Enhancing economic performance and well-being in Chile

Policy Actions for a more dynamic telecommunication sector

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1. Key findings and policy actions

MAIN FINDINGS	KEY ACTIONS TO BE CONSIDERED
Ensuring Low Entry Barriers to Telecommunication Markets and Facilitating Infrastructure Sharing	
Multiple public entities and stakeholders (e.g. Ministry of Housing and Urban Development, Municipal Works Directorates, surrounding neighbours) participate in the review process for obtaining a permit for the deployment of antennas. The large number of heterogeneous prerequisites, procedures or permissions necessary for infrastructure deployment is an important roadblock. The costs for the installation of high towers are very high since operators are obliged to pay an equivalent of 30% of the project budget to improve the public space surrounding the antenna. Currently, there are no provisions that require passive infrastructure sharing. Network operators face several barriers when deploying their network infrastructure. Moreover, the existing regulation for concessions - an individual concession scheme for each type of service - is too burdensome for operators.	• Create a mechanism through which operators can file appeals against decisions by Municipal Public Works Departments regarding infrastructure deployment authorisations. • Eliminate high fees for cellular sites deployment to ease infrastructure deployment and facilitate market entry. • Create an infrastructure sharing system between sectors through a regulation for the use of poles, pipelines, cables, and infrastructure of the electricity, aqueduct and sewer sectors. • Create a simplified licensing procedure through which operators are authorised to provide all types of telecommunication services.
Reviewing Power Density Regulation and Addressing Public Concerns	
Power density regulation in Chile sets EMF (electromagnetic fields) limits substantially lower than those defined by the International Commission for Protection against Ionising Radiation (ICNIRP) guidelines. Chilean EMF limits fall within the average range of the five most stringent OECD countries. The Antenna Law prohibits the installation of cellular sites near "public or private schools, nurseries, kindergartens, hospitals, clinics, urban premises with high voltage towers, nursing homes, or other sensitive areas of protections so defined", except for cases of antennas between three and twelve metres high. In addition, Article 2 of the Antenna Law gives SUBTEL the power to "declare a specific geographical area as a saturated area or radiating telecommunication systems, when the power density exceeds the limits determined by the technical regulations dictated for that purpose by SUBTEL."	• SUBTEL and the competent authorities in Chile could review the current EMF limit regulation to align it with international standards as well as with growing demands for IP traffic. One way to tackle this trade-off would be by harmonising EMF limits to those accepted by the WHO (i.e. as provided by the EMF Guidelines of the ICNIRP). • Initiate a national campaign to ensure a better understanding of the health effects of non-ionising radiation of antennas, so as to reduce public concerns.
Creating a National Transfer System that facilitates Infrastructure Deployment	
Information regarding infrastructure deployment is not shared in the Information Transfer System managed by SUBTEL. Although Article 116 bis F of the Antennas Law requires municipalities to determine the best areas to deploy infrastructure, there is no legal obligation for municipalities to report their preferential areas to SUBTEL, the MTT, nor to the Ministry of Housing and Urban Planning. As a consequence, the current system creates excessive search costs to interested agents, which may prevent investment in new infrastructure.	• Consider the creation of a provision that obliges Municipal Public Works Departments to share land registry information regarding preferential zones for infrastructure deployment with relevant Ministries and national authorities. This would increase operators' incentives to verify preferential areas for infrastructure deployment throughout the national territory and rural zones. • Implement a National Information Transfer System with an inventory of all State's assets (e.g. public buildings) that can be used for communication infrastructure deployment. Ideally, this system would also include private real estate with geolocation details.

MAIN FINDINGS	KEY ACTIONS TO BE CONSIDERED
Reference Framework for Spectrum Management and Spectrum Allocation	
Although Chile experienced significant advances in spectrum availability and assignment, and shows higher mobile penetration than other Latin American countries, there are still areas that do not have mobile service coverage, or in which the technologies offered do not allow users to connect to the Internet at broadband speeds. The parameters governing spectrum assignment in Chile are rigid and are in the Law since 1982. Those include the comparative selection model for spectrum assignment which is not the most efficient assignment model. In addition, conditions that are currently set in the context of the comparative selection model are not established by involving reference studies through which it is possible to estimate the cost of such obligations.	• Adapt the conditions for future use of the 3.5 GHz band, considering possible reallocation and refarming schemes. • Establish transparent and clear strategic guidelines regarding the current and future availability of radio spectrum for mobile telecommunication services in the country, based on projected needs and technological developments. • Define technical and economic criteria in order to contribute to the determination of reasonable obligations for the assignees in future spectrum assignment processes for mobile telecommunication services. • Include connecting strategic infrastructure (such as highways and ports) and industrial areas as additional criteria for future spectrum assignment processes in light of the increased importance of the Internet-of-Things and other advanced technologies to spur Chile's digital transformation. • Create new rules in order to achieve more flexible spectrum assignment and use mechanisms, adapted to future requirements of the society and productive sectors in the country. Ideally, spectrum allocations should be based on auctions.
Creating an Independent Telecommunication Regulator	
The regulatory governance of Chile's telecommunication sector has not followed the evolution of the market over the last decades and sets Chile apart from international best practice. SUBTEL is a centralised organism of the Ministry of Transport and Telecommunications and as such its resourcing framework differs from the requirements of a stable, independent and technical regulator for the telecommunication sector. Furthermore, the nomination and appointment of the regulator's leadership, as well as the structure of decision-making mechanisms could be further strengthened and protected from political interference. Therefore, there is scope to increase the accountability of regulatory decisions and actions through a more independent regulatory agency. In addition, a consolidation of regulatory functions for the sector would lower co-ordination costs, which currently rely on ad-hoc mechanisms.	• Set up an independent arms-length economic and technical regulator for the telecommunication sector, in line with OECD policy recommendations and practice across OECD member countries. • In parallel to the legislative process, define and implement a phased approach for the creation of an independent telecommunication regulator. This will be necessary to bridge the duration of the legislative process and pave the way for the establishment of an independent regulator with strengthened regulatory capacities. • Robust and transparent governance of Chile's telecommunication regulator will be key for ensuring the efficiency of the sector, in particular in deploying new technologies and infrastructures, such as the next generation of mobile networks 5G.

2. Introduction and overview

In recent years, the telecommunication sector in Chile has experienced rapid and impressive advances. In 2010, Chile was the first OECD country to legislate in favour of network neutrality and prohibit the blocking of unreasonable discrimination of services. Moreover, over the last decade, Chile has achieved one of the highest growth rates in mobile broadband penetration across OECD countries, with mobile broadband penetration rates rising exponentially from 3.5 in 2009 (Q4) to 94.6 in 2019 (Q4) (OECD, 2020[1]). In addition, from December 2018 to December 2019, Chile experienced a very high annual growth rate of fibre subscriptions, amounting to 36.2%.

