ECA POLICY BRIEF

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

I. Introduction

Broadband Internet has been categorized as one of the world's most important general-purpose technologies, able to dramatically impact social structures and entire economies.[1] Broadband and information and communications technologies (ICTs) can also be mechanisms for social and digital inclusion for all, especially for disadvantaged and remote populations.

Several studies demonstrate that the penetration and quality of broadband are important factors for economic growth. According to a World Bank study, it is estimated that every 10 per cent increase in broadband penetration in lower-middle-income countries results in a commensurate increase of 1.38 per cent in the gross domestic product (GDP).[2] Studies also reveal the economic impact of broadband, through jobs created by the usage of its infrastructure, and the indirect result of spillover externalities, such as increased productivity and new products and services, and through accelerated innovation.[3]

There are many possibilities for developing content and mobile applications on broadband networks in Africa for transforming and improving people's living conditions. It is estimated, for example, 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 will reach $60 trillion over the next 15 years, while McKinsey predicts that the Internet of Things market will grow at a compound annual growth rate of 32.6 per cent by 2020.[4] General taxation of the mobile ecosystem is expected to rise to $480 billion by 2020, creating an additional 3 million new jobs, and bringing the total number of jobs in the mobile ecosystem to more than 20 million by 2020.

In that regard, African Governments have considered broadband as a fundamental right that everyone should have access to and benefit from. The role of hardware and software are important in high-speed broadband Internet whose services have become important for African Governments, businesses and individuals, and an integral part of daily life. Today, only 20 per cent of Africans have Internet access, and there are only two years left to meet the broadband conditions target of 50 per cent. There are gaps in the broadband infrastructure in Africa, such as slower speeds, inadequate access and low affordability to broadband services. At the regional level, there are also several challenges, including energy access, harmonized policies and regulations, development and access of regional broadband infrastructures to promote market integration.

The present policy brief is drawn from a recent study by ECA entitled "*Towards improved access to broadband in*

1   Silja Baller, Soumitra Dutta, and Bruno Lanvin, eds, *The Global Information Technology Report 2016: Innovating in the Digital Economy* (Davos, Switzerland, World Economic Forum, 2016), available at: http://www3.weforum.org/docs/GITR2016/WEF_GITR_Full_Report.pdf.
2   Y. Kim, T. Kelly, and S. Raja, *Building Broadband: Strategies and Policies for the Developing World* (Washington, D.C., World Bank, 2010).
3   R.L. Katz, *Impact of Broadband on the Economy: Research to Date and Policy Issues* (Geneva, April 2012, International Telecommunications Union).
4   See http://www.forbes.com/sites/louiscolumbus/2016/11/27/roundup-of-internet-of-things-forecasts-and-market-estimates-2016/.

Africa". It summarizes the evidence on broadband access in Africa and provides key policy recommendations for consideration by African policymakers and decision makers. It is hoped that it will contribute to explorations of how best to build up broadband infrastructure on the continent and thus make broadband services easily accessible and affordable to citizens and firms.

II.   The state of broadband in Africa

African Governments are increasingly leveraging broadband to provide online services where citizens can receive information and interact with public service administration. Broadband facilitates civic engagement and makes it easier for Governments to perform certain functions, including tax collection and civic registrations. For these activities, the broadband enables interactions, for example, between government and citizen; government agencies; and government and business.

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 shared a few gigabits and some countries had only a few kilobits. In addition, more than 500,000 km of fibre-optic cable now criss-crosses the continent, finally connecting countries. Researchers[5] find that these cables led to an overall rise in employment on the continent of between 4 per cent and 10 per cent.

What has seen continuous growth across Africa is fourth-generation long term evolution — commonly referred to as 4G LTE. By the end of 2017, 102 mobile operators had launched 4G LTE services in 43 countries and at least another 88 mobile operators in Africa planned to launch 4G over the next two years.[6]

The growth of Internet exchange points (IXPs) in Africa over the last year has been remarkable. Benin, Botswana, Burkina Faso, Côte d'Ivoire, the Republic of the Congo, Madagascar, Malawi, Mozambique, Rwanda, the Sudan and Zimbabwe established an IXP over the twelve months leading to mid-2017. As a result, sub-Saharan Africa Broadband uptake grew by 34 per cent per year between 2008 and 2015, and penetration is anticipated to reach 80 per cent by 2020, up from 20 per cent in 2015.

By facilitating access to economic opportunities and social welfare in developing countries, mobile broadband has been promoting financial transactions through mobile banking and mobile money in Africa, as well as supporting new ways of delivering health care in many developing nations.[7] 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, Co-Creation Hub in Nigeria, Kinu in the United Republic of Tanzania, and Durban's SmartXchange in South Africa.

As Africa looks forward to sustainable development, which seeks to embrace green growth strategies, the broadband helps by contributing 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, among others.

