

Response to the Next Generation Radio Frequency Spectrum for Economic Development

A submission to the Department of Communications and Digital Technologies submitted by: (in alphabetic order)

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- 2. Association of Progressive Communications**
- 3. Black Equations**
- 4. Eyelook Telecomms**
- 5. Friends of a Free Internet (FoFI) - CSO coalition**
- 6. iNethi NPC**
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- 11. Violence Prevention through Urban Upgrading (VPUU NPC)**
- 12. Zenzeleni Community Networks (Mankosi Cooperative, Eastern Cape)**
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The Director-General, Department of Communications and Digital Technologies,

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1. Introduction

The COVID-19 pandemic reinforced the critical role meaningful reliable and affordable access to broadband plays in our everyday lives. It has contributed to a connectivity boost, moving from basic connectivity to more bandwidth-intensive technologies. However, it has also exposed the long-standing existing digital inequalities which continue to be further amplified as the social and economic gaps between the connected and unconnected grow as a result.

Historically, rural South Africa has been underserved in terms of telecommunication services. This situation has prevailed into the era of broadband connectivity for various reasons. Despite well thought out policy frameworks and several efforts, such as SA Connect, the prospects of operators offering affordable broadband services in rural and less affluent areas are minimal. Even with the efforts of the Competition Commission, the telecommunications industry, in its current state, will have difficulty providing sustainable, affordable access to telecommunications in outlying areas.

In the COVID-19 era, around the world, community networks are playing an increasingly important role in meeting the rising demand for affordable connectivity. Beyond simple access, they also create a platform that promotes the building of local capacities, as well as the creation and distribution of locally-relevant content.

In South Africa, community networks, in an organic manner, have begun to address one of the key challenges highlighted in the Problem Statement of this policy, namely, the *“connectivity divide, with a resultant to perpetuate exclusion of rural, remote and underserved communities”*. Despite growing in size and number thanks to the efforts of organizations such as Zenzeleni Networks¹, community networks in the country face significant barriers, and are held back by another of the well-identified problems that this policy aims at addressing, viz. the *“exclusion of Small, Medium, and Micro-enterprises (SMMEs) and new entrants in the sector”*. In particular, community networks are excluded from an *“exclusive spectrum regime which promotes economic growth for a few market players at the expense of broader participation and limited socio economic development, and therefore an inequitable assignment of spectrum which is in high demand”*.

We are especially supportive of the overall intent of the Spectrum Policy given that it seeks to realise the enabling principles and guidelines of the 2016 Integrated ICT White Paper and with a specific intent to address the identified policy gaps and limitations (as outlined in 4a, i-v).

Hence we **strongly support** the goals of this draft policy, and in particular its Guiding Principle to:

“Adopt spectrum management approaches that promotes SMME participation and emergences of new entrants to the ICT sector.”

This guiding principle is, in turn, aligned with the recommendations from the Data Inquiry conducted by the Competition Commission, which proposes that *“government at all levels actively promote [...] the creation and entry of community networks”* in the market as an intermediate programme to enhance price-based competition².

¹ Zenzeleni Networks Not For Profit Company was incorporated in 2017, as a spinout from the University of the Western Cape together with its founding partners and the first Community Cooperative in Mankosi (a rural village in the Nyandeni Municipality, OR Tambo District), Eastern Cape. Over the past two years Zenzeleni NPC has been leading a national capacity development initiative to provide much needed skills to other Community Networks such as SOWUG (Gauteng), [Mamaila Network](#) (Limpopo), [Black Equations](#) and [V-NET](#)(Western Cape), Seoding (Northern Cape); [Zenzeleni Network Cooperatives](#) and Amadiba (Eastern Cape). See <https://zenzeleni.net/2022/04/27/school-of-community-networks>

² Competition Commission South Africa’s Data Services Market Inquiry final Repo. Available at : <https://www.compcom.co.za/wp-content/uploads/2019/12/DSMI-Non-Confidential-Report-002.pdf>

Below we provide further insights and recommendations about specific clauses in the policy that we believe are critical to unlocking access to spectrum for small network operators, community networks, and municipalities and to achieving digital inclusion in South Africa.

