Response to the Publication of Draft Information Memorandum for the Auction of 2 x 100MHz in the 3.5GHz Spectrum Band

A submission to the Nigerian Communications Commission by the Association of Progressive Communications

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The Executive Vice Chairman
Nigerian Communications Commission
Plot 423 Aguiyi Ironsi Way,
Maitama, Abuja.
(3.5GHz Spectrum Licence)

Attention: Head - Spectrum Administration/ Chairman SG Auction Committee

E-mail: spectrumauction@ncc.gov.ng

Introduction

The importance of access to affordable broadband is now a commonplace insight since the outbreak of COVID-19. However, the pandemic has revealed something even more important for policy-makers and communication regulators; it has made clear that **inclusion** must be a top priority if the Internet is not to become an amplifier of inequality.

Communication technology is a natural amplifier of human activity. Those with affordable access to communication move forward while those without are quite literally invisible to the connected. Broadband networks are delivering ever greater utility, from education to commerce to social safety nets with the unfortunate side effect that the social and economic gap between those with affordable access and those without increases by default. The inescapable conclusion from this is that inclusiveness, making sure everyone has affordable access to broadband, must be a pre-eminent priority of policymakers.

The purpose of this submission is to encourage NCC to adopt “use-it-or-share-it” provisions in the context of the upcoming spectrum auctions. The impact of such provisions will be to increase digital inclusion by unlocking innovation in service delivery in underserved regions by wireless internet service providers and community networks in Nigeria.

This submission has been prepared by the Association for Progressive Communications.

Equitable Access to Spectrum

While the scarcity of spectrum as a natural resource is a fundamental principle of spectrum management, it is a principle that is more applicable to urban areas than rural areas, where large amounts of spectrum often remain unused. As spectrum licenses for mobile services are typically national in scope, the business models of national mobile operators are naturally oriented towards investment in infrastructure in more densely populated urban areas where the customer base is larger and income levels are higher. The result is that spectrum in many rural areas lies unused, even though assigned to an operator[1]. This is particularly true of a band like 3.5GHz which is being auctioned with a high reserve price.

For exclusively-licensed spectrum, a property-rights based approach that guarantees exclusivity to the license holder is the international norm for the IMT frequency bands. This model has enabled highly successful investment in national mobile telephony (and now mobile broadband) networks all over the world. However, as demand for spectrum has exceeded its administrative availability, the cost of access to IMT spectrum has risen dramatically. While this may be a boon to governments who see the telecom sector as a critically-needed influx to the treasury, the rise in the cost of spectrum has had the unintended consequence of establishing an insurmountable barrier to smaller operators who are the likely source of innovation needed to bridge the digital divide.

The Challenge of Rural Access

Liberalisation and privatisation of the telecommunications market has led to massive investment in telecommunications infrastructure leading to the unprecedented spread of telecommunications networks around the world, not to mention the growth of the internet. But the growing value of "being connected" combined with slowing growth in poor and rural areas suggest that specific provisions need to be made to incentivise and lower the cost of access to the unserved and under-served. The GSMA have summed up the issue succinctly in their policy paper on Enabling Rural Access[2]:

> *"The lack of coverage in rural areas is the consequence of a basic economic challenge: deploying infrastructure in remote areas can be twice as expensive, while revenue opportunities are as much as ten times lower, a combination that deeply affects the business case for MNOs to deploy infrastructure."*

While the application of universal service funds in some countries have been able to mitigate this problem by subsidising the capital costs of rural deployments by MNOs, the operational costs in many cases still do not match the income levels in rural areas. Thus, even when coverage obligations are imposed on operators, it may yet not result in active service. It is hard not to conclude that there is now an urgent need to introduce alternative business models and regulation to ensure affordable service delivery in rural and remote areas.

