

Nombre del país

Este documento pretende ser una guía y una plantilla para los perfiles de países. El objetivo de los perfiles de país es proporcionar a cualquier persona que desee establecer una red comunitaria, cooperativa u operador comercial de servicios de telecomunicaciones un amplio conocimiento de las normas que rigen el establecimiento y funcionamiento de estas redes, así como de las oportunidades y obstáculos existentes.

La página está organizada de acuerdo con las categorías que se esperan dentro de cada perfil de país. En cada categoría encontrará preguntas clave a las que debería buscar respuestas, sugerencias sobre dónde encontrar información y ejemplos de buenas prácticas en las distintas categorías de todo el mundo.

El wiki también está diseñado para capturar parte de la información como campos en una base de datos que permitirá algunos análisis comparativos entre países. Estos campos se introducen debajo del wiki en los campos del formulario y se muestran en la página del wiki como una variable. Los elementos resaltados como `<btn size="sm" icon="glyphicon glyphicon-edit">esta</btn>` representan datos estructurados almacenados en un campo de base de datos. Los campos de la base de datos se pueden exportar a formato de hoja de cálculo, CSV o JSON.

`<callout type="question" icon="true">En cada una de las siguientes secciones, verá las preguntas que debe hacer para obtener más información </callout>` `<callout type="success" icon="true">Los ejemplos de buenas prácticas se identifican con una marca de verificación como la siguiente</callout>`

	Nombre	Acrónimo	URL	Contacto	Twitter
Regulador	<code><btn size="sm" icon="glyphicon glyphicon-edit">Name of Regulator</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">Acronym</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">website</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">contact email</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">twitter account</btn></code>
Ministerio	<code><btn size="sm" icon="glyphicon glyphicon-edit">Name of Ministry</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">Acronym</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">website</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">contact email</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">twitter account</btn></code>
Servicio universal	<code><btn size="sm" icon="glyphicon glyphicon-edit">Name of USAF</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">Acronym</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">website</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">contact email</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">twitter account</btn></code>
Agencia de Espectro	<code><btn size="sm" icon="glyphicon glyphicon-edit">Name (if different)</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">Acronym</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">website</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">contact email</btn></code>	<code><btn size="sm" icon="glyphicon glyphicon-edit">twitter account</btn></code>

Política nacional

En cada país existen diferentes conjuntos de políticas que enmarcan y orientan al sector de las telecomunicaciones, dentro del cual operan la mayoría de los pequeños operadores y las redes comunitarias. En esas políticas podría haber disposiciones que favorezcan o inhabiliten las actividades de estos operadores.

En algunos países, estas disposiciones podrían estar incluidas en la constitución del país, por lo que vale la pena revisar los artículos relativos a los derechos especiales de los pueblos indígenas y otras poblaciones históricamente desfavorecidas.

En la mayoría de los países, el sector de las telecomunicaciones está enmarcado en una Ley de

Comunicaciones, Telecomunicaciones o TIC. Muchas veces esto se complementa con otras leyes sobre el acceso a la información privada, enmarcando el papel del regulador, etc.

Por último, la mayoría de los gobiernos establecen en los planes nacionales los objetivos de rendimiento que desean alcanzar en el sector. La mayoría de los países tienen un plan de banda ancha, que vale la pena revisar para entender el papel que los gobiernos esperan de estos pequeños operadores. Además, algunas veces se hace referencia a ellos o al futuro que vislumbran para las comunidades rurales y marginadas en los Planes Nacionales de Desarrollo más amplios.

En esta sección, usted debe proporcionar enlaces a las políticas, leyes o incluso elementos clave de la constitución que pueden ser relevantes para las redes comunitarias y los operadores a pequeña escala que intentan atender a las personas que no reciben servicios.