2. Licensing Framework for community networks and alignment with international directives

We very much welcome the determination of the policy:

“To address challenges that can impede the development of community networks including proliferation of these networks, the Regulator must develop a licensing framework for Community Networks in a manner that allows participation of new entrants, commercial viability, geographic spread of participants.”

Removing barriers for the development of Community Networks is rooted in international and regional resolutions. For example, from the 14th session of the ITU Council Working Group-Internet on “Expanding internet connectivity”, where a “*number of policy issues related to expanding Internet connectivity were highlighted [...] including complementary access solutions such as community networks*”³, members states at the ITU have reached consensus to:

- “invites Member States, Sector Members and other stakeholders to work collaboratively [...] to encourage innovation and entrepreneurship in local populations, including by encouraging community support for entrepreneurship and locally based programmes, including those for complementary solutions and networks;”⁴
- “invites Member States” to consider inclusive and innovative policies to close the digital divide, taking into account national initiatives and telecommunications/ICTs complementary access networks and solutions,”, something that, where it is requested, it has instructed the Director of the Telecommunication Development Bureau to support⁵.

This has been further elaborated as the best practices developed by the ITU’s Global Symposium for Regulators where within the Regulatory tools to bridge the funding and financial gaps it recommends to: “*Promote local innovation ecosystem and provide incentives for the participation of small and community operators in deploying low-cost rural networks, including specific licensing measures, access to key infrastructure and funding, and social coverage promotion programs.*”⁶

At the regional level, already in 2019, the African Union Commission was instructed by members to “*Promote the formulation of strategy and pilot projects for unlocking access to basic infrastructure and services for rural and remote areas including [...] community networks...*”⁷. In addition, the ITU in its Digital Trends for Africa 2021 included as “*Possible consideration for the Africa region to*

³ ITU CWG-Internet: Online Open Consultation (December 2020), <https://www.itu.int/en/council/cwg-internet/Pages/consultation-sep2020.aspx>

⁴ Report by the ITU Secretary-General for the Sixth World Telecommunication/Information and Communication Technology Policy Forum 2021, available at: <https://www.itu.int/wtpf21/en/itu-speeches/sqs-report/>

⁵ RESOLUTION 37 (Rev. Kigali, 2022), Bridging the digital divide. Provisional Final Report of the World Telecommunication Development Conference (Kigali, 2022). Available at: <https://www.itu.int/md/meetingdoc.asp?lang=en&parent=D18-WTDC21-C-0103>

⁶ ITU’s Global Symposium for Regulators 2021 Best Practice Guidelines. Available at: https://www.itu.int/en/ITU-D/Conferences/GSR/2021/Documents/GSR-21_Best-Practice-Guidelines_FINAL_E_V2.pdf

⁷ 2019 Sharm El Sheikh Declaration from the African Union’s Specialized Technical Committee on Communications and Information Technologies (STC-CICT). Available at: https://au.int/sites/default/files/decisions/37590-2019_sharm_el_sheikh_declaration_-_stc-cict-3_oct_2019_ver2410-10p_m-1rev-2.pdf

address affordability and meaningful connectivity” the need to “Review universal service fund (USF) models and approaches, including exploring new community network access models and public community access points (Wi-Fi hubs) for underserved and rural communities.”⁸

At the national level, other countries in the region have already created community network categories in its licensing framework. Zimbabwe⁹, Uganda¹⁰, Ethiopia¹¹ and Kenya have all considered community networks within their frameworks. In particular, in Kenya the Communications Authority of Kenya (CAK) modified its Unified Licensing Framework in 2021 to add a Community Networks Service License with an annual fee of only 5000 Kenyan Shillings (~750 ZAR)¹². The license encompasses both an infrastructure and a service license. Licensees incur an annual fee of approximately 750 ZAR and are exempted from contributing to Universal Service Funds. This licensing arrangement resulted from technical assistance requested by the regulator and commissioned to APC. The technical assistance process included a strong component of stakeholder consultation to ensure broad industry buy-in¹³. Beyond this, CAK has included the support for 100 community networks in its draft USF Strategy 2022-2026¹⁴.