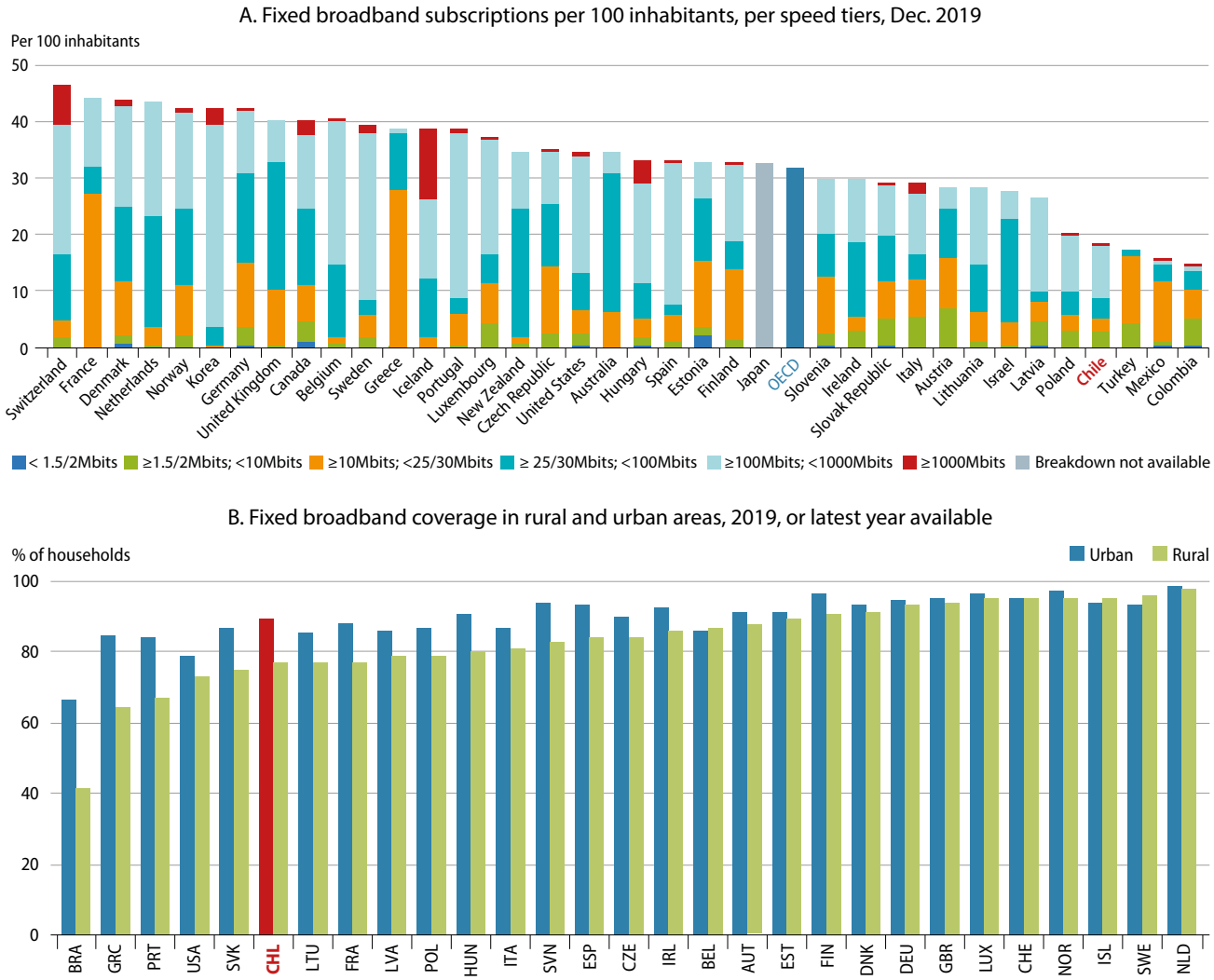
Despite these significant improvements, challenges remain, preventing the digital economy to reach its full potential. For example, albeit rising, fixed broadband subscriptions still lag behind the OECD average (Figure 2.1, panel A). In fact, the deployment of high-speed fixed networks is not only important to increase fixed broadband penetration in the country, but also for the newer generation of mobile networks, with 5G networks relying mainly on fibre backbones (OECD, 2021[3]). Moreover, significant regional disparities persist in the country, with fixed broadband coverage standing at 76% of households in rural areas, as opposed to 89% in large metropolitan regions (Figure 2.1, panel B).

To help address some of these challenges, this Assessment analyses the existing concession system and the legal and administrative requirements for infrastructure deployment in Chile. It assesses how the Chilean system of granting permissions for infrastructure deployment may act as a barrier to deployment. It also identifies a number of issues that may discourage new operators from engaging in infrastructure deployment.

In addition, with growing demands placed on networks and more spectrum to be allocated to mobile communication services, efficient spectrum management should be a key objective. The current parameters that govern spectrum assignment in Chile are relatively rigid and date back to 1982, focusing primarily on the quality and geographic expansion of services. The Assessment reviews possible alternative approaches and identifies actions aimed at establishing clear criteria and conditions when assigning spectrum.

The governance of the telecommunications sector also needs attention and upgrade. Chile stands out among OECD countries for lacking an independent sector regulator. Currently, the Subsecretariat of Telecommunications (Subsecretaría de Telecomunicaciones, SUBTEL) sets sector policies and performs regulatory, inspection and enforcement functions. These multiple responsibilities strain SUBTEL's capability to effectively regulate the sector. Over time, the lack of an independent regulatory authority risks undermining the confidence in a stable regulatory environment in a critical moment for the sector, when new investments and upgrades are needed. Drawing on international best practices, the Assessment proposes the creation of an independent technical and economic regulator and points at avenues to strengthen the regulatory capacities of the current ministerial regulator as a way of transitioning into the establishment of an independent regulator.

Figure 2.1. Fixed broadband coverage and penetration is low, with large regional disparities



Note: For Figure A. Australia: Data reported for December 2018 and onwards is being collected by a new entity using a different methodology. Figures reported from December 2018 comprise a series break and are incomparable with previous data for any broadband measures Australia reports to the OECD. Speed tier data are only for services purchased over the National Broadband Network (NBN), which comprise the majority of fixed broadband services in operation. There is no public data available for the speed of non-NBN services. Data for Canada, Switzerland and United States are preliminary. New Zealand: Speed tiers are for 2018 instead of 2019.

Source: OECD Broadband portal, http://www.oecd.org/sti/broadband/broadband-statistics/.

To support the achievement of these policy goals, the Assessment provides an overview of strategies and actions for consideration to improve Chile's communication policies and processes in the areas of infrastructure deployment, information sharing, spectrum allocation and management and the governance of the sector. It includes a detailed action plan to support the implementation of the proposed actions. Since infrastructure deployment is a key objective of the Chilean government, the proposed actions consist of near-term interventions with a suggested timeline and an indication of responsible authorities and milestones to track progress. The proposed policy actions form a comprehensive policy package to enhance Chile's telecommunication strategy on various fronts.

The Assessment was prepared by an OECD multidisciplinary team with experts from the Economics Department, the Directorate for Science, Technology and Innovation, and the Public Governance Directorate. The OECD team worked closely with a number of Chilean institutions, including the Ministry of Economy, the Ministry of Transportation and Telecommunications, and the Subsecretariat of Telecommunications (SUBTEL). The Assessment builds on information collected through a questionnaire, as well as meetings and interviews with key government institutions, operators, research institutions and civil society conducted during an expert mission to Chile on 8-10 July 2019.

3. Infrastructure deployment in Chile

3.1 THE GENERAL LEGAL AND REGULATORY TELECOMMUNICATION FRAMEWORK IN CHILE

Governmental agencies in charge of the telecommunication sector

In Chile, the main regulatory authority of the telecommunication sector is the Ministry of Transportation and Telecommunications (MTT), through its centralised organ Subsecretariat of Telecommunications (SUBTEL). The main functions of both entities in this field are to direct, control, promote, and develop public telecommunication policies in the country.

