localization of traffic that can contribute to creating affordable broadband services.

Universal access to broadband: African governments have considered broadband as a fundamental right, and that everyone should have access to and benefit from such as in the rural areas. To achieve this objective the effective implementation of the universal service is of paramount importance. Incentives such as for example the preferential terms of licenses and authorizations of uses of the spectrum to attract operators or investors to deploy broadband services in high-cost areas can be implemented. This approach would ensure the necessary resources for investment in the development of the internet infrastructure and services. However, access to the Internet is not enough; policy-makers must address broader socio-economic inequalities and help people acquire the skills they need to take full advantage of the Internet. This is in line with a more integrated development approach, like that adopted in the 2030 Agenda for Sustainable Development, which highlights that development challenges are linked and cannot be met in isolation.

Broadband for Regional Integration: In terms of regional integration, African landlocked countries are facing a serious problem of high-speed Internet access due to the fact that they do not have a direct access to any submarine cable. Physical integration is an essential element and as such, broadband infrastructure is a key component. The future competitiveness of the continent is directly dependent on its ability to strengthen sub-regional and regional broadband infrastructure. Consequently, to attain a better economic integration in the continent through broadband infrastructure, there is a need to plan well the development of regional infrastructure integration to enhance the uptake and use of broadband in the continent. Member States have other obligations to fulfill, such as, completing broadband missing links attributed to the countries as part of cross-border physical networks to enhance policy and regulatory framework for the economic integration in the continent. Therefore, governments need to design appropriate mechanisms for financing Regional Backbone Infrastructure and Exchanges, to open up the market and look for a more harmonized regional approach to investment and scale up use.

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