NIGERIA NATIONAL BROADBAND PLAN REVIEW

A4AI Input and Comments on revising and updating the 2013-2018 Broadband Plan

Abstract

Recommendations towards ensuring digital equality and accelerating opportunities for Nigeria

Alliance for Affordable Internet

www.a4ai.org

Foreword

Although Nigeria is Africa's largest economy, broadband affordability is still a challenge for many of its citizens. Nigeria was the first country to openly adopt the "**1 for 2" affordability target,** committing to ensuring that Nigerians can afford at least 1G of data per month at a cost of no more than 2% of average monthly GNI. A4AI has since been measuring the policy progress made towards ensuring an affordable internet e.g. policies to drive prices down and expand access.

In 2018 Nigeria met the "1for2" UN broadband target for affordability when the cost of 1GB of mobile prepaid data decreased to 1.6% of average monthly GNI/p.c. indicating some improvement in the ICT sector. In addition, Nigeria scored 58% on the 2018 Affordability drivers index which measures the progress made in policies towards access and infrastructure. While steady progress has been made in the areas of broadband strategy, universal and public access, infrastructure sharing and spectrum management, large income inequalities across the country show internet affordability is out of reach for many people. The World bank Atlas reports an estimated 86 million people in Nigeria lived in extreme poverty (less than $1.90/day) in 2013. So in keeping with the government's vision of leveraging information and communication technologies to advance national socio-economic development, an updated strategy is needed to build on previous rounds of policy and regulatory reforms to make broadband internet affordable for all income groups.

The 2013-2018 Nigeria Broadband Plan represented a strong and articulate presentation of the objectives, opportunities, targets, and priorities for expanding and enhancing Broadband ICT access and utilization in Nigeria. It provided an excellent overview of the state of broadband in the country and a reasonably ambitious set of projects and plans to move the country's broadband ICT sector forward. It also set the goal for *Nigeria to become one of the world's leading economies by year 2020 using high-speed broadband networks that will provide every Nigerian with fast, reliable and affordable internet access as a fundamental requirement.*

With the expiry of the National Broadband plan in 2018, Nigeria risks a slowdown in its policy progress which could delay the required investments in the ICT sector. A new National Broadband Plan cannot be overemphasized enough. In making this happen however, it is important to assess the extent to which objectives and targets set have been achieved and to reformulate more relevant objectives, options, targets and actions crucial to achieving Nigeria's vision of a middle income economy.

This document is not an update of the National broadband plan but one that provides the analysis, viewpoints, and recommendations from the Alliance for Affordable Internet (A4AI) to the Government of Nigeria, concerning the development of a new National Broadband Plan. It is based on knowledge of emerging broadband ecosystem trends, feedback from a series of multi-stakeholder coalition engagements including the Nigeria Broadband and Infrastructure Forum held in October 2018. It also gleans from secondary research as well as submissions by members

of the A4AI coalition. The contents have linkages to the Economic Recovery and Growth plan with a medium term mission for propelling Nigeria to sustainable, accelerated development and restore economic growth by 2020. This report also draws on Nigeria's vision 20:2020 strategy, Nigeria ICT Policy 2012 and the National ICT Roadmap 2017-2020, pointing out the corresponding structures needed to foster faster deployment of affordable broadband, digital infrastructure, to enhance services, skills and entrepreneurship

This document comes at an opportune time as a new government administration takes office and with less than 6years to connect the many offline in line with the UN Broadband Commissions 2025 targets. We hope it provides insights on the importance of digital inclusion and equality ensuring that Nigeria attains affordability across all the quintiles and that people of Nigeria are provided with access to ubiquitous high-quality Internet service, essential digital skills and the power to use the broadband for development.

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1. Introduction

In 2018 ITU indicated figures showed the world had achieved the 50% internet access. Connecting the last four billion will not happen through market forces alone; it will require targeted efforts aimed at connecting those least likely to be connected, including those in poor, rural and hard-to-reach communities many of whom are found in Sub Saharan Africa and Southern Asia.

While mobile ownership has seen significant increase, their use of the internet lags men with a 29% gender gap (GSMA 2018.)[1] Nigeria, being the most populous nation in Africa also has persistent inequality between rural urban and at various educational levels. The most current gender scorecard[2] for Nigeria shows an overall score of 30% and highlights the key areas that need improvement (table1) .

Table 1. NIGERIA GENDER SCORECARD

	Overall Score	Internet Access & Women's Empowerment	Affordability	Digital Skills & Education	Relevant Content & Services	Online Safety
		(Scored out of 10)				
Nigeria	30%	2	5	2	3	3

If these digital gaps are not addressed, women, rural populations and other marginalized groups risk being left behind in Nigeria's economic revolution and would be unable to contribute to the growth of the country. Policies ad plans must therefore prioritize access for women, girls and those offline population with measurable and time bound targets to close the gap ensuring true broadband affordability across the all the quintiles.

The Nigerian Communications Commission (NCC) indicates broadband internet penetration levels stood at 33.08% as at the end of February 2019 with 63.1 million users connected[3]. The NCC has also declared a goal of 70% broadband penetration over the "next couple of years" although the timeline is undefined. It is worthy of note that the broadband plan of 2013-2018

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[1] https://www.gsma.com/mobilefordevelopment/resources/mobile-gender-gap-report-2019/

[2] See the action plan developed by Paradigm Initiative including recommendations http://webfoundation.org/docs/2016/09/WF_GR_Nigeria.pdf

[3] https://www.ncc.gov.ng/stakeholder/statistics-reports/industry-overview#view-graphs-tables-7

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had a goal of 80% broadband penetration by the end of 2020; less than 6months away and very unlikely to be met at current growth rates. The Economic Recovery and Growth Plan (ERGP) of Nigeria which seeks to drive change, provide opportunities for job creation relevant content development acknowledges the important role of broadband technology and its attendant benefits

Nigeria's digital revolution and economic growth therefore needs secure, affordable ubiquitous broadband access to advance innovation, playing a key role in the tourism, financial services, telecommunications, creativity and SMEs enhancement objectives of the ERGP. Development can be accelerated if Nigeria successfully develops and implements a detailed roadmap for an effective ICT ecosystem at levels that ensures realities, trends, innovations, challenges and opportunities from local to global are captured as drivers for sustainable development.

2. Evolution of the Broadband ICT Landscape

In forging ahead beyond 2019, it will be important to reflect on the accomplishments under the previous plan, and also to review and update the broadband context in Nigeria and around the world, to take account of the ever-evolving ICT ecosystem. Many of the opportunities and challenges for broadband in society, the economy, and governance that were anticipated and partly addressed under the 2013 Plan remain relevant five years later. Some issues have increased in importance, others have shifted in different directions, while a range of new considerations are also now presenting themselves.

The following discussion highlights some of the key recent trends and developments in the broadband ICT landscape, and updates to ongoing topics, which should be taken into account in the next five years and beyond, as part of the 2019-2023 Nigeria Broadband Plan.

The Global ICT landscape in 2019

- Network technology:

    o Wireless mobile network standards continue to evolve. In 2013, 3G service was the widespread standard for mobile broadband. By 2019, 4G/LTE has become more commonplace, with higher speeds and more reliable service (although some users in Nigeria are still awaiting even 3G!). Although for mobile already, however, the next standard, 5G, is becoming available in some test markets, and this will likely be deployed more widely throughout the 2020s, yielding another quantum upgrade in mobile communications. Policies on ICT authorization, spectrum

assignment, competition, and infrastructure investment need to take into account these forward-looking developments.

