

**Response to Electronic Communications Act
(36/2005): *Notice regarding Information
Memorandum on Licensing of Spectrum in the
IMT700, IMT800, IMT2600 and IMT3500 Bands***

A submission to the Independent Communications Authority of South Africa

by

Association for Progressive Communications (APC)

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**The Independent Communications Authority of South Africa
350 Witch-Hazel Avenue,
Eco Point Office Park, Eco Park,
Centurion, Gauteng.
Attention: Mr Davis Kgosimolao Moshweunyane**

Tel: +27 (0) 12 568 3497

E-mail: IMTLicensing@icasa.org.za



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 ICASA to adopt “use-it-or-share-it” provisions for IMT spectrum licenses issued through the ITA. The impact of these provisions will be to increase digital inclusion by unlocking innovation in service delivery in underserved regions by WISPs and community networks in South Africa.

This submission has been prepared by the Association for Progressive Communications¹.

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 operator². A recent case in point is Cell C has beginning to switch off their networks in some provinces, leaving a large amount of spectrum assigned but unused³. Incentives in the form of subsidies to national network operators for rural roll-out have achieved some success but are typically not a priority for corporate shareholders. 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

¹ See Annexure 1 for an overview of the Association for Progressive Communications

² 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/>

³ Cell C decommissions physical network in three provinces <https://www.commsupdate.com/articles/2021/07/01/cell-c-decommissions-physical-network-in-three-provinces> CommsUpdate 1 July 2021

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 Access⁴:

"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.

It is worth noting that the cost of eNodeB LTE 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 ICASA 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.

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

⁴ Enabling Rural Coverage: Regulatory and policy recommendations to foster mobile broadband coverage in developing countries. https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2018/02/Enabling_Rural_Coverage_English_February_2018.pdf GSMA 2018



license exempt regulation or WiFi. WiFi technologies are estimated to generate US\$31 billion in economic value in South Africa alone⁵. 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 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 enshrining “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 use⁶. In the United Kingdom, the regulator (OFCOM) introduced a Local Access License⁷ 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 3.8GHz⁸. Even now the Canadian regulator has launched a consultation on a shared spectrum strategy to support rural and remote deployment in Canada⁹. 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

⁵ 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

⁶ FCC: Citizens Band Radio Service (CBRS) <https://www.fcc.gov/wireless/bureau-divisions/mobility-division/citizens-band-radio-service-cbrs> April 13, 2017

⁷ OFCOM: Local Access Licence - Guidance document (2019) https://www.ofcom.org.uk/_data/assets/pdf_file/0037/157888/local-access-licence-guidance.pdf

⁸ 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

⁹ 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

license even though their regulatory frameworks already support C/IS". All of the above suggests that now is the time to invest in shared spectrum regulation that can unlock affordable access for all South Africans.

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 Growth¹⁰ 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 license¹¹ 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 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 license¹² 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-

¹⁰ 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_20_12.pdf

¹¹ 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

¹² https://rpc.ift.org.mx/vrpc//pdfs/68531_190715125729_364.pdf Original text in Spanish.

"8.6. Servicios para uso secundario. El Instituto se reserva el derecho de otorgar otras autorizaciones para el uso, aprovechamiento y explotación de las bandas de frecuencias objeto de la presente concesión de Espectro Radioeléctrico, o porciones de las mismas, para uso secundario. En tal caso, el uso de las bandas materia de esta concesión de Espectro Radioeléctrico contarán con protección contra Interferencias perjudiciales."



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.

Recommendations

We strongly encourage ICASA to develop “use-it-or-share-it” provisions for spectrum licenses issued in the context of the proposed ITA. 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 ICASA 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:

(i) **Association of Progressive Communications** : 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



Annexure 1 : Overview of the Association for Progressive Communications

The **Association for Progressive Communications (APC)**, established in 1990, is an international network of civil society organisations dedicated to creating a just and sustainable world by harnessing the collective power of activists, organisations, excluded groups, communities and social movements, to challenge existing power structures and ensure that the internet is developed and governed as a global public good. Our vision is for people to use and shape the internet and digital technologies to create a just and sustainable world, leading to greater care for ourselves, each other and the earth.

In 2019, APC members approved the network's strategic plan for 2020-2023. This strategic plan includes a number of specific outcome areas that inform the work of APC's staff and its 60 organisational and 30 individual members, often carried out in conjunction with APC partners. One of these specific outcome areas is digital inclusion.

Within the digital inclusion outcome, the Local Access and Community Networks (LocNet) initiative is led by APC in partnership with Rhizomatica, which is also an APC member organisation. This initiative aims to contribute to an enabling ecosystem for the emergence and growth of community networks and other community-based connectivity initiatives in developing countries. It is part of a multi-year, multi-donor approach which started in July 2017 based on diverse strategies related to learning and institutional strengthening, knowledge exchange, policy and advocacy, technology innovation and sustainability, and gender and women's participation.

As part of the policy advocacy strategy to create a more enabling regulatory framework for local operators and community networks and given its ITU Sector Member status, APC has been participating and providing input to different ITU processes and documents including Study Group questions, the Council Working Group on Internet related policies, the Global Symposium of Regulators, among others. Besides, APC provides Technical Assistance to regulatory authorities, as well as training to regional regulatory associations and policy makers. APC also conducts and publishes research to gather evidence on the impacts of these complementary access models and contributes to written submissions to public consultations on the topic.