Esto puede incluir estrategias/planes nacionales de TIC, estrategias/planes nacionales de banda ancha. Puede optar por hacer referencia a la legislación adyacente que sea pertinente a las redes comunitarias, como las estrategias/planes de servicio universal, los planes nacionales de desarrollo, las políticas de las PYME y las políticas educativas. Puede optar por extraer las secciones pertinentes de los documentos en el perfil del país.

<callout type="question" icon="true">

- ¿Hay alguna mención a los derechos de los pueblos indígenas con respecto a la soberanía sobre sus tierras y/o el uso de otros recursos naturales (por ejemplo, el espectro)?
- ¿Qué mecanismos ha implementado su Administración para la prestación de servicios de telecomunicaciones/TIC en zonas rurales y remotas desatendidas o desatendidas? (UIT-D 19)
- ¿Ha mostrado su país algún progreso o ha tomado alguna medida en la instrumentación de la regulación para integrar a operadores pequeños o sin fines de lucro con el fin de proporcionar conectividad de banda ancha a los usuarios en áreas rurales y remotas? En caso afirmativo, sírvase describir el caso e indicar las fuentes de información adicional. (UIT-D 19)
- ¿Tiene su país planes para implementar alguna de estas medidas? En caso afirmativo, sírvase describir el caso e indicar las fuentes de información adicional. (UIT-D 19)
- ¿Ha considerado o implementado su país medidas regulatorias para permitir a los pequeños operadores, sin fines de lucro o comunitarios, el acceso a los recursos del espectro y a las redes troncales? En caso afirmativo, sírvase describir el caso e indicar las fuentes de información adicional. (UIT-D 19)
- ¿Ha publicado su país algún estudio o información estadística sobre operadores comunitarios pequeños y sin fines de lucro en zonas rurales y remotas? (UIT-D 19)

</callout>

Licencias de Operador

Las leyes y regulaciones varían de un país a otro en términos de qué tipo de licencia se requiere o no para operar una red de comunicaciones. Esto puede variar desde ningún requisito de licencia hasta un rango de diferentes tipos de licencias. Como tendencia general, los reguladores se están alejando de las licencias tecnológicas o de aplicaciones específicas en favor de licencias más genéricas que den cabida a una gama de actores y servicios. Con arreglo a un régimen unificado de concesión de licencias, se permite a un operador prestar cualquier tipo de servicio de comunicaciones que sea técnicamente capaz de prestar. Esto coincide con la tendencia de las tecnologías y servicios de comunicaciones que tienden a tener los protocolos de Internet como su protocolo subyacente.

Esta tendencia se conoce como régimen unificado de concesión de licencias y, si bien el fin último de la concesión de licencias unificadas podría ser un único tipo de licencia, la formulación más común de la concesión de licencias unificadas es tener una licencia para la infraestructura (los activos físicos, por ejemplo, cables, estaciones de base, enrutadores, estaciones terrenas, etc. que componen la red) y una licencia para los servicios (servicios de ancho de banda, conmutación de paquetes, VoIP, medios de transmisión de vapor, etc., entregados a través de la red). Algo confuso es que no existe un estándar común sobre cómo se denominan estos dos tipos de licencia. Algunos reguladores subdividen la 'licencia de servicios' en una 'licencia de servicio de aplicación', por ejemplo, Internet, y 'licencia de servicio de contenido', por ejemplo, medios de transmisión por secuencias.

La nueva tecnología ha desdibujado los límites de algunas de estas licencias. Los equipos WiFi baratos son técnicamente "infraestructura", pero a menudo no se ajustan bien a la definición de licencia de infraestructura que se creó teniendo en cuenta las redes nacionales.

Otro criterio clave para la concesión de licencias se refiere a si el operador está prestando servicios comerciales a un tercero. Los operadores comerciales son el tipo más común de operadores con licencia. Sin embargo, también hay redes privadas que se dedican al autoabastecimiento de servicios. Este tipo de operador presta servicios a sus clientes. Esta podría ser una corporación que opera una red nacional que conecta sus oficinas. Podría ser una cooperativa o una red comunitaria sin fines de lucro que ofrezca servicios locales que se autoabastezcan de su propia capacidad.