SUBTEL was created in 1977 as an organ under the oversight of the MTT, under Decree Law N° 1762. Since its creation, SUBTEL has been entrusted with the mission of developing Chile's communication sector, which has undergone a deep transformation over the past forty years. The attributions that were first assigned to the MTT are now exercised by SUBTEL as a technical and specialised body. However, the MTT still holds some special functions. For example, the MTT acts as first-instance court in case of infringement charges imposed by SUBTEL under article 36 of the General Telecommunications Law (hereinafter GTL).[1]

SUBTEL's functions cover a wide range of areas, including:

- Performing the necessary procedures to grant and modify the authorisations required for the operation of telecommunication services;
- Enforcing all processes for an efficient and timely processing of all concessions, permits and licenses that are required to operate telecommunication services;
- Maintaining administration, coordination, and management mechanisms for all cross-cutting activities related to the generation of concessions, permits and licenses; facilitating a fluid and efficient operation for telecommunication services;
- Enforcing the GTL and all regulations concerning the telecommunication services provided by concessionaires and permit holders;
- Promoting the increase of coverage of telecommunication services in rural or urban areas of low income, with low or no availability of these services, due to the economic unfeasibility of being served by the national telecommunication industry;

1. Article 36 of the GTL provides as follows: "Violations of the rules of this law, its regulations, fundamental technical plans and technical standards, will be sanctioned by the Ministry in accordance with the provisions of this law. The sanctions will only materialise once the resolution that imposes them has been executed. (…) "

- Designing strategies and instruments that ensure the development of the telecommunication market, promoting competition in this sector, and ensuring the availability of quality services and adequate prices.

Many of these actions are carried out jointly with other public bodies. These include the Comptroller General of the Republic (*Contraloría General de la República*, CGR); the National Service of the Consumer (*Servicio Nacional del Consumidor*, SERNAC); the National Economic Office (*Fiscalía Nacional Económica*, FNE); the Chilean Tribunal for the Defence of Free Competition (*Tribunal de Defensa de la Libre Competencia*, TDLC); and the National Council for Television (*Consejo Nacional de Televisión*, CNTV). The Supreme Court also produces rulings on topics that are closely relevant to SUBTEL's scope of work, such as infrastructure and spectrum access regulations, spectrum allocation and competition in the telecommunications sector.

Regulation for licensing, interconnection, access to infrastructure, and spectrum management

The Chilean telecommunications law establishes the principle of free and equal access to spectrum frequencies through concessions, permits, or temporary telecommunication licenses that must be granted by the State.[2]

Radio spectrum allocation is regulated by the GTL (Article 13C), as well as by Regulation N°412 of 1995 issued by the MTT. In accordance with this regulation, whenever SUBTEL's technical standards indicate to assign only a limited number of concessions, then the so-called **comparative selection model** prevails. This is an allocation model which assigns the concession or permit to the project which offers the best "technical conditions" (with respect to coverage, the network deployment period, quality, technology, guarantees), ensuring an optimal transmission and excellent service. If there are two or more equally qualified applicants, the tie is resolved by a public bid.[3]

Nonetheless, since the last modification to the GTL, at the beginning of the 1990s, an **individual concession regime** has been implemented. This means that, for each type of service provided, there is a specific authorisation defined by the relevant sector regulation. Thus, public, intermediate, and sound broadcasting services each require a different authorisation.[4] Concessions of public and intermediate services are granted by the State, and the procedure is found in articles 14, 15 and 16 of the GTL, as well as in article 13C, previously mentioned for public bids.

Regarding the deployment of antenna towers, the competence to approve concessions lies with each municipality, in accordance with the General Law on Urban Planning and Construction, Decree No. 458 of 1876 of the Ministry of Housing and Urban Planning, as amended by Law No. 20599 of 2012 that regulates the installation of antennas for the transmission of telecommunication services.

In order to apply these rules, the Ministry of Housing and Urban Development defined a set of unique national forms that the interested parties should present to each municipality.[5]

On the other hand, the concession for sectoral licenses and permits corresponds to SUBTEL exclusively, while the permits for passive infrastructure for the provision of telecommunication services are given by different agencies of the state apparatus (municipalities, Ministry of Housing and Urban Planning, or other ministries).

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2. Article 8 of the GTL provides the following: "For all purposes of this law, the use and enjoyment of radio spectrum frequencies shall be freely and equally accessible through telecommunications concessions, permits or licenses, especially temporary, granted by the State."

3. Article 13C of the GTL highlights the following: "Until the deadline for submitting to the public tender has expired, without the concessionaire who is in the case contemplated in the preceding number making such presentation. The concession will be assigned to the applicant whose project, fully complying with the contest rules, offers the best technical conditions to ensure optimum transmission or excellent service. In any renewal of a concession, the concessionaire who held it will have a preferential right for its allocation, provided that it matches the best technical proposal that ensures optimum transmission or excellent service, as appropriate. In the event that two or more contestants offer similar conditions, the contest will be resolved by public raffle between them, if none of them has the quality of a previous concessionaire. (…) "

4. Article 8 of the GTL establishes "a concession granted by decree will be required for the installation, operation, and exploitation of the following Telecommunications services: a) public services; b) intermediate provided for telecommunication services through facilities and networks intended for that purpose; and c) sound broadcasting (…)." In addition, the "Manual de Trámites de Autorizaciones" from Concessions Division of SUBTEL gives a general guideline for the obtainment of concessions for each service.

5. The SERVIU is an autonomous State institution with presence in each region of Chile, related to Chilean government through the Ministry of Housing and Urban Planning. This institution has legal personality of public law, with an independent patrimony.

In Chile, there is no clear universal-access obligation for operators. Hence, there is no obligation to undertake public bids for the provision of telecommunication services in remote or hard-to-reach-areas. Therefore, in accordance with Title IV of the GTL, the Telecommunications Development Fund was created; for the purpose of *"promoting increase in coverage of telecommunication services, preferably in rural areas, and urban areas of low income"* (See Box 3.1).

In turn, Chile recently introduced national roaming through two different decisions that were both issued in mid-July 2020. On the one hand, the Supreme Court[6] ordered the establishment of a new national roaming obligation. This obliges "incumbents", i.e. operators with a "national coverage network", to provide national, compulsory and temporary roaming to new entrants that are still deploying their own networks – thus allowing new operators to fully be able to compete with incumbents. This roaming obligation applies to all spectrum bands, and not only the ones allocated through new spectrum allocation processes. The decision of the Supreme Court does not define national coverage[7] and the concrete duration of the obligation – factors that will be important to determine in the future. The introduction of a clear and well-defined sunset clause is especially important, as this provides a necessary investment incentive for operators without a national coverage to extend their networks faster and compete against established operators. A sunset clause where the roaming regulation is set for too long (e.g. over five years) would harm investment incentives.

On the other hand, a different type of national roaming regulation was also introduced by Law 21,245, published in the Official Journal on July 15, 2020.[8] The Law amends the Telecommunications law, and determines that operators must allow access to and use of their facilities to other concessionaires for virtual mobile operations and automatic roaming. For this purpose, operators must formulate reference offers for wholesale access which need to be based on "general, uniform, objective, transparent, cost-oriented criteria, in economically viable and non-discriminatory terms, and sufficiently disaggregated in all its elements".[9] For some areas, such as sparsely populated areas, where only one operator provides services or projects funded by the Telecommunications Development Fund, as well as some services such as emergency services, no sunset clause has been defined. For other cases, a sunset clause is to be defined which cannot exceed five years.

Overall, the scope of Law 21,245 can be considered broader than the Decision of the Supreme Court, but it is unclear how the two decisions, which were published one shortly after the other, can be aligned. While the Supreme Court decision is an asymmetrical regulation imposed on networks with national coverage, Law 21,245 constitutes a symmetrical regulation. The latter can be regarded as particularly counterproductive for cases where no sunset clauses are defined,

6. Supreme Court, decision of 13 of July: Corte Suprema, Sentencia de 13 de julio 2020, Rol 181-2020. Justices: Jorge Dahm, Sergio Muñoz y Leopoldo Llanos (concurrent opinion); María Eugenia Sandoval y Ángela Vivanco (dissenting opinion).

7. e.g. whether this is geographical coverage, population coverage or how much coverage can be regarded as national coverage.

8.. Law 21.245 of 2020

9.. Article 26.bis. Law 21.245 of 2020.