- o Meanwhile, satellite and other aerial systems are becoming more viable options for delivering high capacity transmission access to remote areas. Terrestrial deployment of WiFi and other wireless broadband, especially in public access locations, is becoming a viable alternative or complement to mobile networks.

- o Fiber-to-the-home, and to-the-business or other locations is also a growing trend, and even an essential option for high-volume enterprises and government offices. All these technology platforms should be deployed and integrated on a widespread basis to optimize broadband access and utilization.

- Digital devices:

  - o The quality, variety, and utility of digital devices has continued to grow exponentially. Smart phones in particular are becoming commonplace, with increasing sophistication and quality, even as prices for all but the highest-end devices have been declining rapidly. Entry level smartphones can now be purchased in many countries for less than $50 with "smart featurephones" markedly lower at $23

  - o Many other consumer smart devices and wearable technologies are becoming common place, from tablets to smart wrist watches to personal health equipment and entertainment systems, which can all be linked and used interchangeably.

  - o More broadly, the Internet of Things (IOT) is transforming the functionality of countless devices, including household appliances, business and manufacturing equipment, automobiles, and more, allowing greater efficiency, connectivity, and intelligent operations in virtually all aspects of society.

- Digital applications, utilization:

  - o The quantity and scope of digital applications, both mobile and PC-based, has expanded tremendously. Society is becoming increasingly dependent on multiple, integrated broadband-based applications to enhance all aspects of daily life.

  - o Key developments in high-level, remote, and aggregate uses of data, such as cloud computing, Big Data analytics, and crowd sourcing applications are transforming large-scale research, business, and government functions.

  - o Digital entertainment is becoming a primary source of leisure for countless citizens, and a massive industry worldwide and in Nigeria. Opportunities have expanded for distribution of Nollywood films via platforms such as *IrokoTV* enhancing other domestically produced content, while video streaming allows

individual users to establish a reputation and following. Growing interest in on-line video/computer gaming and "e-sports" is challenging traditional entertainment models for users' attention and purchases (especially, but not exclusively, young people).

- o Advanced research has made further progress on technological frontiers that will drive the role of digital applications in the near and long-term future. Artificial intelligence is incorporated in a growing variety of systems and services, including the increasing wave of Digital Assistant features. Virtual Reality and Augmented Reality continue to enhance and adapt the uses of technology across many fields. As these and other innovations become more mainstream, their roles and impacts should be incorporated in broadband policies and objectives.

- o Many aspects of the evolution of digital applications are resulting from small entrepreneurs and the expanded opportunities for app coders and developers to participate in the field, developing functions of interest and relevance to their national and local communities. Nigeria is at the forefront of African markets in the growth and impact of its ICT entrepreneurship incubation and Tech Hub movement, a trend which should be reinforced.

- Cyber security:

  - o As the roles and utilization of broadband ICTs have expanded, the risks and incidents of cyber security abuses have become increasingly critical. Any national strategy to promote increased broadband access and utilization must at the same time incorporate pro-active, aggressive measures to mitigate existing cyber security risks inherent in ICT use and application, including digital fraud, identity theft, malware and viruses, hacking, exploitation, and more.

  - o With more critical infrastructure (power, water, transport) integrated with ICT networks and systems, the vulnerability of these systems, and national security to sophisticated cyber-attacks is becoming more apparent.

  - o A recent trend of fraudulent intervention and hacking in political campaigns and news media has intensified divisions and suspicion, and threatened to undermine democracy in many countries including in Nigeria.

- Social media, digital content:

  - o The role of social media has become even more ubiquitous in recent years, and is the driving source of demand and utilization for all consumer broadband. Citizens' lives, information, entertainment, commerce, and employment are increasingly dominated by on-line and especially phone-based interactions.

- Among the most popular and revolutionary trends in digital/social content is video streaming, via sites such as YouTube. These are becoming a dominant substitute for traditional Television, especially among younger users, and are driving a new generation of popular and commercial culture. Broadband is an essential prerequisite to participate in this new medium.

- Digital Inclusion

  - As Broadband ICTs have expanded dramatically, and their impact on economic and social activity has become virtually ubiquitous, the Digital Divide has in some respects become greater and more challenging to overcome. Those who are excluded from access to and use of ICTs are often now left even further behind and excluded from mainstream society. Although strong gains have been made worldwide, including in Nigeria, in bringing technology access to many millions of new users, large gaps remain, and those on the outside continue to fall further behind.

- Economy and employment:

  - Broadband technology and the Internet have become even more deeply entwined with nearly all aspects of the economy. Most businesses and a growing number of jobs depend on some degree of digital resources and skills, and this dependence will grow greater in the years ahead.

  - E-commerce and other Internet-based businesses represent a new, growing sector that depends entirely on broadband. Even most traditional businesses are coming to rely upon digital marketing and customer service as elements of their operations.

  - The explosion of the so-called "gig" economy – part-time jobs and business models such as Uber and Airbnb, and many others – is driven by broadband mobile networks and applications which match workers with customers, expanding income and entrepreneurship opportunities, and disrupting many traditional market segments.

  - Agriculture, manufacturing, natural resources, and other lynchpins of Nigeria's economy all compete across globalized world markets that utilize broadband ICTs at every stage of production and distribution.

  - By the 2020s, a large majority of jobs in every sector will require some level of digital skills and familiarity with broadband technologies and applications. Education, training, employment, and public service programs must all focus on enhancing these skills across all segments of the population, and especially

increasing awareness and opportunities for women and other disadvantaged groups.

- Government and public services:

  o Broadband plays a crucial role in improving efficiency and accessibility of government operations at all levels. Rollout of national e-government networks and services can also help stimulate investment in local connectivity, as well as public awareness.

  o Political processes and civic engagement are enhanced by broadband access to information, citizen data and ID applications, and grass-roots organizations at the local level.

  o Broadband in schools and universities is becoming more essential to effective and efficient educational opportunities. Curricula that incorporate digital tools and skills are a new imperative for training students for the ICT-driven workplace and society. New methods and resources are being adopted to improve the quality, efficiency, and relevance of education at all levels.

  o Health care systems and services are also rapidly adopting broadband ICT-based tools and applications, and utilizing these technologies to improve communication and support for patients, effectiveness of record-keeping, access to diagnosis and information, medical supply chains, and training for doctors and nurses, particularly in remote areas.

  o Public safety and national security systems increasingly rely on the use of broadband digital networks and applications to communicate among locations and personnel, to monitor and detect both natural and human threats, to provide emergency services, and to manage responses to disasters or crises.

  o Environmental programs to protect and improve natural resources and quality of life are also adopting broadband ICT-based solutions, while coping with increasing challenges of climate change and environmental disruptions. At the same time, the new phenomenon of "e-waste" arising from the ubiquitous presence of discarded digital equipment is a growing problem that must be addressed as these technologies expand further.

- Awareness, adoption, affordability:

  o Although penetration and use of advanced ICTs and broadband services has expanded substantially worldwide, including in Nigeria, there remains a significant digital divide, which is arguably growing wider. As devices and applications

become more sophisticated, it has grown even more difficult for many marginalized populations to understand, adopt, and afford such technologies.

- o Barriers of familiarity, cost, language, literacy, relevant content, culture, and other factors affect demand and use even where broadband network access has been established. Service providers often do not see such marginal, low income customers as worthy of demand stimulation marketing campaigns. There is a need for public awareness and promotion efforts by governments, NGOs, and other civil service organizations to help fill these gaps.