Given South Africa’s already robust operator licensing framework, we consider that the simplest and most effective way to license community networks would be through a review of the License-exempt regulations¹⁵. This could significantly lower the barrier to market entry for community networks with only modest changes to the existing licensing framework.

3. IMT Spectrum for Community Networks

We commend the Department for the inclusion of clause

21 (g) The Regulator must investigate and report with recommendation(s) to the Minister, a framework for the release of spectrum for community use and the other IMT spectrum that have been designated for transformation to community networks

Again, this is in line with the Best Practices developed in 2021 by the ITU’s Global Symposium for Regulators where it recognises that “Spectrum Innovation” is key for the Digital Future” and recommends that regulators “*Adopt a multifaceted approach to freeing up additional spectrum in*

⁸ ITU- D Digital Trends in Africa 2021. Available at:

https://www.itu.int/dms_pub/itu-d/opb/ind/D-IND-DIG_TRENDS_AFR.01-2021-PDF-E.pdf

⁹ Postal and Telecommunications Regulatory Authority of Zimbabwe - License Fee Categories. Available at:

<http://www.potraz.gov.zw/wp-content/uploads/2022/03/Licence-Categories-Including-Fees.pdf>

¹⁰ Uganda Communications Commission’s Communal Access Provider License

<https://www.ucc.co.ug/wp-content/uploads/2020/05/COMMUNAL-ACCESS-PROVIDER-LICENSE-25-05-2020.pdf>

¹¹ Ethiopian Communication Authority’s Telecommunications Licensing Directive 792-2021

[https://eca.et/2022-03-24T06-45-04.775ZTelecommunications%20Licensing%20Directive%20No.%20792-2021%20\(Engl ish\).pdf](https://eca.et/2022-03-24T06-45-04.775ZTelecommunications%20Licensing%20Directive%20No.%20792-2021%20(Engl ish).pdf)

¹² Communications Authority of Kenya’s Unified Licensing Framework, Community Network and Service Provider License. Available at:

<https://www.ca.go.ke/wp-content/uploads/2021/10/Community-Network-and-Service-Provider-CNSP-License.pdf>

¹³ Public Consultation On Draft Licensing And Shared Spectrum Framework For Community Networks In Kenya.

Available at:

<https://www.ca.go.ke/public-consultation-on-draft-licensing-and-shared-spectrum-framework-for-community-networks-in-kenya/>

¹⁴ Communications Authority of Kenya’s Draft USF Strategic Plan 2022-2026

<https://www.ca.go.ke/wp-content/uploads/2022/04/Draft-USF-Strategic-Plan-2022-2026-.pdf>

¹⁵ Licence Exemption Regulations published in the Government Gazette No. 31289 of 29 July 2008.

<https://www.icasa.org.za/pages/services-licencing>

*the low, mid and high bands for a variety of business plans to successfully meet the need of additional network capacity while facing finite spectrum resources, including releasing spectrum for the establishment of community networks on a technology-neutral basis*¹⁶

Until fairly recently, even if IMT spectrum were available to small operators, the requirements for operating an IMT network were beyond their reach due a combination of the high cost of network equipment and the complexities of negotiating voice interconnection arrangements with incumbent operators. However, the emergence of data-only LTE operators both in access networks and Fixed Wireless Access (FWA) networks have dramatically reduced the complexity of operating an LTE or even 5G network. Interconnection can now be handled in the same manner as any Internet Service Provider (ISP) through peering and transit agreements.

Furthermore, the cost of LTE / 5G radio technologies has plummeted, bringing base station costs within the same orders of magnitude as licence-exempt wireless equipment. A highly competitive manufacturing market¹⁷ has brought prices down to where they are within reach of small ISPs and community networks.