La licencia también puede desglosarse en función del volumen de negocios generado por la organización.

Otro tipo de organización es aquella que posee una infraestructura de comunicaciones pero que no la explota. Podría tratarse de una empresa comercial que zanja la fibra pero no la "ilumina". Puede tratarse de un municipio que invierte en conductos e infraestructura de fibra o incluso sólo en conductos, pero que no explota una red por sí mismo. También podría ser una organización sin ánimo de lucro como la fundación Guifi.net, que tiene una infraestructura en común para sus miembros pero que no opera una red. Por lo general, ninguno de ellos requiere una licencia del regulador, ya que no operan una red de telecomunicaciones. Sin embargo, pueden requerir otras licencias como permisos de paso, derechos de paso, etc.

Las licencias anteriores pueden ser todas de alcance nacional o pueden tener tanto una versión nacional como una subregional. Se pretende que las versiones subregionales de las licencias mencionadas sean menos onerosas tanto administrativa como financieramente para el operador y faciliten un enfoque más granular de la prestación de servicios.

Por último, puede haber exenciones de licencia disponibles para cualquiera de las categorías anteriores basadas en criterios específicos, tales como operar como una organización sin fines de lucro o prestar servicios a regiones desatendidas.

Requisitos técnicos y administrativos

Los requisitos técnicos y administrativos para las licencias varían de un país a otro, pero normalmente los requisitos pueden incluir alguna combinación de:

- prueba de constitución en el país
- prueba del domicilio social y de la dirección permanente
- datos de accionistas y directores
- prueba de propiedad/inversión local

(Maybe something about regions?)

Governments incorporate those regulations into their National Frequency Allocation Tables or National Frequency Plans, which is the first document to consult in order to understand which services can be used in each band. In most cases, for each band governments include both the reference to the Radio Regulation which describe the specific of this band, as well as the National Regulation describing the details of the use of that band in the country.

(Maybe an example of this?)

In addition, for most of the spectrum governments assign the use of an entire band or blocks of it to particular organizations. This assignment can be of national, regional, or even smaller scope (for a given area or a point to point link), and tend to be for a particular period of time. There are also different ways of assigning parts of the spectrum. This can be done via auctions, where the best bidder wins; reservation, where the interested party requests the government its use. In both cases the organization usually pays fees to access this spectrum which vary from country to country, and, in most cases, from band to band. The payment of these fees grants the organization exclusive use of that spectrum and, in exchange the authorities must ensure other organizations do not interfere with them in that block. We will refer to this spectrum in the sections below as Licensed Spectrum.

There are bands which are not assigned to a particular organization for a period of time, and access to them is more adhoc, with organizations interested in using it organized themselves via technological means, or otherwise. There are two main ways in which this takes place and we go into them in more details below, referring to them as License-exempt and Secondary Use, respectively.

In all cases above, the spectrum can be used for two very distinctive purposes, regardless of the mechanism used to access it: access and transport. The first one refers to the use of the spectrum for users or end devices to communicate; and the latter for its use by the devices carrying those communications to the other end. Often times, the same spectrum can be used for both, but in the classification used in this wiki refers to its most common use. There are cases where its use is common for both access and transport, and so the band will appear twice, as in these cases the technical, and even administrative requirements, will vary for each of them.

Technical and Administrative Requirements

The technical and administrative requirements for each modality of accessing spectrum (licensed spectrum, license-exempt spectrum, and secondary use) as well as for each of the uses it can have (access and transport) will vary and should be included in detail below. As a departing point, this section should include a reference to the most up to date National Frequency Allocation Tables or National Frequency Plans (they get renewed almost every year in most countries).

Licensed

Something about interference here... and the need to regulate!

Access Networks

Most of the licensed spectrum that is available for access it is used for mobile telephony and data,

and tends to be referred to as International Mobile Telephony (IMT) bands.