- o Along with the increased quality and complexity of broadband digital services has come a greater propensity for technical challenges for users, from repair and maintenance, to understanding how to use devices and applications, to mitigating exploitation, fraud, and abuse. These problems will only continue to grow as penetration increases, especially among the least technically familiar users, and they call for strong new efforts to provide user-friendly and widely available technical support.

- o Although prices of smart devices and network services have stabilized or declined in many areas, entry-level access to broadband is still unaffordable for large segments of the population. Programs to subsidize such users, and to drive down service costs through increased competition and other reforms, are essential to bring the least advantaged citizens on-line.

These and other developments and trends are highlighted in the comments on updating the 2013 Broadband Plan in the sections below.

3. Broadband Benefits and Status (Sections 1-3)

This section addresses Sections 1-3 of the 2013 plans, with comments based on the above observations

3.1. Broadband and Its Benefits

- ● Defining Broadband for Nigeria:

   - o The previous target definition of broadband as a minimum speed of 1.5 Mbps is insufficient for 2019 and going forward. That standard was intended to evolve with technology and market conditions, and should continue to do so.

- A near-term target of at least 5 Mbps is reasonable for mobile broadband; for fixed a higher standard of at least 20 Mbps should apply. These targets should increase over time. Objectives should also require reforming Quality of Service(QoS) measurement standards and methodology to ensure that the end user experience truly reflects high speed, reliable service and the evolving nature of broadband technologies.

- The Broadband Ecosystem:

  - The Broadband Ecosystem concept described in the 2013 Plan (Investment, Availability, Relevance, Affordability) differs in scope and focus from other views of this Ecosystem. Alternative concepts incorporate various nuances of the supply and demand side, e.g., equipment, applications, sector-specific adoption, and more, as well as Policy dimensions. The ICT ecosystem as shown in the Nigeria ICT Roadmap (Figure1) paints a picture of the vision of the Federal Ministry for broadband development. It may be helpful to review these perspectives and elaborate further on the Nigerian Broadband Ecosystem.

- Economic Benefits of Broadband:

  - The Benefits of Broadband outlined in the 2013 Plan are still applicable and relevant, while the scope and impact of such benefits across multiple sectors of the economy have continued to expand. It may be useful to reflect some more recent examples and findings to reinforce this section in the new Plan.

  - In particular, it would be useful to reference the recent World Bank World Development Report on the Digital Dividend, to provide updated references on the benefits of Broadband in Entertainment, Agriculture, and Commerce, among other topics. Also see the discussion of these topics in Section 2 above.

- Broadband in Government, Civic Engagement, Public Services:

  - The Benefits of Broadband described in this section have also greatly increased in the intervening years. They include both economic and social benefits arising from deployment and adoption of Broadband in Government, Education, Healthcare, Public Safety, Smart Grid and Environment Management, and other key public service and societal applications. The discussions in section 2 above highlight many of these trends in recent years.

3.2. Where We Are with Broadband

This section should update all of the factors measured under the previous Plan, such as infrastructure and network investment and deployment, Government initiatives, costs, demand, and all other relevant factors. As at 2019, It should especially highlight advances and changes that have occurred over the past five years. A good review of the penetration levels, National backbone map, mobile coverage map and Local access maps will be of immense importance to identify the key areas that need targeting to bridge the digital gap. Recent data from sources such as GSMA coverage maps and ITU interactive maps provide some information but additional information is needed right to the granular level. Data from local agencies will be essential to create a more accurate picture of coverage gaps, quality of service and the choice of options offered to consumers.

3.3. The Challenges of Broadband Operators and Users

3.3a The Challenges of Broadband Operators
This section should provide a detailed review of the key Challenges identified in the previous Plan, and the extent to which those have been resolved. They include:

- Rights of Way
- Regulation and Taxes
- Security of Infrastructure
- Spectrum Allocation
- Investment and Funding

3.3 b The Challenges of Major Broadband Users

In addition to the above revised challenges for operators, the new Plan should include a separate section which describes and addresses the key challenges confronting large broadband ICT users in the current market environment. This should include especially financial institutions, manufacturing and other corporations, large NGOs, and Government agencies themselves as users of ICT resources. These groups should be consulted to determine the key barriers and difficulties that they face, such as pricing, reliability of service, quality of service, cyber security, transactions, and other factors.

4. Strategy and Roadmap Goals and Objectives

This section reviews the core National Broadband Strategy and Roadmap Goals and Objectives from Section III, Chapter 4 of the 2013 Plan. These include the main elements of the Strategy, including specific Targets, and the proposed approaches to achieving them. In each case, we indicate the relevance and appropriateness of the previous targets and strategies for the new 2019 Plan, and suggest updates to these elements. We also recommend certain new targets and areas of focus that might be included in the new Plan.

4.1. Targets

This section of the 2013 Plan provides a set of specific targets for expanding access to broadband over its 5-year horizon. The new Plan should review each of the 2013-18 targets and identify precisely how far the country has moved toward reaching them. Where possible, it should provide an explanation or details to help understand where targets have fallen short, or have been exceeded.

The new Plan should then incorporate revised, forward looking targets for each of the 2013 categories. It should also identify a set of additional new targets, for elements not previously included. (See Table 3 For targets achieved and recommendations) and Table 4 for in and 4 in the appendix for progress on objectives and recommendations.

I TABLE 2: LIST OF TARGETS IN BROADBAND PLAN 2013-2018

ITEM	DESCRIPTION	TIMELINE	RESPONSIBLE
Costing & Pricing	Agree cost-based lease pricing model and implement agreed wholesale price caps Agree Plan for review of the cost of acquiring spectrum licences	2013	NCC, Licensees NFMC, NCC
Funding & Investment	Agree Financial Incentives for achieving rollout targets Agree Funding Options for accelerating broadband Infrastructure rollout	2013	FMCT, NCC, MoFI, Licensees FMCT, NCC, USPF, Ministry of Finance

Driving Demand	Set up Public Access Points and ICT Training Centres Educate women on the use and benefits of ICT Interconnect all Internet Exchange Points Connect all universities Connect schools, colleges and hospitals Incentivise OEM sub $30 smart phone devices	2014	NITDA, USPF,DBI, State Govs FMCT, NCC, USPF NITDA, NCC GBB, NUC, FMCT, USPF State Govs, NCC USPF NCC, Local Manufacturers & Blackberry, Nokia, Samsung, Huawei, ZTE, etc.
Building Fibre Infrastructure	Build Metro fibre networks in all the major cities and state capitals Incentivise building of last mile wire line infrastructure to homes, estates, and commercial premises Extend international cable landing points to other coastal states	2014	Licensees, State Govs NCC, Licensees FMCT, NCC, Licensees
Building Fibre Infrastructure	Build Metro fibre networks in all the major cities and state capitals Incentivise building of last mile wire line infrastructure to homes, estates, and commercial premises Extend international cable landing points to other coastal states	2014	Licensees, State Govs NCC, Licensees FMCT, NCC, Licensees
Wireless Broadband Infrastructure Upgrade and Expansion Phase 1	All new cell sites to be LTE compatible Spread 3G to at least 50% of the population Complete Digital Dividend spectrum migration Release more spectrum for LTE	2014 2015	Licensees NCC, Licensees Licensees, NBC, NCC NFMC, NCC
Wireless Broadband Infrastructure Upgrade and Expansion	Spread 3G/LTE to at least 70% of the population	2017	Licensees, NCC

Phase 2			
Wireless Broadband Infrastructure Upgrade and Expansion Phase 3	Spread 3G/LTE to at least 80% of the population	2018	Licensees, NCC

Source: Nigeria Broadband Plan 2013-2019

4.2. Strategy for Broadband

The 2013 Plan included 11 subsections (4.2.1 to 4.2.11) which defined the broad parameters of the Strategy for Broadband. We have slightly reorganized these into 3 categories: (i) Infrastructure and Access, (ii) Policy and Regulatory Frameworks, and (iii) Demand and Utilization. (Relevant previous section #s are provided for cross-reference). We have also proposed some additional strategic objectives to expand the scope of the overall strategy.