APC and its members, including Zenzeleni Networks NPC in South Africa, have consistently advocated for spectrum access for small operators and community networks since 2016, such as :

- Earlier policy positions which were developed out of action research have been published online¹⁸.
- Most recently we have responded to the latest “Information Memorandum Regarding ICASA’s Intentions to Initiate the Second Phase of the Licensing Process and to make available Radio Frequency Spectrum to Prospective Licensees to Provide Mobile Broadband Wireless Access Services in the Low and Mid Radio Frequency Bands”.
- In the previous public consultation for releasing IMT spectrum, ICASA recognized our contribution when determining need for the radio frequency spectrum *“to be shared with ECNS licensees in areas that spectrum is not utilised to stimulate competition, promote SMMEs and cooperatives, and ensure that the radio frequency spectrum is used efficiently in accordance with section 2 (f), (p) and (e) of the ECA, respectively.”* This resulted in spectrum sharing clauses in the newly issued spectrum licensees which are very much welcomed. However, because the proposed licences will still assign spectrum *“on a national basis exclusive to the licensees”*, any attempt to subordinately assign some portion of that spectrum is likely to be contested by the licensees.

With the foregoing in mind, we applaud the introduction of Clause 12(b) and 12(d)

“(b) This policy supports the determination that in licensed bands a “right to exclusivity” in spectrum licensing be transformed into a “right to protection from interference”. In spectrum licensing, the principle will enable the Regulator to implement spectrum sharing in a manner that preserves all the rights of the license holder, at the same time unlock potential of unused spectrum for sharing.

(d) The Regulator must set the rules and regulations for the holders of licensed spectrum such that the principle of “use-it or sharing-it” is allowed.”

¹⁶ ITU's Global Symposium for Regulators 2021 Best Practice Guidelines. Available at:

https://www.itu.int/en/ITU-D/Conferences/GSR/2021/Documents/GSR-21_Best-Practice-Guidelines_FINAL_E_V2.pdf

¹⁷ See Appendix A for a partial list of low-cost LTE / 5G manufacturers

¹⁸ See https://www.dst.gov.za/images/2018/18-646-Community-networks-policy-brief-3-December_V31.pdf or DOI: 10.13140/RG.2.2.35843.76325

We propose that all new and renewed national IMT spectrum licences be framed as a “*right to protection from interference*” rather than the traditional “*right to exclusivity*” implied under current policies¹⁹. This may be achieved through the introduction of a *use-it-or-share-it* provision in spectrum licences. In parallel, immediate steps should be taken to introduce a shared spectrum licence aimed at access to licensed but unused spectrum. This practice is consistent with IMT spectrum licensing in Mexico²⁰ and the United Kingdom²¹ where Community Networks are sharing spectrum with Mobile Network Operators.

In parallel, we recommend that introduction of non-competitive local licencing of IMT frequencies in bands where low-cost equipment is available, such as the 40MHz on offer in the 2300MHz band. Regulators around the world²² have been introducing new non-competitive local spectrum licence frameworks in order to unlock this potential.

In addition, we applaud clause 12 (e) which states:

“The Regulator must distinguish between spectrum fee payment for commercial use and non-commercial use and apply appropriate measures to ensure that non-commercial users are not charged excessively.”

Reduced or exempt fees for non-commercial operators, especially in underserved regions, recognises the role that non-profits can play in not only providing access but also building the capacity of local communities to take full advantage of digital services.

We are also pleased to see clause

12“(h) Spectrum inventories and licensee database including an exhaustive mapping of all spectrums (licensed and unlicensed), should be made public on an easy to access and continuous basis.”

This clause aligns with international trends spearheaded by the International Telecommunication Union and the World Bank about transparency in the telecommunication sectors²³. We believe that transparency regarding the assignment and utilisation of radio spectrum is key to understanding the challenge of affordable access for all and to engaging all stakeholders in the solution.

Finally, we acknowledge clause 20(e).

“(e) The free basic data to be provisioned through the users of spectrum for community use and the size of the free basic data per household to be determined by the Minister through a regulatory framework/policy directive”

Having cultivated and advocated for the proliferation of community networks in bridging the digital divide, we applaud the draft policy in acknowledging, the role of community networks as an alternative model in realizing the objectives of rolling out the free basic data to qualifying

¹⁹ Electronic Communications Act, 36 of 2005 and the Radio Frequency Spectrum Regulations, 2015 (as amended)

²⁰ 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."