The main reason to understand how access to IMT spectrum takes place in your country is because we acknowledge that the best way for universal access to occur is for communities to operate this spectrum where available.

In some cases a band is not fully allocated and we could convince the government to create set-asides for social use. Other times the band is fully assigned to operators but unused in given areas (normally rural and sparsely populated ones). In yet other cases, the band has not been yet assigned which allows for engagement with the authorities for set-asides earlier on. The aim for this section is to provide a view on the possibilities available in that regard.

For some countries, we have been collecting some of this information, and it is available in this website: <https://opentelecomdata.org/spectrum-chart/>. For your country the idea is to enable a link each of the bands in the table below, so when clicking it shows the chart with the information.

Issues	800MHz	900MHz	1800MHz	2100MHz	2600MHz	3500MHz
Band assigned?						
Assignment method						
Fully assigned						
Primary use by CN?						
Secondary use by CN?						

Rows in the table:

- Has this band being assigned in your country?: Yes/No
- Method of assignment?: Auction / Reservation / D.N.A.
- Is there spectrum yet to be assigned is this band: Yes / No / D.N.A.
- Are there reports of spectrum assigned but not used in an area? Yes / No / D.N.A.
- Can it be used by community networks and small operators? Yes / No / D.N.A.
- Indicate the community networks and small operators using them? Org name / D.N.A

[For each of the answers where the answer is yes, please provide a link]

[In the case there are community networks using it, please describe the process followed to do so by others]

[There are different mechanisms to “provide evidence” to answer question 4, if you have the knowledge that this is the case. One is by checking the maps provided by the operators, another one is by reports that you may find in the news. You can also conduct spectrum measurements yourself (a description on how to do this to follow)] Once this spectrum is assigned to one organization, there are technical and administrative requirements associated to it. For instance, the need to meet some universal service obligations as well as some minimum services to be delivered to the final users. Please include here any information you may have here in that regard (even if it comes from a mobile network operator) for reference.

(I can share the ones from Vodacom, MTN, Cell, other in SA for 900 MHz and 1800MHz)

PtP Networks

In most scenarios the use of ISM bands for broadband transport links is sufficient and has all the advantages related to it: license exempt spectrum, highly available low-cost gear, etc. However, there might be places, specially in links going through nodes in crowded highsites, where the use of those bands may be good alternative.

The band considered below, 7GHz and 11 GHz are the most common ones and it below we would like to determine the requirements to using them.

Issues	7GHz	11GHz	24GHz	60GHz
Band assigned?				
Assignment method				
Fully assigned				
Primary use by CN?				
Secondary use by CN?				

Rows in the table:

- Has this band being assigned in your country?: Yes/No
- Method of assignment?: Auction / Reservation / D.N.A.
- Is there spectrum yet to be assigned is this band: Yes / No / D.N.A.
- Are there reports of spectrum assigned but not used in an area? Yes / No / D.N.A.
- Can it be used by community networks and small operators? Yes / No / D.N.A.
- Indicate the community networks and small operators using them? Org name / D.N.A

[For each of the answers where the answer is yes, please provide a link]

Once this spectrum is assigned to one organization, there are technical and administrative requirements associated to it. For instance, the need to meet some universal service obligations as well as some minimum services to be delivered to the final users. Please include here any information you may have here in that regard (even if it comes from a mobile network operator) for reference.

License-Exempt

Access Networks

Frequency	Power Limit	Transmit Power
900MHz	Region 2 only	
902 - 928 MHz	2.4EIRP	
2.4GHz		
2400 - 2483.5 MHz	2.4EIRP	
5GHz		
5150-5250 MHz	5.1EIRP	
5250-5350 MHz	5.2EIRP	
5470-5725 MHz	5.4EIRP	
5725-5800 MHz	5.8EIRP	

PtP Networks

Frequency	Power Limit	Transmit Power
2.4GHz		
2400 - 2483.5 MHz	2.4EIRP	
5GHz		
5150-5250 MHz	5.1EIRP	
5250-5350 MHz	5.2EIRP	
5470-5725 MHz	5.4EIRP	
5725-5800 MHz	5.8EIRP	

- Point to rules for license-exempt spectrum use?
- Is registration required for WiFi?
- What is the process for homologation / type approval?