In some cases, we have found that the structure and content of the previous document lacks a degree of cohesion. Some strategic goals are not addressed in this section, but are then raised in later portions of the Plan or the Roadmap. Some issues are raised several different times in various locations. We have attempted to add a degree of structure and consistency in the discussion here, and urge that the new Plan should be as coordinated as possible.

(i) Infrastructure and Access

This group of objectives deals with the supply of broadband infrastructure and services in the country, and the strategic approaches to ensuring universal broadband coverage and access.

- Define Served, Under-served and Unserved Areas (4.2.1):

  o These definitions should be revisited, in light of the levels of broadband access as of 2019. The Plan should highlight the size and scope of areas that fall under each (revised) definition, along with the proposed strategies for providing service in each.

- Ensure Resilient Submarine Cables (4.2.3):

- o There should be a review and update of the degree of inter-carrier recovery agreements established since the 2013 Plan, as well as new cable landing station projects and plans in locations other than Lagos.

- Promote Enabling National Infrastructure (4.2.4):

  - o This section of the 2013 Plan generally addressed the technology options and status for providing each layer of the national ICT infrastructure (national backbone, metropolitan area, last mile access). These should be reviewed and updated in the new Plan.

  - o On the national backbone, a concern was lack of interconnection across operators. This issue should again be reviewed, and if such interconnection remains unresolved, it should be a priority for the Government/regulator.

  - o The previous Plan also indicated that there was insufficient national and regional backbone capacity in some areas, as well as a lack of metropolitan fibre networks in many cities. Fully expanding national and metropolitan fibre backbone networks should again be a high priority for the new Plan.

  - o Regarding the Last Mile, the previous Plan focuses primarily upon the need for adequate spectrum allocation to allow for true wireless broadband (LTE/4G) services. (See spectrum discussion below). It also identifies the goal of increasing fixed broadband fibre links to homes and businesses, and notes that costs of Right of Way are one of the key challenges to wider deployment. These issues should be revisited in the new Plan, including the growing longer-term potential of even more advanced wireless (5G) options, as well as public WiFi, along with fixed fibre connections.

- Provide Required Investment (4.2.5):

  - o The previous Plan estimated that a total of US$2.0-billion *per year* would be required to fund all of the broadband infrastructure anticipated to achieve the Plan's objectives. It noted that some of these costs were driven by Right of Way and license fees, among others. The Plan proposed a more in-depth study of the potential costs and their variability. The new Plan should include a similar cost analysis, with detailed assumptions and alternatives.

  - o The Plan mentioned that most of the estimated costs would be provided by market sources, with some contribution from Government funds. The new Plan should include a review of the actual levels of investment and other spending by the private sector on broadband infrastructure and services over the previous 5 years. It should also provide a forecast of the amounts to be spent by different

parties under the new Plan, including allocations expected from the Universal Service Provision Fund.

- **Employ an Open Access Model for Network Infrastructure (4.2.8)**:

  - The 2013 Plan noted that there was a proliferation of fibre networks among the various operators throughout much of the country, although significant areas remained without coverage. These multiple networks, however, were typically not interconnected and lacked redundancy. The Plan therefore called for establishment of an Open Access Infrastructure sharing agreement among all operators. While the basic framework was in place, there was a need for Government to facilitate the full adoption of such infrastructure sharing. It will be important to review the degree of progress made on this goal.

  - In general, infrastructure sharing has the potential of accelerating the penetration of broadband services, by reducing costs of investment and operations, lowering barriers to entry, and increasing penetration in underserved areas.

  - The new Plan should actively promote infrastructure sharing beyond only fibre networks, to include sharing of both passive and active elements of mobile networks We recommend that the Plan call for the NCC to enact regulations that provide a framework for the sharing of active elements of a mobile network. This is particularly important in the case of national roaming in areas where basic telecommunications service is not available.

  - The New plan should equally promote sharing of infrastructure between the ICT sector and other sectors such as utilities, transport, Energy/ Power, Roads etc. ensuring better collaboration in development and more efficient use of resources. Additionally, it should encourage a "dig once" policy to reduce multiple laying of cables and duplication of infrastructure

- **Develop a National Fibre & Wireless Broadband Coverage Map (4.2.10)**:

  - The 2013 Plan recognized the importance of having up-to-date and accurate information and mapping of broadband network coverage throughout the country, and committed the Government to the immediate development of a GIS based telecoms infrastructure map. Regardless of the degree to which this has been achieved to date, such maps need to be fully updated and maintained current as an essential goal and tool for the new Broadband Plan. These maps should also be easily accessible to aid planning of the sector

(ii) Policy and Regulatory Frameworks

This category addresses the Government's role as policy maker and regulator in promoting the objectives of the Broadband Plan.

- Develop Clear Policy, Regulation, and Roles for the Government (4.2.2):

  o This section of the 2013 Plan identified some general areas where the Government's role should be enhanced to promote development of broadband. Primarily, it called for a review of the 2003 Communications Act, to update it to address broadband issues and ICT infrastructure in general. If this review and revision has not been completed, it should be an immediate priority of the new Plan.

  o Other goals in this section involved broad principles of collaboration among different levels of Government, building Smart Cities, and working with the private sector. Such general goals are worthy, but do not necessarily lend themselves to specific strategic actions. It does give the example of ongoing collaboration on Rights of Way, which represents an important initiative which should be emphasized (see below). The new Plan should aim to highlight similar actionable policy goals wherever possible.

- Critical National Infrastructure and Cyber Security (4.2.6):

  o This section addressed two key concerns relating to network security issues: physical attacks and sabotage, and cyber or virtual threats. It recognized the critical nature of ICT infrastructure and the vital importance of reducing and eliminating these threats. These concerns have only grown more important over the past five years. See the discussion under Section 2 above.

  o The 2013 Plan called for the Government to enact a comprehensive Cyber Security Law. If such a Law has still not yet been adopted, this should be a high priority for the new Plan. Even if a Cyber Security law has been enacted, it should be reviewed and updated to address the evolving cyber security challenges.

  o In most countries, the national governments in recognizing the importance of broadband infrastructure have taken steps to protect them by designating them as critical national information infrastructure. In the light of this, we recommend that Nigeria should do the same, and assure that adequate security measures are adopted. Under the previous Plan, a Critical Infrastructure Protection Act was proposed: this should be reviewed and implemented if it has not already been adopted.

- The previous Plan also encourages the establishment of a team of experts to detect and respond to cyber threats. This seems to be an insufficient directive, and should be made an explicit element of the Government's cyber security policy, to establish a permanent office or division within the national security or regulatory agency, focused exclusively on monitoring and enforcing cyber security threats.

- Optimise Spectrum Utilisation (4.2.7):

  - Under the 2013 Plan, the Government was to undertake a strategy to reallocate and reassign spectrum, to increase available spectrum to support wireless broadband services. The status of all spectrum allocation must be fully reviewed, and a comprehensive, forward-looking plan should be adopted under the new strategy, including spectrum for new 5G and other broadband services.