²¹ 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

²² See Appendix B for a list of countries around the world that have implemented Non-Competitive Local Licensing of IMT spectrum

²³ World Bank, 06 June 2022. [Making it Possible for the World to Log On](#)

households, as such extending broadband access to rural, remote and underserved areas. However, we also propose that a feasibility study is conducted on the financial/funding model for the roll out of the basic data, as to ensure that the financial burden of rolling out the model is not carried by the CN's/SMME's. In this regard we propose a segmented approach in which the model for rural areas in particular is assessed. Such an assessment should factor in our proposal below in relation to the role of the current USAF or the prospective Digital Development Fund. Additionally, we request the Department to reconsider "household(s)" as the beneficiary of the program as this has the risk of perpetuating the digital divide along gender and age lines, and instead use individuals.

To conclude the above two sections, we recommend that the timeline for the implementation of this framework, included in "*Annexure B: Roadmap towards new round of Spectrum Licensing [...] (b) Licensing of Community Networks and remainder of IMT spectrum designated for SMMEs by 31 July 2023*", is respected. In this regard we recommend that the timeline for the Regulator to produce a report with recommendations included in clauses 21.2 (d) and 21.2 (g) is modified accordingly.

4. Public funding for SMMEs targeting universal access

While this policy is intended to focus on spectrum policy, we add this comment here, so that a holistic view might be taken in relation to the plight of small and medium enterprises, and Community Networks in particular, who would potentially benefit from the promulgation of the draft policy.

A key problem that has been faced by Community Networks is their ability to seed their startup. In the main, Community Networks such as Zenzeleni NPC are providing a service to poor citizens, in what is generally termed in the telecommunications market ecosystem as the "true access gap". Chapter 14 of the ECA was designed with this in mind and the USAASA was established to use the USAF to address this true access gap (Figure 1).

Figure 1 / ...

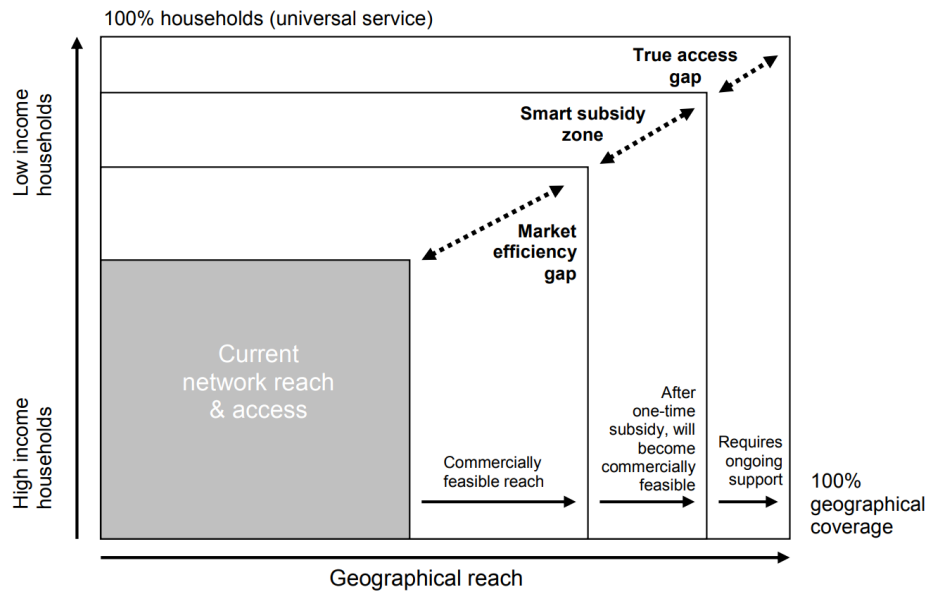


Figure 1: Telecommunications Market Model²⁴ demonstrating the “True Access Gap” comprises the poorest household in a country

There is to date, however, very little evidence that the USAF has been applied in a manner that has effectively addressed the true access gap. As a very recent example, in the Eastern Cape, where Zenzeleni NPC has been able to demonstrate the Community Network model, there are examples of failed connectivity projects (providing connectivity to all public institutions in the Nyandeni and KSD local municipalities) which were funded by approximately R70m from the USAF. Despite spending all the money, none of the sites were operational according to the last reports from USAASA 3 years later, and one of the two companies that was awarded the contract filed for voluntary liquidation after this process.