Agree with 1 and 3, as they apply to all license-exempt bands, not only WiFi, anything on WiFi, would have to go under WiFi.

Then I would add a subcategory for WiFi /ISM Bands and potentially two tables one for access and one for backhaul, so they don't get too crowded. Some bands within WiFi may only be "allowed" for access. Do we want to get into the advantages throughput-wise of using "wider" channels.

In the table I would allow for EIRP, but also for TxPower, and also for some explanations... like increase your Gain by X everytime you reduce your TxPower by Y

I wonder what do we do with 900 MHz, for instance.

Maybe add a subcategory for potential articles or discussions on the expansion of this band?

Maybe add a subcategory on examples in this band (Cns, small operators, and the like)

If we refer to bands, I would call this section mmBand? and would only focus on the license-exempt component of them (in the case of SA there are some, maybe we can use the ones in the Spectrum paper that we have identified to be exempted elsewhere (24.05 - 24.25 GHz, 57 -64 GHz, 64 - 71 GHz, 71 - 76 GHz, 81-86 GHz), I would move 11GHz to licensed...

Frequencies for microwave links outside of 2.4GHz and 5GHz 11GHz 24GHz 60GHz and other

Secondary Use

Access Networks

PtP Networks

- Information on TVWS or other dynamic spectrum pilots.
- Pending rules for TVWS

Spectrum Fees / Costs

Application

Annual

Auction

<callout type="success" icon="true">

- [UK Regulator \(OFCOM\) Spectrum Information Portal](#)
- [Nigerian Communications Commission - Frequency Assignment Tables](#)

</callout>

similar to the above I will add subcategory of news items points to a potential change as well as potential examples using this band.

As with the licensing, I would add here another subcategory about compliance and other costs...

For instance, it is here were I would use the USOs. The more I think about it, the more I think that license obligations (including USOs) should be a subcategory of the spectrum licensing framework. At least if we use SA for the prototype, as they are part of the spectrum licenses they receive... I have some as example.

But also the taxes on the benefits of using the spectrum, which was a big thing in the last court case won by Rhizomatica, and that it exists in others. One thing is the cost of getting it assigned to you, and another one the taxes on the benefits from its use... It's a bit like CAPEX and OPEX.

Both here and in the Fees above, we can explore whether a given Administration offer incentives that include lower rates of payment for the use of spectrum when it is to be used in isolated and underserved areas?

Backhaul

Backhaul refers to the source of connectivity for a network. This may be a fibre optic network, a wireless microwave connection, or even a direct connection to a peering point such as an Internet Exchange Point (IXP). While it is not essential for a network to connect to the rest of the internet (community networks can offer local network services), it is the most common scenario.

Increasing demand from internet users for access to streaming media content can dramatically increase the backhaul requirements for a community network or small-scale operator. Whereas a 64kbps could serve an entire network 20 years ago, now network operators may require access to hundreds of megabits per second. This can quickly become the single biggest operational expense for a small network.

Accordingly, it is essential to understand all of the options for access to backhaul networks. A start to this is to find maps of terrestrial fibre optic infrastructure in your country. This includes both the routes of the network as well as the Points of Presence (PoPs) for the network. Fibre optic networks are only accessibly through their PoPs. Accessing this information can be a challenge. Some [countries](#)

[and operators are transparent about their network](#) but they are often more the exception than the rule. Wherever possible include links to or images of maps of backhaul infrastructure and the locations of IXPs in this section.