Box 3.1: THE TELECOMMUNICATIONS DEVELOPMENT FUND

The Telecommunication Development Fund was created by Title IV of the GTL. The following characteristics of the fund are highlighted:

- The Telecommunications Development Fund (*Fondo de Desarrollo de las Telecomunicaciones*, FDT) is a financial instrument of the Chilean government whose principal objective is the increase of coverage in rural and low income urban areas. The rationale provided is that, in general, it is economically unfeasible for the national telecommunication industry to deploy communication infrastructure in those areas.
- The Fund determines which projects will be executed from those presented based on connectivity requirements or demands made by telecommunication services concessionaires, municipalities, neighbourhood councils, and other social or community organisations or third parties. These requirements are then technically and socially evaluated by the FTD Management Division of SUBTEL who is in charge of preparing the proposals that will be submitted to the Telecommunications Development Council (*Consejo de Desarrollo de las Telecomunicaciones*, CDT). If approved, they become part of the projects that are eligible for subsidies. Those projects are then submitted to a public tender during the following year.

as this creates no incentives to invest and thus can result in less infrastructure competition. The decision to grant automatic roaming to established players in the market can also be questioned, as those players are already in a position to expand their networks. Rather, it would be preferable to allow operators to sign infrastructure sharing agreements in areas where infrastructure is not built out, so as to extend overall coverage in the country.

3.2 MAIN BARRIERS TO INFRASTRUCTURE DEPLOYMENT

The level of infrastructure deployment by operators is key when it comes to competition and the expansion of coverage. For this reason, many OECD member countries are working towards removing barriers to deployment of fixed and mobile ICT (Information and communications technology) infrastructure.

Chile is at the start of another technological cycle for communication services, which will lead to the deployment of 5G networks. These networks will deliver new transformative services, so it is crucial that communication operators' investment decisions are not distorted by barriers. This section focuses on determining the principal barriers that Chile should eliminate in order to facilitate the entrance of new competitors and the expansion of coverage. It identifies specific issues that are likely to have a negative impact on the deployment of communication infrastructure, meaning that investment and hence coverage are likely to be lower than they could be.

The main barrier that operators face is the existence of various regulations at different levels of government and the lack of a unique and central entity that provides guidelines and standards for telecommunication infrastructure deployment.

Although regulations to grant permits for deployment of passive infrastructure are at the national level – under the GTL-, the actual power of authorisation of deployment is the responsibility of municipalities.[10] Municipalities, in turn, have different and unique legal frameworks that are not necessarily harmonised.

Similarly, the existence of various regulations (and regulators) makes it hard for new operators to enter the Chilean market. In particular, the current regulations do not encourage operators in the market to cooperate and share passive infrastructure under market conditions.

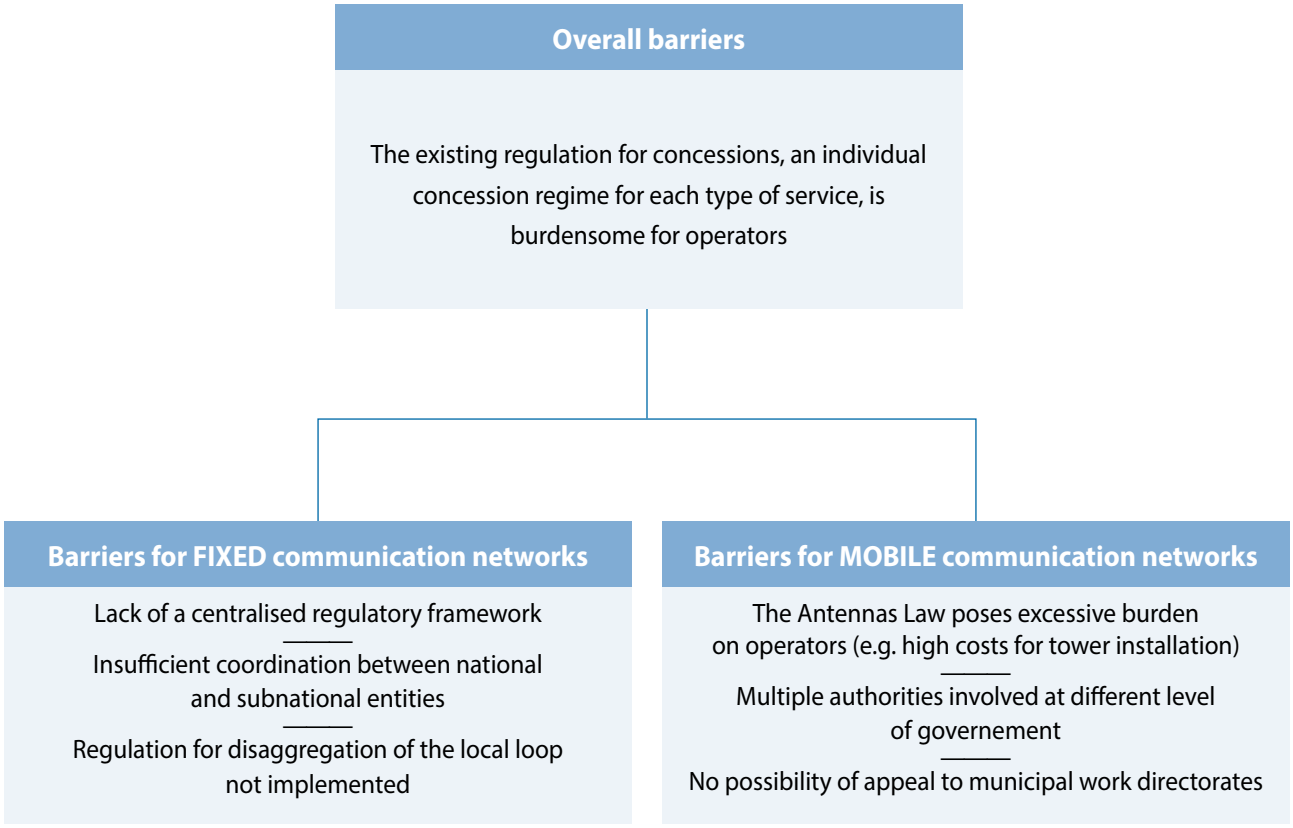
Overall, one key issue affecting competition is the existing concession regime. The current individual concession regime is not only too burdensome for operators, but also creates artificial barriers to market entry. Because competition fosters innovation in the market, it is desirable that the market is easily accessible to new entrants, i.e. that the market is "contestable". Instead of the current individual concession regime, a **single concession regime** may be preferable, in which the regulatory authority (SUBTEL) publishes a single concession class for all companies.

In other words, this would involve adopting a single licensing regime whereby operators are authorised to engage in all telecommunication services throughout the entire Chilean territory. This would encourage potential operators to enter the market and engage in infrastructure deployment, thus reducing barriers to entry and providing a contestable telecommunication market. Incumbent operators would be motivated to engage in new telecommunication services.

Additional key barriers are specific to either fixed or mobile communication infrastructure (Figure 3.1). Section 3.2.1. discusses specific barriers to the deployment of fixed communication infrastructure, while section 3.2.2 discusses barriers to the deployment of mobile communication infrastructure, with a focus on the challenges arising from the so-called Antennas Law.

10.. As defined by the General Law of Urban Planning and Construction (Decree No. 458 of 1976 of the Ministry of Housing and Urban Planning), as amended by Law N° 20599 of 2012 that regulates the installation of Transmitting Antennas of Telecommunications Services.

Figure 3.1 Overview of key barriers to the deployment of communication infrastructure



Barriers for infrastructure deployment of fixed communication networks

There are different barriers to fixed network deployment in Chile, both at the horizontal level (i.e. street level deployment such as streets, sidewalks, roads) and at the vertical level (in-building deployment).

Regarding horizontal deployment, the main barriers are the lack of a unique and centralised regulatory framework (given the powers of municipalities), the absence of mandatory coordination between national and subnational government authorities, and the lack of rules at the national or local level that provide incentives for operators to share infrastructure.