  - The date for migrating from analogue to digital TV broadcast is still unclear. This was supposed to occur in 2015. Considering the spectrum that will be freed once digital migration is achieved, it is important that the Federal Government work towards a certain date to see this becomes a reality for Nigerians. This should be addressed by the new Plan.

- Provide Transparent Costs and Capped Pricing (4.2.9):

  - The 2013 Plan calls for the regulator to undertake a cost modelling process to support fair and transparent pricing, particularly for infrastructure sharing. This was to be completed by the end of 2013. It also recommended considering adoption of a price-cap plan based on the cost analysis. This is still an important goal to enable an effective infrastructure sharing regime, and should be reviewed and strengthened.

- Regulation of Rights of Way (NEW):

  - Although the 2013 Plan did highlight Right of Way as an important challenge, it did not explicitly include this issue among the Goals and Objectives of this section. We feel it is important enough to highlight separately.

  - Presently in Nigeria, the Right of Way (RoW) charged by the various state governments for the use of land within the state for siting telecommunications infrastructure is not uniform. While RoW charges in some states may be less in comparison to other states, nonetheless, an operator desiring to achieve national coverage will be forced to pay different RoW charges to each of the state government in Nigeria, which the retail price for this telecommunications service

is unfortunately passed on the end-users of this service. Additionally, this RoW charges puts the operator in a precarious economic situation as a failure to pay, inevitably means that the operator may not be able to provide telecommunications services within the designated area, which in turn means that the operator is unable to generate a revenue as a result of not being able to provide telecommunications services.

- o We understand that the Federal Government (FG) has published a draft RoW policy that seeks to make these charges uniform across the various state government of Nigeria, however some states are yet to embrace this initiative. Our recommendation is that FG should as a matter of priority continue to engage state governments to ensure that this policy becomes a reality. Uniformity in RoW charges enables the operator to properly take into consideration reasonable expenses it is likely to incur in network infrastructure deployment and service expansion, and as a basis for carrying broadband services to unconnected areas.

- Regulatory support for market competition (NEW):

  - o While we recognize that existence of competition provisions of the Nigerian Communications Act 2003 (the Act) and the Competition Practices Regulations 2007 (The Competition Regulations) and the regulatory tools available to the Commission to protect and ensure competition in this the broadband ecosystem, these tools can be strengthened.

  - o The Commission should regularly conduct a dominance assessment in the broadband market to ascertain the operator(s) with market and what ex ante remedies may be applied to mitigate the abuse of such market power.

  - o Disclosure of pertinent information by broadband providers is relevant to consumers and key to market competition. The Commission should ensure that this is the case in every situation where consumers subscribe for a broadband service.

- Taxation and fiscal policy (NEW):

  - o The new Plan should more explicitly address concerns regarding taxation of broadband ICT equipment, services, and operations, at all levels. Although it is appropriate for the Government to obtain tax revenue from telecom operators, it is also important to ensure that such taxes are not excessive, and do not hamper incentives for investment, or drive up prices for low-income users. The Government should conduct a thorough review of its fiscal policies relating to this sector, and determine the financial impact, on the industry, on end users, and on the Government itself, of reducing various taxes and levees.

(iii) Demand and Utilization

The 2013 Plan included only one brief component in this chapter related to Broadband Demand and Utilization (subsection 4.2.11, "Drive Demand through Digital Advocacy, Literacy and Inclusion"). Later in the document, Chapters 7 and 8 do provide more extensive proposals on support for adoption and utilisation, and content development. However, the emphasis within this Chapter, which purports to describe the full scope of the Strategy, is quite limited. We propose to highlight demand-related objectives somewhat more prominently in this section. This would include the following objectives, which are generally linked to the measures in Chapters 7 and 8:

- Affordability:

    o The Government should review trends in affordability of ICT devices, services, and applications, and adopt measures to ensure such technologies are affordable to all citizens.

- Digital Literacy:

    o Programs should be introduced and expanded to promote digital literacy, especially among those unfamiliar with broadband ICTs, such as in underserved areas where new access becomes available. Public awareness, training, adoption, and utilization programs should be incorporated in all policies that promote expansion of broadband access.

- Gender Equality in ICTs:

    o We recommend designating part of the Universal Service Provision Fund (USPF) to help close the digital gender divide. This funding could be targeted to ensure connectivity and access, affordable devices, digital literacy, relevant content, and other resources of specific value and help to women, to ensure their full participation in the benefits of broadband.

- Local Content and Skills:

    o Programs should be adopted at the national and local government levels to support development of locally relevant ICT content and applications, as well as skills among the local population to develop apps, and ICT-based enterprises.

4.3. The Roadmap

This section of the original Plan contains an extensive chart (Roadmap) of actions to be taken, timelines, and responsible parties. It is noteworthy that many of the specific items in the table

are not otherwise addressed in the previous sections regarding the Strategy and its goals and objectives.

It is important to conduct a thorough review of the progress made on each of these items, and the steps taken by the identified responsible parties.

In developing the new Plan, greater attention should be paid to aligning this Roadmap document with the goals and objectives, and to fleshing out the specifics of each task in greater detail. These should be incorporated in the Implementation Plan.

4.4. The Broadband Progression Chart

The diagram depicts the progression of broadband technology deployment over time. It should be updated to take account of technology changes and the new targets of the strategy.

4.5. KPIs and Performance Monitoring

This section of the 2013 Plan contains a representative KPI monitoring Table, with 7 proposed indicators, to be monitored and recorded quarterly following adoption of the Plan. It states that the Broadband Council will monitor and report on these and other indicators.

Such reports (to the extent they have been made) should be closely reviewed as part of the process of developing the new Plan – and the methods, and effectiveness of the monitoring processes should be assessed as well. A new, more comprehensive KPI table should be developed to reflect the appropriate indicators for the new Plan, along with more precise and formal procedures for tracking and reporting the relevant data.

* TABLE 3: PREVIOUS TARGETS SET AND THE DEGREE TO WHICH THEY HAVE BEEN ACCOMPLISHED** SEE APPENDIX FOR ORIGINAL

SET TARGET	Plan 2013-2018 (Target or timeline)	Status of targets	Suggested changes for next plan
Broadband target for cities (broadband availability, wired)[4]	16% (2018)[5]	Target not achieved.	The lack of uniformity and arbitrariness in Right of Way (RoW) charges is an impediment to broadband penetration in Nigeria.[6] The Federal Government and the 35 State Governments of Nigeria should work to adopt the National Economic Council's (NEC's) recommendation of N145 per metre.
Broadband target for cities (broadband penetration, wired)[7]	5.3 (2018)[8]	Target not achieved.	The Federal Government and the 35 State Governments of Nigeria should work to adopt the National Economic Council's (NEC's) recommendation of N145 per metre.
Broadband national target (broadband availability, wireless)[9]	80% (2018)[10]	Target not achieved.	The Federal Government and the 35 State Governments of Nigeria should work to adopt the National Economic Council's (NEC's) recommendation of N145 per metre.
Broadband national target (broadband penetration, wireless)[11]	42% (2018)[12]	Target not achieved. Only 33.13% penetration rate as at	The Federal Government and the 35 State Governments of Nigeria should work to adopt the National Economic

[4]Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018' [WWW document] URL https://www.researchictafrica.net/countries/nigeria/Nigeria_National_Broadband_Plan_2013-2018.pdf (visited 2019, July 15), p. 57.

[5] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 57.

[6] Prince Osuagwu, Naomi Uzor. (2018, May 30). 'Why Nigeria's 5-year broadband plan is failing' [WWW document] URL https://www.vanguardngr.com/2018/05/nigerias-5-year-broadband-plan-failing/ (visited 209, July 15).