Fibre optic infrastructure is not the only option for backhaul. Microwave networks are less and less common but also offer an option. Satellite services, while typically the most expensive option, may be the only option for backhaul in remote areas.

In this section of the profile you will also be looking for policies and regulations related to backhaul infrastructure. This may include stated positions by the government or regulator on [Open Access](#). It may include regulations with regard to infrastructure sharing.

Finally, public information on backhaul pricing is [available in some countries](#) and it is worth investigating the availability of backhaul pricing information.

<callout type="success" icon="true">

- [UK Infrastructure sharing](#)
- [Mexico regulations on infrastructure sharing](#)
- [Kenya - National Optic Fibre Backbone Network Map](#)

</callout>

Gender

Internet access is an effect magnifier that can amplify access to education, markets for business, and strengthen and increase social connection. Unfortunately that same magnifying power can amplify negative outcomes. Care needs to be taken to understand how access to communication is changing society and in particular gender relations. Any network initiative should take into account disparities in access to, design of, participation in, and control of communication networks.

Some places to start with this include looking for gender-disaggregated national statistics on communication network access as well as any research into gender and ICTs in your country.

It is also worth looking directly at the communication regulator. Are women equally represented in senior management? Does the regulator have a gender policy and/or strategy?

- number of men in senior management at regulator regMen
- number of women in senior management at regulator regWomen

<callout type="success" icon="true">

- [Uganda's ICT Laws and Policies from a Gender Perspective, 2016](#)
- [UK regulator's policy on Gender and Diversity](#)

</callout>

Universal Service

Universal Service in telecommunications refers to the policy of providing some level of service to all citizens. Recognising that the private sector cannot be relied to provide services in remote, low-income, and/or sparsely populated areas that may not generate sufficient turnover to match their business models, universal service initiatives were designed to incentivise / subsidise the build-out of telecommunications infrastructure in underserved regions. This usually takes them form of a fund which is created through a levy on existing national network operators as some percentage of their turnover. This fund is sometimes operated by the regulator, or by government or by a semi-independent entity. In particular it would be useful to detail the processes and timing and qualification criteria for accessing universal service funds.

Another way in which universal service policies may manifest themselves is in coverage obligations attached to operator licenses, often to spectrum licenses purchased at auction. You may wish to list them here or in the spectrum licensing section and provide a link/pointer here.

In this part of the profile, you should point to national universal service policies and obligations. In particular, it would be worth investigating whether universal services funds been used to support community networks in your country. If so, how.

Does your Country offer support for local entrepreneurs that are implementing sustainable business models for the development of rural communications, either through the Universal Service Fund or other initiatives?

<callout type="success" icon="true">

- [Universal Service and Access Agency of South Africa \(USAASA\)](#)

</callout>

Cooperatives

The [International Cooperative Alliance defines cooperatives](#) as an “autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically-controlled enterprise.” Cooperatives can be a powerful organisation model for telecommunications networks, especially in underserved regions. In this section, you should identify cooperative legislation and any associated documentation or resources available to cooperatives. Also, if there are existing telecommunications and/or broadband cooperatives in your country, please link to them here.

<callout type="question" icon="true">

- [Kenya Co-operatives Societies Act](#)
- [Broadband for the Rural North \(B4RN\)](#) in Lancashire, UK
- [Zenzeleni Co-operative](#) in the Eastern Cape of South Africa

</callout>

Resources / References

This last section is optional and can be used to point to additional national resources or information that is relevant to community networks and/or small-scale operators that is not captured in the above categories.

Coding examples

Within the wiki you can use this special formatting comments to highlight particularly important information, relevant examples or questions that should be asked.

`<callout type="tip" icon="true">`This could be for hints / tips / tricks on finding information, what to look for etc.`</callout>` `<callout type="question" icon="true">`A question`</callout>` `<callout type="success" icon="true">`A good practice example might look like this`</callout>` `<callout type="danger" icon="true">`A bad practice to be aware of might look like this`</callout>`

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