The dispersed and unstructured regulation is burdensome for operators and reduces the incentives for coordination between companies from different industries to share passive infrastructure. As a result, each company deploys its own infrastructure, which can result in multiple networks along the same sidewalk or street and an overall high cost burden.

In addition to what has been shown, the Tribunal of Competition Defense has intervened in the market under competition law grounds in order to facilitate infrastructure sharing, including the determination of areas of dominance and the obligation for the incumbent's network disaggregation. However, the Bill for network disaggregation *"(…) after the period of public discussion to which it was submitted, has not been enacted…"*[11]. As a consequence, the incumbent has no real incentive to share network elements since the regulation for disaggregation of the local subscriber loop and the bitstream is not applied in practice.

11 https://www.tdlc.cl/nuevo_tdlc/wp-content/uploads/informes/Informe_02_2009.pdf

With regard to vertical deployment, the same problems arise. An investigation by the national competition authority detected numerous local monopolies, due to the common practice of fixed communication operators to reach exclusive agreements with buildings for pipelines and interior installations. This investigation by the TDLC led to the issuance of the Law 20808 of 2015 on protecting the free choice of cable, Internet or telephony services. The law prohibits these exclusive agreements and obliges suppliers to coordinate in future buildings. The main aspects of this law can be found in Box 3.2 below.

BOX 3.2 THE LAW ON PROTECTING THE FREE CHOICE OF CABLE, INTERNET OR TELEPHONY SERVICES (LAW 20808 OF 2015)

The Law imposes the following obligations to real estate and construction companies:

- To inform telecommunication operators of new real estate projects that (i) include the installation of telecommunication facilities in the building design; and (ii) correspond to real estate projects that involve several units and contemplate laying networks underground or the installation in condominiums.
- To regulate the technical specifications and the necessary criteria for the installation of interior and exterior cameras, as well as the respective "polyducts" and the internal distribution network in condominiums of extension or height, in order to allow the use of said infrastructure by more than one telecommunication operator.
- It is prohibited to agree on provisions that unreasonably limit the entry of telecommunication companies.

Barriers for infrastructure deployment of mobile communication networks

Operators who want to deploy infrastructure must fully comply with the provisions of Law 20 599 of 2012 (Law of Transmission and Broadcasting Antennas for telecommunication services, hereinafter, Antennas Law) that regulates the deployment of towers for antennas and radiation systems, and establishes different obligations depending on the height of the antenna tower and its location.

The Antennas Law obliges operators to fulfil a series of multiple and burdensome requirements to comply with municipalities[12] – and their Works Directorates – as well as to liaise with the nearby neighbourhood council, with the obligation to offer economic compensation to all immediate property owners next to the antenna tower. This sometimes leads to a situation where people are encouraged to exercise their right of opposition or resistance to both infrastructure deployment and mobile access network expansion. Furthermore, the procedure with the neighbourhood councils can be difficult, since infrastructure deployment can affect the value of real estate surrounding mobile telecommunication infrastructure.

This law has proven to be highly burdensome and has generated long waiting times for industry actors to obtain deployment permits, due to the large and differentiated number of administrative requirements to be met. Each municipality or local government has the discretion to adopt different criteria for infrastructure deployment (local authorities or governments can vary their criteria independently throughout the Chilean territory). Moreover, each municipality can impose additional charges with respect to some additional procedures, such as the review of files or the fees for the installation of cabinets.[13]

In addition to these local procedures, each industry player who desires to deploy infrastructure is also required to complete a procedure with SUBTEL. The current procedure may entail a significant workload for SUBTEL divisions, and, hence, can generate a considerable delay in the response. The following tables, based on information obtained in an OECD mission to Santiago, summarize the average time the authority takes to issue an authorisation:

12. As stated, each municipality has its own regulation and infrastructure management system. There are approximately 345 municipalities in Chile, of which more than 50% are semi-urban with a medium or low technology development.

13. To address this challenge, some OECD countries put limits to municipalities on what they can charge to operators. The US, for example, limits such fees with a nationwide order, produced by the FCC, which "Accelerating Wireless and Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment," adopted on the 26 September 2018, clarifies the FCC's views regarding the amount that municipalities may reasonably charge for small cell deployment given the practicalities of 5G deployment and the importance of 5G to the United States. In particular, the FCC declared that, pursuant to Section 253 of the Communications Act, fees should be a "reasonable approximation of the municipalities' costs". In offering guidelines for determining this value, the FCC cited the rules of twenty states that limit upfront pole fees to USD 500 for use of an existing pole, USD 1 000 for installation of a new pole, and recurring fees of USD 270.

Table 3.1 Requests submitted to SUBTEL for antennas attached to existing structures (approved in the same request year and authorised by Resolution)

Year in which the authorisation for deployment was granted	Average number of days taken for the authorisation
2016	115
2017	92
2018	111

Table 3.2 Requests submitted to SUBTEL for antennas attached to new towers (approved in the same request year and authorised by Decree)

Year in which the authorisation for deployment was granted	Average number of days taken for the authorisation
2016	131
2017	173
2018	153

Table 3.3 Requests submitted to SUBTEL for microwave links (approved in the same request year and authorised by Decree)

Year in which the authorisation for deployment was granted	Average number of days taken for the authorisation
2016	356
2017	208
2018	204

Source: Information gathered during the OECD fact finding mission. Information provided by operators.

In general, SUBTEL procedures for infrastructure deployment also require a public service concession, whose term is granted for 30 years to legal entities by a Supreme Decree. This Concession must be signed by the Minister of Transportation and Telecommunication by express delegation of the President. Since it is a Supreme Decree, its revision is referred to the Office of the Comptroller General (CGR).

Mobile operators also face the growing obstacle of theft and vandalism in sites and infrastructure that, in addition to hindering infrastructure deployment, can obstruct the provision of mobile services. Therefore, there is a need to develop a holistic public policy for the protection of mobile communication infrastructure and for critical telecommunication infrastructure, not yet protected through specialised instruments.

Regulation on infrastructure sharing is outdated, despite multiple attempts from SUBTEL to adapt it to new technologies and to the needs or requirements of the Chilean society. However, a new regulation faces multiple barriers that ultimately slow down the modernisation process. To modify the existing regulation, the participation of the regulatory entity (SUBTEL) and both branches of the Congress is required, since the bases of the existing regulation are enshrined in laws that can only be modified by the Chilean Congress. Delays in modifying the law mean that the current regulatory framework is not always in line with the advances in services and the needs of consumers and the community.

The Antennas Law

One of the objectives of the Antennas law (Law N° 20599 of June 11, 2012) is to reduce the amount of antenna towers through co-location, harmonisation on towers, and lower-rise towers, *"with the purpose of reducing the urban impact where these*

facilities are located".[14] A report from the Chilean Chamber of Deputies also stresses that the law was created *"with a special emphasis on the effectiveness and efficiency tools aimed at minimising the urban impact of antenna towers and radiation systems, the effectiveness of neighbour participation mechanisms, and the measures adopted by the law for the protection of people's health."*[15]

Under these criteria, the law requires a permit for all installations of antenna support structures that have a height above 3 meters including the tower, antennas, and radiation systems. The permit must be granted by the Public Works Directorate of the respective municipality. There are different procedures for obtaining permits depending on the height of the antenna tower. In general, the procedure for a tower over 12 meters of height is significantly more complex than the procedure for the installation of an antenna tower of a height between 3 and 12 meters.