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[1] Innovations in Spectrum Management: Enabling community networks and small operators to connect the unconnected. Authors: Stephen Song, Carlos Rey-Moreno, Michael Jensen. Published by Internet Society. 2019. Available at https://www.internetsociety.org/resources/doc/2019/innovations-in-spectrum-management/

[2] Enabling Rural Coverage: Regulatory and policy recommendations to foster mobile broadband coverage in developing countries. GSMA 2018 .https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2018/02/Enabling_Rural_Coverage_English_February_2018.pdf

It is worth noting that the cost of LTE and 5G base station technology has plummeted in recent years, with a wide ecosystem of manufacturers now producing LTE and 5G equipment for a fraction of the cost of what radio equipment cost even ten years ago. If affordable LTE and 5G technologies are within the financial reach of smaller operators, then all that holds them back is access to spectrum. Given that spectrum which is in high demand in urban centres often remains unused in rural areas, there is an opportunity for NCC to establish a win-win scenario with spectrum auctions that guarantee protections for successful bidders while unlocking spectrum in areas where primary license holders have little interest.

Lack of Coverage Obligations

In order to address the reluctance of operators to invest in rural areas, particularly when there is a concern to recoup high investment costs in spectrum licenses, spectrum licenses often come with coverage obligations that ensure operators will commit to providing access in underserved and rural areas. While it is true that such provisions have had mixed success in their implementation around the world, we note with concern that the Draft Information Memorandum does not appear to include any mention of coverage obligations. This makes the introduction of use-it-or-share-it provisions in awarded spectrum licenses all the more urgent.

Enabling Digital Inclusion in the Spectrum Auction

We have already seen the economic value that can be unlocked when wireless technologies are made available through a combination of affordability and regulatory accessibility through license exempt regulation or WiFi. WiFi technologies are estimated to generate US$33 billion in economic value in Nigeria alone by 2025[3]. License exempt spectrum is the one avenue that small operators have to enter the wireless broadband market. Small operators have leapt to take advantage of improvements in WiFi technologies as both an access and a backhaul technology.

However, WiFi has distinct limitations, especially when trying to service more sparsely populated regions. The restricted power output of WiFi which enables its license exempt status also has the impact of significantly increasing the number of access points required to cover a given region. What a single LTE/5G base station can cover might require dozens or even hundreds of WiFi access points in order to offer the same coverage.

If action is not taken to empower small operators with access to broadband spectrum beyond license exempt frequencies, the divide between large and small operators is likely to grow as is the digital divide between the relatively-wealthy, connected urban centres and poorer rural regions.

Shared Spectrum

There is an opportunity to bridge the chasm that exists between expensive exclusive spectrum licensing and the license exempt ecosystem in the auction by introducing

[3] Economic value of Wi-Fi® forecast in Africa, Middle East, and India https://www.wi-fi.org/news-events/newsroom/economic-value-of-wi-fi-forecast-in-africa-middle-east-and-india Sept 2021

"use-it-or-share-it" provisions in the licenses that will be issued to winning bidders. Recognising that large amounts of licensed spectrum remain unused, especially in rural areas, regulators around the world have begun to implement shared spectrum regulation that continues to empower spectrum license holders while at the same time unlocking access to spectrum in areas where operators have no strategic interest. In the United States this has been implemented in the 3.5GHz band with the Citizens Band Radio Service (CBRS) which contains three tiers of access licensing ranging from license-exempt to exclusive use[4]. In the United Kingdom, the regulator (OFCOM) introduced a Local Access License[5] in 2019 which offers access to spectrum that has already been licensed to existing mobile network operators in locations where they are not using their spectrum. In the same year, the German regulator announced spectrum sharing in 3.7GHz and 3.8GHz[6]. In 2021, the Canadian regulator launched a consultation on a shared spectrum strategy to support rural and remote deployment in Canada[7]. The proposed strategy in Canada builds on the model developed by OFCOM. Each of these countries chose to attach specific "use-it-or-share-it" provisions to IMT spectrum licenses. All of the above suggests that now is the time to invest in provisions for shared spectrum regulation that can unlock affordable access for all Nigerians.