However, despite the progress in creating a conducive environment for the use of broadband networks, African countries still face several challenges in sustaining an enabling environment for broadband infrastructure and network development. Barriers include limited fixed infrastructure, high costs and insufficient backbone networks. Broadband connections and services are not available in many localities and unaffordable for the majority of the citizens where available. Among others, some of the challenges in improving 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 2009.[8] Prior to 2009, most plans focused on information society issues, with a focus on the broadband from 2009 onwards.

- **Business models and pricing:** Broadband services are still too expensive for many African countries. Africa represents the least affordable broadband service in the world, with the average fixed-broadband price in the continent being about 64 per cent of gross national income (GNI) per capita compared with 1.7 per cent of average income in developed countries and 31 per

5   See http://www.nber.org/papers/w23582.pdf.
6   See https://www.balancingact-africa.com/reports/telecoms-inter-net/4glte-network-projects-and-launches-in-africa-july-2017.

7   See the report by the Broadband Commission, *The State of Broadband 2012: Achieving Digital Inclusion for All* (Geneva, International Telecommunications Union, 2012).
8   *ITU World Telecommunication/ICT Regulatory database, Broadband Commission for Digital Development.*

cent of average income in developing countries.[9] In more than two thirds of African countries, the cost of the mobile cellular basket represents more than 5 per cent of GNI per capita, and the service thus remains unaffordable for large segments of the population. For example, in several countries, monthly broadband packages cost more than the national minimum wage. In Nigeria, for example, the $80 average cost of monthly broadband packages is nearly double the national 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 regions in the world has the most expensive broadband connection. Burkina Faso is the most expensive country in the world for broadband subscription, with an eye-watering monthly cost of $962.41.[11]

- **Regulation:** According to the International Telecommunications Union (ITU) report, *Measuring the Information Society 2014*, regulatory action is needed in Africa to open the international gateways to competition and facilitate backhaul (for example, by setting a reference offer for the leased lines of the incumbent that provides connectivity to the landing station). This could lower barriers to entry in the market and stimulate competition in broadband services. Regarding harmonization policies and regulations, despite the several initiatives by regional economic communities, the level of transposition or implementation of these policies and regulations at the level of member States is relatively slow and inconsistent.

- **Infrastructure**: Africa is the only region where mobile broadband penetration remains below 20 per cent. In many countries, national backbone and cross-border infrastructure is still relatively limited, and as a result most Internet traffic between African countries is exchanged through Europe, North America or Asia. According to ITU, about 92,000 km of optical-fibre link, including 25,000 km of international submarine cable routes, are needed to bridge regional and international

broadband gaps, which represents an investment of $1.6 billion for regional links.

III. Policy priorities for broadband

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

- **Broadband policies and strategies:** As has been observed, many African countries have not updated their national ICT and broadband policies, which 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.

- **Harmonization of policy and regulatory frameworks:** To encourage harmonization of broadband policy and regulatory frameworks at subregional and regional levels, member States need to demonstrate, at the national level through serious measures and actions, the implementation of regional economic communities decisions to achieve the regional interconnectivity and universal access plans. They should also take all necessary legislative and regulatory measures for the adoption of the 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 cost. A small number of countries could meet the 5 per cent of GNI per capita figure of the Broadband Commission. This is due on one hand to the lack of availability of broadband through the well-developed backbone networks and access networks, and on the other hand, to the lack of competition through appropriate regulatory mechanisms. However, experience from elsewhere indicates 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 regional economic communities need to promote the open access principle for the existing infrastructure of incumbents and utilities, including enhancing

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9   The State of Broadband: Broadband catalyzing sustainable development, September 2016, see http://broadbandcommission.org/Documents/reports/bb-annualreport2016.pdf.
10   http://a4ai.org/mobile-broadband-pricing-data.
11   https://docs.google.com/spreadsheets/d/1oH5Ham4Yn8x80ma0j_Z5SnOcQyUIsbPtzmcc0fvUEeI/edit#gid=216699028.

interconnection both at national and regional levels 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, that everyone should have access to and benefit from, including those in rural areas. To achieve this objective, the effective implementation of the universal service is of paramount importance. Incentives such as the preferential terms of licences and authorization for usage 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 Internet infrastructure and services. However, access to the Internet is not enough; policymakers must address broader socioeconomic 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, such as 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 direct access to any submarine cable. Physical integration is an essential element and broadband infrastructure is thus a key component. The future competitiveness of the continent is directly dependent on its ability to strengthen subregional and regional broadband infrastructure. Consequently, to attain better economic integration in the continent through broadband infrastructure, there is the need to plan the development of regional infrastructure integration well to enhance the uptake and use of broadband in the continent. Member States have other obligations to fulfil, such as completing broadband missing links attributed to the countries as part of cross-border physical networks to enhance policy and regulatory frameworks for the economic integration in the continent. Governments therefore 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.