Article 1 of the Antennas Law, which adds Article 116 Bis F to the General Law of Urbanism and Construction, establishes that *"every support tower for antennas and radiation systems over 12 meters high shall require a permit for the installation issued by the respective Municipal Construction Directorate"*. Moreover, the application for obtaining a deployment permit requires the submission of the following documents:

a. Installation request signed by the property owner and the responsible dealer. In the case of national goods for public use, and state property administered by municipalities, authorisation from the respective municipality is also required.

b. An antenna tower installation project plan with the signature of a competent professional complying with distance rules.

c. Project budget, including, structures, telecommunication transmission systems, equipment and rental income.

d. A technical project describing the structure of the tower, including its foundations (…) indicating the antenna support capacity, also prepared by a competent professional. (…)

e. Certificate issued by the Correos de Chile that accredits the communication by certified letter, to the respective neighbourhood council and to property owners in the area located in the surroundings of the tower[16].

f. Construction proposals to improve the public space surrounding the antenna equivalent to an amount of 30% of the project budget.

g. Certificate from the General Directorate of Civil Aviation that proves that the tower and antennas do not constitute a danger to air navigation.

h. SUBTEL certificate proving that a request for the granting or modification of the concession of telecommunication services has been submitted.

i. Information on the conditions of the property where the infrastructure will be deployed.

Three aspects can be highlighted from the requirements listed above:

1. There are too many mandatory technical requirements for the process of obtaining permits for the installation of towers or radiation systems of a height of more than 12 meters;

2. the coordination with neighbours surrounding the project is required to obtain installation permits; and

14. http://www.afinex.cl/web/wp-content/uploads/2015/05/RESUMEN-DE-LA-LEY-20599.pdf

15. http://www.evaluaciondelaley.cl/ley-n-20-599-que-regula-la-instalacion-de-antenas-emisoras-y-transmisoras-de-servicios-de-telecomunicaciones/foro_ciudadano/2014-04-29/100118.html

16. The radius of the area amounts to twice the height of the antenna.

3. infrastructure deployment of towers becomes extremely expensive since the board of neighbours must be compensated with an improvement of nearby public works with an equivalent value of 30% of the project's budget attached to the permit request– Letter F of Article 116 Bis F.

If an industry player aims to install an antenna between 3 and 12 meters of height, fewer documents need to be provided, but the requirements are still a barrier for infrastructure deployment since they are still too technical and time consuming. Specifically, documents a), b), h) and i) of Article 116 Bis F are required. Among these requirements, document b) should be highlighted since it requires the project to be signed by a *"competent professional"* and since it has to include *"plans for the installation of towers that comply with the rules on distancing"*, as well as presenting *"an explanatory report of the design and construction measures adopted to harmonise the structure with the urban environment of the site of installment"*. Hence, these examples reveal how burdensome it can be to install new antennas. For example, as will be explained below, the existing distancing rules in Chile are stricter compared to other OECD countries. Additionally, there are no criteria to determine what the term "harmonise" indicates in this context. As a result, municipalities have full discretion on the meaning and interpretation as well as in the decision regarding all completed requests.

The Antennas Law encourages the installation of smaller towers with low urban impact, since fewer requirements apply to these facilities, in comparison to those that exceed twelve meters. However, even though the law creates incentives for the installation of lower antennas, requirements are still too burdensome.

In addition to the large set of documents included in the Annexes that are required to be submitted, the active participation of other entities or agents is required to install higher antennas above 12 meters. The Municipal Council, the Municipal Works Directorate, Neighbourhood Councils, affected neighbours, the Ministry of Housing and Urban Planning, SUBTEL, as well as the community -which needs to be informed of the installation with a publication in local newspaper- all need to be involved in the overall process.

In particular, citizens have the possibility to make pertinent observations within a period of 30 calendar days after the communication of the project. Citizens have the right to:

a. "*Oppose the installation of a tower for technical reasons related to SUBTEL's grant of a telecom service*".

b. "*Make observations on the tower installation project to the Municipal Works Department of their neighborhood*". By exercising this right, the neighbourhood council must choose one of the following alternatives: (i) demand improvement works that would minimise the impact of the installation of the tower in the public space of the neighbourhood to the company as a compensation, or: (ii) require that the installation is harmonised with its urban environment, through a design that is harmonised with the urban landscape and the architecture of the place that surrounds it.

c. "*Ask for the prosecution of the property's tax appraisal, when being an owner of a property located within the radius associated with the installation of the antenna support tower*."

d. "*To ask the company to comply with the maximum radio emission standard issued by the Ministry of Environment in the area*".

This means that although the Law does not explicitly state it, property owners located in the surroundings have the right to object to a planned antenna installation by submitting their comments. This is especially the case when there is a precautionary principle under which citizens can raise their doubts regarding the harmful effect of the radiations emitted by the antennas and, thereby, seek that authorities do not allow the installation of antenna towers.

This creates a delicate trade-off between the potential benefits of deploying infrastructure and the potential drawbacks for health and the environment.

There have been longstanding public concerns in many countries about the potential health effects of wireless services due to the exposure to electromagnetic fields (EMF). That is why numerous international organisations, including the World Health Organization (WHO), have studied the effects of EMF associated with mobile services, which has led to guidelines on EMF limits by the International Commission on Non-Ionising Radiation Protection (ICNIRP), a non-governmental organisation formally recognised by the WHO. The translation of these EMF limits into laws or regulatory measures in each country is known as power density regulation. Power density regulation can be a powerful strategy to balance cell site deployment with public health considerations and/or the goal to minimise environmental disruption at a local level (OECD, 2019[2]).

However, adding capacity to wireless networks can only be accomplished by making more spectrum available, making use of it more efficiently or increasing the number of cellular sites (OECD, 2019[2]). Therefore, if a country (or a municipality) decides to set very strict power density rules (as is the case for Chile, compared to international standards), a potential consequence is a direct increase of the cost of network deployment (i.e. as they may require more spectrum for operators to be able to meet the demand of data traffic). The deployment of cellular sites can therefore be an important way to help provide services that use a large amount of data with minimal delays and cope with the increased generation of data traffic. Moreover, cellular sites can be critical to address the demands of the digital transformation and to use technology for public policy goals, such as improved outcomes in transport or the provision of health services.

In Chile, the considerations about power density regulation are contained in the Antennas Law,[17] whereas the Ministry of Environment sets the EMF limits (Article 2 that modifies Article 7 of the GTL).[18] This Law grants SUBTEL the power to identify "saturated areas of radiation telecommunication systems." It also expressly prohibits the deployment of cellular sites in certain buildings such as schools and hospitals, among others.[19] The purpose of this section in the law is to protect people's health from radiation emitted by the equipment. In line with this standard, it is possible that additional places will become classified as sensitive areas in the future.

That being said, the main conclusion of the WHO is that mobile network deployments with EMF exposures below the standard set in the ICNIRP guidelines, "do not appear to have any known consequence on health" (WHO, 2019[3]). However, it appears that infrastructure deployment rules in Chile are stricter than these international standards. In fact, SUBTEL has recognised that *"in Chile the precautionary [health] principle is applied in a strict manner through technical regulation that limits the emission of antennas and cell phones. In the case of antennas, the Chilean protection standard is among the average of the five most stringent OECD member countries. The maximum antenna emission limit allowed in Chile is, on average, 10 times lower than the limit recommended by the WHO, and up to 100 times lower than that authorised in developed countries such as the United States."*[20].

Furthermore, from a more prospective point of view, the current law may have unintended consequences vis-a-vis the deployment of 5G networks. The importance of power density regulation has come to the fore in OECD countries, as the next generation of wireless networks, 5G, will require both macro and small cells to be closer to the user in order to cope with the increasing demands for data traffic. This process of expanding cellular sites, known as "network densification", has raised the issue of whether current power density regulations in OECD countries may impede the deployment of small cells required for 5G networks (OECD, 2019[2]).