[7] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 57.

[8] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 57.

[9] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 57.

[10] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 57.

[11] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 57.

[12] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 57.

		May 2019[13]	Council's (NEC's) recommendation of N145 per metre.
Broadband targets for communities (community access venue, wired or wireless hotspots[14]	65% (2018)[15]	Target not achieved.	The Federal Government and the 35 State Governments of Nigeria should work to adopt the National Economic Council's (NEC's) recommendation of N145 per metre.
(Wireless Broadband Infrastructure Upgrade and Expansion Phase 1) Spread 3G/LTE to at least 50% of the population[16]	2015[17]	Target not achieved.	Release spectrum for LTE rollout. The Federal Government and the 35 State Governments of Nigeria should work to adopt the National Economic Council's (NEC's) recommendation of N145 per metre.
(Wireless Broadband Infrastructure Upgrade and Expansion Phase 2) Spread 3G/LTE to at least 70% of the population[18]	2017[19]	Target not achieved	Release spectrum for LTE rollout. The Federal Government and the 35 State Governments of Nigeria should work to adopt the National Economic Council's (NEC's) recommendation of N145 per metre.
(Wireless Broadband Infrastructure Upgrade and Expansion Phase 3) Spread 3G/LTE to at least 80% of the population[20]	2018[21]	Target not achieved.	Release spectrum for LTE rollout. The Federal Government and the 35 State Governments of Nigeria should work to adopt the National Economic Council's (NEC's) recommendation of N145 per metre.

[13] https://www.ncc.gov.ng/stakeholder/statistics-reports/industry-overview#view-graphs-tables-6
[14] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 57.
[15] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 57.
[16] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 70.
[17]Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 70.
[18] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 70.
[19] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 70.
[20] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 70.
[21] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 70.

5. Roles for Government and Other Stakeholders

5.1 Federal, State and Local Government

The stakeholder roles in the broadband plan are still relevant. However, it is important to review the extent of collaboration in implementation between the various stakeholders and address overlaps and gaps in the new plan. In particular, there should be clear guidelines on industry structure and responsibilities of the various entities and improved collaboration between the Federal, State and local governments to address ROW concerns which threatened to derail investments in provision of broadband access. Multiple taxation, security of broadband infrastructure and the phenomenon of "Area boys" need to be addressed across government levels with closer cooperation having therein.

5.2 The Legislature

The Legislature has a significant role to play in supporting broadband growth in the country by enacting new and relevant legislations that support the policy goals, plans and incentives for growing broadband in Nigeria. Complementary laws and enforcement to support data protection, critical infrastructure, harmonised rights of way and cybersecurity

5.3. The National Assembly

National Assembly must continue to put broadband at the centre of Nigeria's Communication Strategy. It is unclear if the Communications Act 2003 identified for review by the Senate was updated to align with the dynamic broadband space. There is an opportunity to do so with the new plan. In addition, the National Assemble must look at passing laws to support the fast deployment of broadband and its adoption in close collaboration with the legislature and the Federal Ministries.

5.4 The Regulator

The new plan must highlight the role of the National Communications Commission (NCC). It could be assigned the primary responsibility for overseeing and reporting on implementation of the new Plan, and establishment of formal and regular reporting metrics and standards. The Regulator must transition to a 5th generation one adopting a more collaborative style of regulation grounded in evidence in line with newly adopted ITU GSR best practice guidelines and principles. The Regulator should also ensure openness of data.

5.5. The Private Sector

The private sector's role must extend to all current and emerging players in the broadband ecosystem including existing industry groups. Private sector's input should be sought at each stage of the planning to the implementation phase to build on existing contribution by improving the quality of existing Internet service, extending coverage to new areas and connecting new users to the broadband experience. Research and evidence would be central to building a robust plan with actionable targets. Private sector players should be supportive of this process ensuring timely and accurate sharing of data

5.6. Civil Society

Civil society organisations should continue to hold all stakeholders accountable ensuring the views of consumers and marginally excluded groups are accounted for in both the planning and execution of the broadband plan. CSOs will be critical in the collection of data and supporting research particularly on the digital gender gap, affordability and data on those in unserved or underserved areas. Their role should be amplified in awareness creation of the benefits of broadband services to improve adoption, privacy and data protection will be key.

5.7. Consumers, Large and Small
 To augment the role of private sector and civil society, Large corporate broadband consumers e.g. Banks, Larger development agencies and smaller consumer groups should be engaged to elicit first hand feedback on services and how these could be improved.

6. Policy and Regulatory Priorities

Section 6 of the 2013 Plan recognized the rapidly changing international telecommunications policy and regulatory environment, in response to challenges posed by the development of broadband networks and services. It sought to position Nigeria as a world leader, by adopting and updating policy and regulatory priorities to align the sector with emerging global best practices. These goals remain important, and should be reviewed and advanced under the new Broadband Plan. Most of the policy goals discussed in this section have been raised in the previous sections as well. Key elements are summarized in the following subsections.

6.1 Administrative Policies

The 2013 Plan called for several key administrative and institutional steps to improve the regulatory system in Nigeria. It proposed merging of regulatory agencies for more efficient regulation. It stated that the Government should review all ICT laws to ensure that they are

consistent with the Broadband Plan and objectives. It also reiterated the need to enact a cyber security law. This provision also emphasized the need for cooperation among government at all levels, and with the private sector.

In addition, in this section, the Plan indicated that the Ministry of Communication Technology should be responsible to monitor implementation of the National Broadband Plan and provide regular reports.

It is unclear how much, if any, of these objectives have been accomplished. They remain important for the successful execution of the new Broadband Plan. Monitoring of the Plan's implementation, however, might be more effectively assigned to the Nigerian Communications Commission.

6.2 Demand-Side Policies

The 2013 Plan called for several key policy steps related to broadband demand-side objectives. They included development of on-line Government services and information; focus on cyber security, privacy, and e-commerce laws; and initiatives to promote digital literacy, including efforts to translate web content into local languages.

As discussed above, the new Plan should further highlight and expand its focus on demand-side policies, programs, and initiatives.

6.3 Supply-Side Policies

Key supply-side policy objectives of the previous Plan included the intention to promote broadband infrastructure investment, such as by reducing import duties and levies and otherwise facilitating technology imports; streamlining of approvals for Rights of Way and Base Station building permits; and classification of ICT networks as critical infrastructure subject to priority protection. As discussed in previous sections, these are all still important elements of the new Broadband Plan, and should be highlighted and implemented.

6.4 Regulatory Principles

The 2013 Plan emphasized that Nigeria's telecom regulatory regime should remain fully liberalized and technology-neutral, without barriers to entry and based on Open Access principles, and recognizing that networks built on public rights of way should serve public benefits. Key functions for the regulator that were highlighted included maintaining a level playing field, developing fiscal incentive plans, monitoring anti-competitive behaviour, and optimizing spectrum use.

Each of these items should again be incorporated and emphasized in the new Broadband Plan, to reinforce the critical role that competitively neutral, enabling regulation must play in promoting broadband infrastructure investment and service delivery.

7. Final Recommendations and Conclusion

There were several additional sections in the 2013 Broadband Plan, which provide further detail on demand side programs and local content (Chaps 7-8), immediate tactical and strategic options to address short-term initiatives, and the structure of the Implementation Plan (Chap 9). These chapters addressed specifics of follow-through and implementation of the Broadband Plan, which should also be reviewed and updated, as appropriate, when the new Plan is assembled.