Right-to-Exclusivity vs Right-to-Protection-from-Interference

The key to opening up access opportunities lies in the framing of IMT spectrum licenses. Nation-wide spectrum licenses have historically provided a guarantee of exclusivity of spectrum access across an entire country. As such, any decision to share spectrum is then vested in the license holder who may not have significant incentive to share spectrum. Things began to change however in 2012 with the publication in the United States of a presidential report on *Realizing the Full Potential of Government-Held Spectrum to Spur Economic Growth*[8] which proposed that the right to exclusivity in spectrum licensing be transformed into a right to protection from interference. This subtle but profound change enables the regulator to implement spectrum sharing in a manner that preserves all the rights of the primary licensee but unlocks the potential of unused spectrum. An example of this kind of clause can be found in Section 4.2 of the OFCOM 800MHz and 2600MHz license[9] which states:

> *4.2 For the avoidance of doubt the Licences will not guarantee exclusive use of the spectrum awarded. In the future we may grant additional authorisations to allow the use of all, or part, of the spectrum, including the spectrum that is the subject of this Award Process. We would develop*

[4] FCC: Citizens Band Radio Service (CBRS) https://www.fcc.gov/wireless/bureau-divisions/mobility-division/citizens-band-radio-service-cbrs April 13, 2017

[5] OFCOM: Local Access Licence - Guidance document (2019) https://www.ofcom.org.uk/__data/assets/pdf_file/0037/157888/local-access-licence-guidance.pdf

[6] German Telecom Regulator awards 5G private network licenses in the 3.7GHz to 3.8GHz band https://techblog.comsoc.org/2020/09/25/german-telecom-regulator-awards-5g-private-network-licenses-in-the-3-7ghz-to-3-8ghz-band/ IEEE ComSoc Technology Blog 25 Sept 2020

[7] Consultation on New Access Licensing Framework, Changes to Subordinate Licensing and White Space to Support Rural and Remote Deployment https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11717.html August 2021

[8] Report to the President on Realizing the Full Potential of Government-Held Spectrum to Spur Economic Growth. Executive Office of the President. President's Council of Advisors on Science and Technology. July 2012 https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/pcast_spectrum_report_final_july_20_2012.pdf

[9] OFCOM: The award of 800 MHz and 2.6 GHz spectrum Information Memorandum. July 2012 https://www.ofcom.org.uk/__data/assets/pdf_file/0022/32872/im.pdf

> *and consult on the conditions of use under any such additional authorisations in order to manage the risk of harmful interference.*

It can also be found in the renewal of the PCS license[10] in Mexico:

> *"8.6. Services for secondary use. The Institute reserves the right to grant other authorisations for the use, development and exploitation of the frequency bands that are the subject of this Radio Spectrum concession, or portions thereof, for secondary use. In such case, the use of the bands subject to this Radio Spectrum concession shall be protected against harmful interference. "*

Clauses such as this extend spectrum sharing beyond generic sharing frameworks as they have in the UK with the Local License framework and in Mexico where the regulator has set aside spectrum for underserved regions. Clauses such as the above enable a "use-it-or-share-it" approach to spectrum licensing. This contrasts with "use-it-or-lose-it" policies which have proven challenging to implement given the significant sunk costs of the licensees.

Recommendation

We strongly encourage NCC to develop "use-it-or-share-it" provisions for spectrum licenses issued in this 3.5GHz auction. We believe that license provisions that guarantee the license holder the right to protection from interference as opposed to absolute exclusivity are better suited to achieving the efficient use of spectrum as well as more affordable access to communications in underserved regions. These provisions can be a precursor to an enabling environment for greater digital inclusion in the country. We encourage NCC to follow-up on these provisions with a national consultation on shared access to spectrum in underserved regions.

Contact Details

Please forward all correspondence in relation to this submission to

- **Association of Progressive Communications (APC)** : Dr Carlos Rey-Moreno, Co-lead Local Networks: Policy and Strategy, Association for Progressive Communications. Email: carlos@apc.org ; Mobile: +27 (0) 76 986 3633

[10] https://rpc.ift.org.mx/vrpc//pdfs/68531_190715125729_364.pdf Original text in Spanish.
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