17. Based on a principle contained in"Evaluation of Law No. 20.599 [GTL]" of the Chamber of Deputies.

18. Numeral 1 of Article 2 of Antennas Law provides the following: "1) Replace article 7 with the following: Article 7 °. - The Ministry of Transportation and Telecommunications shall issue the regulations that all equipment and networks that, for the transmission of telecommunications services, generate electromagnetic waves, whatever their nature, are installed, operated so as not to cause harmful interference to national or foreign telecommunications services or electromagnetic equipment or systems or interruptions in its operation. For its part, it will be the responsibility of the Ministry of the Environment to issue the environmental or emission quality standards related to said electromagnetic waves, in accordance with the Law on General Bases for the Environment."

19. Article 116 bis E of the Antennas Law provides the following: "(…) Nor may antenna towers be constructed inside of public or private schools, nurseries, kindergartens, hospitals , clinics, urban properties where there are high voltage towers, nursing homes, or other sensitive areas of protection as defined by SUBTEL nor in sites located at a distance less than four times the height of the tower of the boundaries of these establishments, with a minimum of 50 meters away."

20. https://www.subtel.gob.cl/images/stories/apoyo_articulos/notas_prensa/preguntas_respuestas_nueva_ley_torres_antenas.pdf

Likewise, according to the Antennas Law, the installation of the towers to support antenna, like any other construction work, requires a payment of a fee for the construction permit in accordance with the General Law of Urban Planning and Construction. In fact, the permit amounts to 5% of the antenna installation cost, raising the costs of infrastructure deployment.[21]

Thus, the process of obtaining permits for deployment of antennas contained in this Law is complex, not only because it involves the participation of several entities, but also because it entails harsh deadlines. For example, in the absence of approval from the Municipal Works Directorate, the permit is understood to be granted. Therefore, Municipalities have begun to require operators to have an Independent Reviewer[22] in obtaining permits.[23] Some actors in the sector indicate that, in order to obtain a permit for the deployment of 5G antennas, they would need to start this process prior to spectrum assignation in order to provide 5G services. These provisions of the Antenna Law may raise the costs of network deployment.

In addition, it is up to the municipalities to issue the permission for the installation of antenna support towers. However, the interpretation of the Antennas Law allows for discretion in the issuance of permissions, which, in turn, may lead to room for the respective municipalities to create artificial barriers when granting permissions. It is thus recommended that SUBTEL, together with the Ministry of Housing and Urban Development, develop regulations aimed at reducing the leeway for municipalities to generate artificial restrictions on infrastructure deployment.

Likewise, since municipalities are the only authorities in charge of the authorisation process for the installation of antenna support towers, there is no mechanism for operators to appeal decisions of the municipalities. It is therefore recommended to create a mechanism through which operators can file appeals against Municipal Works Directorates. Appeals should be handed in to SUBTEL as it is the regulatory entity in telecommunication.

In conclusion, it can be said that legal and regulatory procedures needed for the deployment of infrastructure are often too burdensome for operators. Together with imperfect rules for municipality administrations, this creates barriers to entry and deployment. Removing these barriers will generate tangible gains for downstream firms and consumers and

21. The Antennas Law adds section 10 to article 130 of the General Law of Urban Planning and Construction. Accordingly,"[p]ermission for the installation of a support tower for antennas and telecommunications transmission systems" corresponds to 5% of the installation budget. Said payment may represent a barrier to infrastructure deployment as it imposes a high cost for obtaining the permit.

22. An independent reviewer is a professional, with current registration in the corresponding Registry of the Ministry of Housing and Urban Planning, which verifies and informs the respective Director of Municipal Works if the project complies with all the relevant legal and regulatory provisions.

23. Article 116 Bis F of the General Law of Construction and Urbanism provides the following: "The respective Municipal Works Directorate, within a maximum period of fifteen days counted in accordance with the provisions of letter e) above, will grant the permit if, according to the annexes, the request complies with the provisions established in this law, upon payment of the municipal rights corresponding to the Provisional Works in accordance with section 3 of the table contained in Article 130 of the General Law of Urban Planning and Construction, or shall be pronounced denying it. If after this deadline there is no written statement about the permit, the interested party may expressly request that issuance of a decision granting or rejecting the permit within two business days. If silence persists, it is understood by that single fact the permission is granted by the Municipal Works Directorate."

BOX 3.3. MAIN BARRIERS TO INFRASTRUCTURE DEPLOYMENT CREATED BY THE ANTENNAS LAW (LAW N° 20599 OF 2012)

The Antennas Law creates, among others, the following barriers to Infrastructure Deployment:

- The law requires an installation permit for all cellular sites with a height greater than three metres.
- Several authorities, such as the Municipal Council, the Municipal Works' Directors, the Ministry of Housing and Urban Planning and SUBTEL, participate in the procedure for granting permits.
- Similarly, Neighbourhood Councils, affected neighbours, owners and / or users of special areas such as schools, hospitals, nursery rooms, nursing homes, and the community in general, participate in the procedure.
- Operators engaging in deployment of antennas bigger than 12 meters must present a proposal on how the deployment will be accompanied by construction work that would improve public spaces, which is financed by the operator with a budget equivalent to 30% of the cost of the cellular tower.
- Nonetheless, affected residents may ask for an alternative proposal harmonic with the urban environment and the architecture of the site.
- Currently, there is no mechanism for operators to appeal a decision by Municipal Work Directorates, which are the only authority with competence to approve the installation of antenna support towers.

foster digital technology adoption, as foreseen by Chile's digital agenda 2020, as it will increase both digital and non-digital trade prospects (OECD, 2018).

3.3 RIGHTS OF WAY

In Chile, there is no general regulation on rights of way. Nonetheless, Article 18 of the GTL establishes two relevant rules regarding rights of way for infrastructure deployment (aerial or underground networks). According to article 18 of the GTL (i), telecommunication service providers have the right of way over aerial or underground areas in streets, squares, parks, roads and other national public goods, only for the specific purposes of the respective service (….); while (ii) easements that fall on private property must be agreed by the parties and will be governed by the rules of common law.

However, in accordance with article 19 of the GTL, when interested parties do not reach a direct agreement for the use of an easement, *"a legal easement shall be deemed to be fully constituted for the purpose indicated in said article provided that the Subsecretariat of Telecommunications by a founded resolution, declares the service as essential"*.

Such regulations contained in articles 18 and 19 of the GTL are the only mechanisms by which communication operators are granted access to state or local easements. However, this is not necessarily in line with presidential instructions. In a Presidential Order, the President expressed the need to *"facilitate said infrastructure for the installation or support of telecommunication systems that contribute to deployment and coverage of telecommunication services."*[24] Moreover, it is stated that promoting and facilitating the installation of towers in remote areas is a priority. The President also stated the need of a regulation that allows private infrastructure installation in public property.

In addition, Chilean regulation does not contain a provision requiring sectors to share their infrastructure with other sectors, except those regulating the fees and services associated to the use of parts of the electrical infrastructure[25]. As a result, the electricicty, aqueduct, and sewer sectors are not required or obliged to share their infrastructure (pipelines, poles, cables, among others) with the telecommunication sector as it is regularly the case for other OECD countries where infrastructure sharing for telecommunication services is mandated by Law. Hence, an enforceable regulation where other industries are obliged to share their infrastructure with communication operators is required, most importantly in the electricity transmission and distribution sectors as their current networks could reduce deployment costs at fast paces.

Therefore, Chile could benefit from a provision that expressly provides the obligation for all sectors to share infrastructure with other sectors. Such an infrastructure sharing system should be governed by regulations for the use of poles, pipelines, cables, and other infrastructure of the electricity, water and other sectors. This way, communication operators can benefit from already existing infrastructure of other sectors in terms of infrastructure deployment, which would reduce costs and increase the velocity of infrastructure deployment.