A key observation with respect to this review and the development of the next Nigeria National Broadband Plan is to recognize that, despite containing a wealth of worthy and important objectives, plans, directives, policies, and initiatives, a large portion of these goals were not achieved during the 5-year period addressed by the Plan. Moreover, there has also apparently not been extensive reporting or monitoring of that Plan's goals and activities designed to implement them. While Nigeria has continued to move forward in terms of broadband penetration and utilization, there remain many areas in which broadband development has been constrained, and the related benefits and opportunities have been unrealized, and this can largely be attributed to the incomplete adoption and implementation of the 2013-2018 National Broadband Plan.

In designing the follow-up Plan for 2019-2024, therefore, it will be especially important to learn the key lessons from the previous Plan. On the level of objectives, targets, policies, and plans, these elements should be updated to reflect the evolving broadband ICT environment, as discussed extensively throughout this document. Many of the needed components are similar to those in the previous Plan, which may not have been fully implemented, while others reflect changing and expanding goals and priorities.

In particular, it will be important to ensure that the new Broadband Plan aligns with the Government's more comprehensive strategies and goals for the economy as a whole, as incorporated in the Vision 2020 and the Economic Recovery and Growth Plan (ERGP) and policies. With the digital revolution opening new doors to a quantum leap of human civilization, the review of the BBP for Nigeria provides an important opportunity for evolving the necessary ICT landscape as a development pathway for societal and economic reconfigurations enshrined in the Federal Government of Nigeria's Economic Recovery Growth Plan (ERGP) and the Sustainable Development Goals (SDGs). The BBP brings a positive potential benefit to the attainment of the

ERGP and the SDGs as it could if well developed and implemented enhance prosperity, social inclusion, environmental sustainability and good governance.

The pathways for the ERGP and the SDGS can only be developed, shaped and governed by a plan that captures robust ICT infrastructure, expanded and enhanced BB ICT access, affordability and utilization in Nigeria. For example, the ERGP hopes to create "ICT-enabled activity to GDP by an estimated 10% and create 2.5 million new jobs between 2017 and 2020". A good ICT infrastructure that is accessible and affordable serves as the cornerstone for creating an interdependent system and activities that will help to manage and achieve this target.

A robust ICT infrastructure is at the center of the attainment of the ERGP and the SDGs and it requires a holistic approach capturing the dynamics involved around network technologies, digital applications, digital utilization, digital inclusion, cyber security, public services, economy and employment. The digital revolution including technologies such as virtual and augmented reality, artificial intelligence and 3D printing will also be enhanced by a robust broadband ICT landscape in Nigeria serving as the instrument to resolve technology challenges and a driver of the transformations that our society and economy needs. To move in this direction, the BBP must be developed and implemented urgently as we have used the last 5 years (2013-2018) to learn how to manage and positively use ICTs, the opportunity to get the fundamentals right now stares us in the face.

Clearly the human capital development component of the ERGP as well as others will benefit from an ICT ecosystem that is capable of building a national economy that creates human prosperity and secures wealth creation, poverty reduction, fair distribution and inclusiveness. While the objectives in the ERGP and those of the SDGs will be led by different agencies of government within different contexts and domains of actions, a robust ICT landscape enables and improves human capacities and capabilities for delivering and ensuring that the ERGP is met by the year 2020 and the SDGs by 2030.

On infrastructure, Nigeria has the opportunity to make further advancements in driving down the costs of network operation and seeing those savings be passed on from operators to consumers in lower data costs. The Federal Ministry of Communications has indicated that as of 2017, Nigeria had less than 50,000 base stations and urgently needs at least seventy thousand (70,000) to eighty thousand (80,000) telecommunication base stations to substantially cover the

broadband needs of the nation.[22] Infrastructure sharing is very instrumental in closing the gaps particularly in rural areas. States should encourage the ICT Regulator and Ministry to broaden the definition of infrastructure sharing to cover sharing with utilities, railroads, oil and gas pipelines to fast track affordable access.

Right of Way bottlenecks across states need to be addressed urgently with better harmonized rates supported by governors. ICT infrastructure should be considered for similar right of way access with utilities such as electricity and water as they are essential for development. This means states should refrain from taxing investment infrastructure but rather focus on the revenues such infrastructure brings. The Federal Ministry of Communications has indicated it will be reviewing all existing Legislations, Acts, Institutional and Regulatory Framework, particularly the National ICT Policy and the National Communications Act 2003 ensuring ROW is adequately addressed. In order to work efficiently implementation would have to be backed by all states. Progress should be made on a harmonized rights-of-way policy, guidelines on active infrastructure sharing, leveraging TV white spaces and community networks for mobile broadband, and making non-conflicting unlicensed spectrum use a possibility to support community networks and local solutions to closing the digital divide.

Contributions to the Universal Service Provision Fund needs to be broadened and the fund truly ring-fenced to speed up financing of broadband infrastructure, digital skills training, relevant content and entrepreneurship. The fund should explore new partnerships with private sector and NGOs to support innovations to rapidly close the digital divide

Conclusion

The Federal Ministry of Communications and the Committee it sets to develop the new Plan must seriously consider the experience of the previous Broadband Plan following its adoption, and seek to design the new plan to address the shortcomings in organizational, institutional, and implementation factors that will determine the extent of its success. In doing so they must seek a thorough evidence based review of all the targets and objectives. We recommend that the Nigeria Communications Commission be assigned primary responsibility for overseeing and reporting on implementation of the new Plan, and establishment of formal and regular reporting metrics and standards. There should be annual check-in forums to discuss progress and challenges among all stakeholders, and public release of all relevant progress reports and data. Finally, in adopting the new Plan, the Government should ensure that its targets and components are realistically achievable within the set time-frames, with the highest priority objectives given precedence.

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[22] https://www.ncc.gov.ng/stakeholder/media-public/news-headlines/201-we-need-80-thousand-base-stations-for-smart-nigeria-prof-u-g-danbatta

APPENDIX
ORIGINAL TARGETS (*FROM PAGE 57 OF BROADBAND PLAN* 2013-2018)

Table 5: Broadband Targets for Cities

Target Type	Medium	Current (2013)	Short Term Targets (2015)	Medium Term Targets (2018)	Long Term Targets (2020)
Availability (Coverage)	Wired	1.5%	10%	16%	25%
Penetration (Usage)	Wired	0.5%	3.3%	5.3%	8.3%

Table 6: Broadband National Targets

Target Type	Medium	Current (2013)	Short Term Targets (2015)	Mid Term Targets (2018)	Long Term Targets (2020)
Availability (Coverage)	Wireless	35%	60%	80%	95%
Penetration (Usage)	Wireless	6%	21%	42%	76%

Table 7: Broadband Target for Communities

Target Type	Medium	Current (2013)	Short Term Targets (2015)	Mid Term Targets (2018)	Long Term Targets (2020)
Community Public Access Venues	Wired or Wireless Hotspots	15%	25%	65%	100%

Table 4: STATUS OF OBJECTIVES AND SUGGESTED CHANGES

	Plan 2013-2018 (Target or timeline)	Achievements/ Progress made	Suggested changes for next plan
(Policy & Regulation) Define the open access framework and secure ROW Waivers with states[23]	2013[24]	Objective not achieved	The Federal Government and the 35 State Governments of Nigeria should work to adopt the National Economic Council's (NEC's) recommendation of N145 per metre. Also, the Nigerian Communications Commission (NCC) should apply the financial support to infrastructure companies (InfraCos) that have met their roll-out targets. The Federal Government should also provide federal incentive to broadband communication service providers by classifying overhead expenses associated with broadband services provision as approved deductible expenses for Annual Operating Levy (AOL) computations.
(Policy & Regulation) Enable expedited ROW permits for the rapid rollout of base stations[25]	2013[26]	Objective not achieved	The Federal Government and the 35 State Governments of Nigeria should work to adopt the National Economic Council's (NEC's) recommendation of N145 per metre.
(Policy & Regulation) Declare Critical National Infrastructure[27]	2013[28]	Objective not achieved	The National Should either amend the National Communications Act or the Cybercrime Act to grant a higher level of protection to Telecoms Infrastructure as critical national assets. Or in the alternative enact a