Without targeted support smaller players such as Community Networks will struggle to enter the market, and to serve the poor people of rural South Africa. We therefore propose that in parallel with the spectrum policy, that funding mechanisms must be considered. Recommendations that we would like to make are as follows:

- a. Until it is replaced, the USAF should be directed to support and fund the implementation of rural Community Networks. This should take precedence over all other non-rural interventions, i.e. expenditure should be prioritised to address the true access gap.
- b. When the digital development fund has been established, it should be directed to continue with the rural connectivity programme of expanding Community Networks.
- c. In all instances, the funding should target holistic interventions that go beyond the provision of network services, covering skills development and awareness programmes, which are vital to the development of functional universal access components.

²⁴ InfoDev, ‘Universal Access and Service’, 2009, Executive Summary, Module 4, ICT Regulation Toolkit and International Telecommunication Union available online at <http://www.ictregulationtoolkit.org/Mod4ExecSummary>

5. Contact Details

Please forward all correspondence in relation to this submission to:

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(in alphabetic order by organisation)

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- **Black Equations:** Mr. Ganief Manuel, Director, Email: ganiefmanuel@gmail.com ; Mobile: +27 (0) 67 947 2015
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Appendix A: Partial list of manufacturers of low-cost LTE / 5G radio base station technologies

Acceleran	https://acceleran.com/
Airspan	https://www.airspan.com/
Baicells	https://www.baicells.com/
Bling	https://blingnetworks.com/
Cambium	https://www.cambiumnetworks.com/
CableFree	https://www.cablefree.net/
CellXica	https://www.cellxica.net/
CIG	https://www.cigtech.com/
Eion wireless	https://www.eionwireless.com/
Ericsson	https://www.ericsson.com/
Fairwaves	https://fairwaves.co/
General Dynamics	https://www.gd.com/
Huawei	https://huawei.com
ip.access	https://ipaccess.com
Klas Telecom	https://www.klasgroup.com/
Lime microsystems	https://limemicro.com/
Mavenir	https://www.mavenir.com/
Mikrotik	https://mikrotik.com/
Motorola	https://www.motorola.ca/
Nokia	https://www.nokia.com/
NuRAN	https://nuranwireless.com/
Octasic	https://octasic.com
Parallel Wireless	https://www.parallelwireless.com/
Redline	https://rdlcom.com/
Star Solutions	https://www.starsolutions.com/
Tecore	https://www.tecore.com/
Telrad	https://telrad.com/
Vanu	https://www.vanu.com/
VNL	http://www.vnl.in/

Appendix B: List of Non-Competitive Local Access Spectrum Licensing Regulation Around the World

United States: Local spectrum licensing 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.

<https://docs.fcc.gov/public/attachments/FCC-18-149A1.pdf>

United Kingdom: the regulator (OFCOM) introduced a Shared Access License in 2019 which offers access to spectrum available for the 1800 MHz, 2.3 GHz, 3.8-4.2 GHz, and 24.25-26.5 GHz bands.

<https://www.ofcom.org.uk/manage-your-licence/radiocommunication-licences/shared-access>

Germany: In 2019, the German regulator announced spectrum sharing in 3.7GHz and 3.8GHz.

<https://techblog.comsoc.org/2020/09/25/german-telecom-regulator-awards-5g-private-network-licenses-in-the-3-7ghz-to-3-8ghz-band/>

France: In September 2019, ARCEP announced that it would be offering frequencies in 2600MHz to metropolitan businesses on a regional basis in order to improve broadband coverage for enterprises. The spectrum is to be assigned on a first come first serve basis, in the case of no competition for the spectrum.

<https://enterpriseiotinsights.com/20220317/5g/france-launches-new-measures-boost-industrial-5g-adoption>

Canada: In August 2022, the Canadian regulator began a consultation on a Non-Competitive Local Licensing Framework for radio spectrum.

<https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11793.html>

New Zealand: Radio Spectrum Management New Zealand established a Managed Spectrum Park (MSP) licence intended for local and regional services. It was designed to encourage a flexible, cooperative, low cost and self-managed approach to spectrum allocation and use.

<https://www.rsm.govt.nz/licensing/licences-you-must-pay-for/managed-spectrum-park-licences>