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[23] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[24] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[25] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[26] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[27] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[28] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

			new law that achieves this purpose.
(Policy & Regulation) License new operators as required[29]	2013[30]	Objective not achieved	NCC should commence the process for licensing new operators
(Enabling Infrastructure) Interconnect National and Regional Long-Distance Operators[31]	2013 - 2014[32]		
(Enabling Infrastructure) Incentivise rollout of fibre infrastructure[33]	2013[34]	Target not achieved and ongoing. However, NCC has implemented the BTRAIN (Backbone Transmission Infrastructure), USPF project and granted approval to NITel to deploy 4GLTE since 2016.[35]	NCC should apply the financial support to InfraCos that have met their roll-out targets. The Federal Government should also provide federal incentive to broadband communication service providers by classifying overhead expenses associated with broadband services provision as approved deductible expenses for Annual Operating Levy (AOL) computations
(Enabling Infrastructure) Agree 3G Rollout Target implementation with operators[36]	2013[37]		

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[29] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[30] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[31] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[32] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[33] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[34] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[35] Umar Garba Danbatta. (2016, November 9). 'The National Broadband Plan as a Catalyst for Social and Economic Transformation - The NCC Mandate' [WWW document] URL https://www.ncc.gov.ng/documents/763-facilitating-broadband-penetration-for-social-and-economics-transformation/file (visited 2019, July 16), p. 15.

[36] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[37] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

(Enabling Infrastructure) Publish plan for freeing up more Spectrum for LTE rollout [38]	2013[39]	Objective not achieved, although NCC conducted a stakeholder's forum on Rural Connectivity using TVWS in March 2019.[40]	NCC should assign and allocate additional spectrum to new and existing operators required for LTE rollout.
(Enabling Infrastructure) Conduct spectrum licensing for LTE in 2.5GHz, and 2.6GHz bands[41]	2013	Objective achieved, although some of the licensees are yet to fully rollout services especially in the North East.[42]	Ongoing monitoring of the Open Access Model by the Federal Ministry of Communications Technology and NCC to ensure that its objectives as regards broadband penetration are met.
(Enabling Infrastructure) Release spectrum on the sub-40GHz bands for mobile backhaul[43]	2013 - 2014[44]	Objective not achieved.	NCC to commence steps to release more spectrum for mobile backhaul.
(Costing & Pricing) Agree cost-based lease pricing model and implement agreed wholesale price caps[45]	2013[46]	Objective achieved.[47]	

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[38] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[39] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[40] https://www.ncc.gov.ng/stakeholder/media-public/news-headlines/496-ncc-holds-stakeholders-consultative-forum-on-television-white-space-set-to-harness-television-white-space-tvws-for-broadband-penetration

[41] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[42] Umar Garba Danbatta. (2017, February 14). 'EVC's Report To the 82nd Meeting of The Board of Commissioners of the Nigerian Communications Commission' [WWW document] URL https://www.ncc.gov.ng/docman-main/speeches/761-evc-s-report-to-the-82nd-meeting-of-the-board-of-commissioners-ncc/file (visited 2019, July 16), p. 2.

[43] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[44] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[45] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[46] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 68.

[47] Umar Garba Danbatta. (2017, February 14), supra, p. 3

Costing & Pricing) Agree Plan for review of the cost of acquiring spectrum licenses[48]	2013[49]	Objective not achieved.	
(Funding & Investment) Agree Financial Incentives for achieving rollout targets[50]	2013[51]	Stated on the Open Access Broadband Model, but do not know the state of implementation.[52]	NCC should apply the financial support to InfraCos that have met their roll-out targets. The Federal Government should also provide federal incentive to broadband communication service providers by classifying overhead expenses associated with broadband services provision as approved deductible expenses for Annual Operating Levy (AOL) computations
(Funding & Investment) Agree Funding Options for accelerating broadband infrastructure rollout[53]	2013[54]		
(Driving Demand) Set up Public Access Points and ICT Training Centres[55]	2014[56]	Objective achieved and ongoing. Several projects such as the BTS project, RUBI pilot and establishment of e-learning platforms & ICT infrastructure have been executed by the NCC	

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[48] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.
[49] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.
[50] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.
[51] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.
[52] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69
[53] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.
[54] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.
[55] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.
[56] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.

		across Nigeria.[57]	
(Driving Demand) Educate women on the use and benefits of ICT[58]	2014[59]	Objective achieved and ongoing in partnership with private sector[60]	
(Driving Demand) Interconnect all Internet Exchange Points[61]	2014[62]	Not sure	
(Driving Demand) Connect all universities[63]	2014[64]	Objective not achieved, ongoing	
(Driving Demand) Connect schools, colleges and hospitals[65]	2014[66]	Objective not achieved, ongoing	
(Driving Demand) Incentivise OEM sub $30 smart phone devices[67]	2014[68]	Objective not achieved.	

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[57] Umar Garba Danbatta. (2016, November 9). supra, p. 19.

[58] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.

[59] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.

[60] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.

[61] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.

[62] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.

[63] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.

[64] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.

[65] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.

[66] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.

[67] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.

[68] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 69.

(Build Fibre Infrastructure) Build Metro fibre networks in all the major cities and state capitals[69]	2014[70]	Objective not achieved, ongoing	Ongoing monitoring of the Open Access Model by the Federal Ministry of Communications Technology and NCC to ensure that its objectives as regards broadband penetration are met.
(Build Fibre Infrastructure) Incentivise building of last mile wire line infrastructure to homes, estates, and commercial premises[71]	2014[72]	Objective achieved, ongoing	NCC should apply the financial support to InfraCos that have met their roll-out targets. The Federal Government should also provide federal incentive to broadband communication service providers by classifying overhead expenses associated with broadband services provision as approved deductible expenses for Annual Operating Levy (AOL) computations
(Build Fibre Infrastructure) Extend international cable landing points to other coastal states[73]	2014[74]	Objective not achieved.	NCC to license new submarine cable operators or support existing submarine cable operator to build landing point in other coastal states
(Wireless Broadband Infrastructure Upgrade and Expansion Phase 1) All new cell sites to be LTE compatible[75]	2014[76]	Not sure	

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[69] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 70.
[70] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 70.
[71] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 70.
[72] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 70.
[73] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 70.
[74] Presidential Committee on Broadband. (n.d). 'The Nigerian National Broadband Plan 2013 – 2018, supra, p. 70
[75] Ibid.
[76] Ibid.

(Wireless Broadband Infrastructure Upgrade and Expansion Phase 1) Complete Digital Dividend spectrum migration[77]	2015[78]	Objective not achieved, ongoing under the supervision of the National Broadcasting Commission	
(Wireless Broadband Infrastructure Upgrade and Expansion Phase 1) Release more spectrum for LTE[79]	2015[80]	Objective not achieved.	NCC to commence steps to release more spectrum for LTE rollout.

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[77] Ibid.
[78] Ibid.
[79] Ibid.
[80] Ibid.