Both passive and active infrastructure sharing can produce efficiencies and cost reductions. These provide incentives for new entrants in national markets and local geographic markets, reduce the costs for operators, and, in turn, potentially for their customers. Such efficiencies can enable communication operators to reduce overall costs in network deployment and maintenance.[26] This is particularly relevant for the next generation of mobile networks, 5G, which requires a densification of networks and, often, a large sets of antennas and small cells.

By way of example, in Colombia, infrastructure sharing between different sectors is a permitted practice. Through Article 22 of Law 1341 of 2009, the Colombian Congress gave the Commission for the Regulation of Communications (*Comisión de Regulación de Comunicaciones*, CRC) the power to regulate the conditions through which infrastructure of

24. Through SUBTEL's filing N° 1185/ GN° 29A from 26.01.2018, the President gives instructions on public infrastructure in Telecommunications.

25. The Presidential Decree N° 13 of 24.07.2018 provides the fees for the use of electrical infrastructure.

26. OECD (2019), "The road to 5G networks: Experience to date and future developments", OECD Digital Economy Papers, No. 284, OECD Publishing, Paris, https://doi.org/10.1787/2f880843-en.

other sectors can be used in communication services. This power has been used by the CRC to establish the conditions under which the electricity infrastructure can be used in communication services by Resolution No. 062 of 2013, where the involved parties may freely determine lease prices.

Mexico's system is another example. Pursuant to the Electric Industry Law *(Ley de la Industria Eléctrica, LIE)*, the Energy Regulatory Commission (Comisión Reguladora de Energía) is empowered to issue the necessary provisions to allow access to the facilities and rights of way pertaining to the national electric system to public service providers acting in other industries, such as telecommunication services (LIE, 2014, Art. 12). Such public service providers will be expected to compensate the CRE at a fair rate (LIE, 2014, Art.12 OECD, 2017[4]).

3.4 *THE "PROINVESTMENT" WORKING GROUP*

At the beginning of June 2018, SUBTEL, together with the actors of the digital ecosystem, formed the ''proinvestment'' working group in order to identify the best ways to increase both foreign and local investment.

Six months after the launch of the pro-investment Working Group, a document was produced that included different measures aiming at getting back to the pace of investment the sector had in previous periods. One of these measures was streamlining the concession procedures and establishing online procedures for licenses in the future. [27]

Similarly, the need for coordination mechanisms between SUBTEL and municipalities for concession procedures was reflected in the document. This way, SUBTEL could instruct municipal authorities, associations, and the Subsecretariat of Regional and Administrative Development which is in charge of *"promoting and conducting institutional reforms in the field of decentralisation, which contribute to an effective transfer of political, economic and administrative power to regional governments and municipalities"*.[28]

Within this Working Group, operators expressed the need for coordination with government agencies that are responsible for other sectors, which are relevant for the deployment of infrastructure. Those include:

- Energy – to facilitate the eventual use of electrical infrastructure for the deployment of telecommunication networks;
- The Subsecretariat for Crime Prevention and the Ministry of the Interior - to explore measures for the protection of telecommunication infrastructure;
- The municipalities – to clarify plans for cable removals, in coordination with telecommunication companies;
- The Ministry of Environment – to expedite the processing of authorisations; and with
- other government institutions – to expedite and facilitate access to passive infrastructure where SUBTEL has already signed a technical collaboration".

Overall, it seems that, so far, the results of this Working Group have been limited and the measures listed in the document have not been implemented yet. According to industry players, barriers to infrastructure deployment persist.

27. See: https://www.subtel.gob.cl/subtel-y-mesa-pro-inversion-acuerdan-medidas-a-implementar-en-2019-para-el-desarrollo-digital-del-pais/

28. See: http://www.subdere.gov.cl/organización/quienes-somos

3.5 INTERNATIONAL GOOD PRACTICES

Several international practices have been implemented in different jurisdictions with regard to the deployment of telecommunication infrastructure. Most of them are harmonised with the local legal and constitutional system. As has been highlighted in the previous section, the deployment of passive infrastructure is significantly influenced by the constitutional organisation of the powers and competences of local territories. Therefore, in order to implement related best practices, it might be required to promote deep constitutional and legal reforms. A set of different practices are highlighted below.

Infrastructure deployment in the EU

A general guidance on policy implementation for infrastructure deployment can be found in the Directive 2014/61/EU from the European Parliament and the Council. The Directive creates minimum requirements to "*reduce the cost of deploying high-speed electronic communication networks*". The principal requirements on infrastructure deployment set forth on the Directive are the following:

Article 3 regulates the access of network operators[29] to existing physical structure.[30] Therefore, Section 1 of Article 3 provides that all Member States shall ensure every network operator has the right to offer their physical infrastructure or to provide communication networks access to their physical infrastructure.

Section 2 of Article 3 requires Member States to ensure that every network operator has the obligation, upon request of an undertaking authorised to provide public communication networks, to meet all reasonable requests for access to their physical infrastructure under fair and reasonable conditions. According to this section, network operators shall be obliged to decide with respect to written access requests and their price.

Section 3 of the same Article provides that every refusal of access shall follow objective, transparent, and proportionate criteria. This Section provides a set of non-exhaustive examples of valid criteria for refusals, such as: technical suitability of the physical infrastructure, availability of space to host the elements of high-speed electronic communication networks, safety and public health concerns, the risk of serious interference of planned electronic communications services, or the availability of viable alternatives means of wholesale physical network infrastructure access.

Section 4 provides that all Member States shall ensure that, upon refusals to access, either party is entitled to refer that issue to the competent national dispute settlement body.

Section 5 provides that all Member States shall require the competent national dispute settlement body to issue a binding decision regarding any conflicts brought by any party participating in a refusal to access. According to this Section, all competent bodies shall reach a decision within the shortest possible time without exceeding four months from the date of receipt of the issue at hand.

Article 5 provides minimum requirements to ensure the existence of rights for Coordination of civil works.[31] Within this, Section 1 provides that all Member States shall ensure that all network operators have the right to negotiate agreements concerning the coordination of civil works with undertakings authorised to provide electronic communication networks.

Similarly, Section 2 of this Article establishes that all Member States shall oblige every network operator, directly or indirectly performing civil works, to meet all reasonable requests to coordinate civil works on transparent and

29. According to Section 1 of Article 2 of the Directive, network operator means "an undertaking providing or authorised to provide public communications networks as well as an undertaking providing a physical infrastructure (…)".

30. According to Section 2 of Article 2 of the Directive, physical infrastructure means "any element of a network which is intended to host other elements of a network without becoming itself an active element of the network, such as pipes, masts, ducts, inspection chambers, manholes, cabinets, buildings or entries of buildings, antenna installations, towers and poles; cables, including dark fibre, as well as elements of networks used for the provision of water intended for human consumption (…)".

31. According to Article 2 of the Directive, Civil works means every "outcome of building or civil engineering works taken as a whole which is sufficient of itself to fulfil an economic or technical function and entails one or more elements of a physical infrastructure."

non-discriminatory terms made by undertakings authorised to provide communications networks. This Section also provides that these requests must be accepted provided that the proposed coordination does not entail any additional costs, does not impede control of the civil works, and the request is filed in advance and at least one month before the work is finished.

Section 3 provides that any party is entitled to refer the issue to the national dispute settlement body when a request for the coordination of civil works is not reached within a timeframe of one month from the date of receipt.
On the other hand, Section 4 provides that all Member States shall ensure that the national dispute settlement body reaches a decision regarding the coordination of civil works by taking full account of the principle of proportionality, including the examination to determine if fair and non-discriminatory terms, conditions and charges where included in the request. According to this Section, decision of the national dispute settlement body should be reached in a timeframe within two months from the date of receipt of the complete request.

Nonetheless, Section 5 establishes that Member States may provide for exemptions from the obligations of coordination for those civil works of insignificant importance. These exceptions shall be duly reasoned and parties shall be given the opportunity to comment on the draft exemptions within a reasonable time.

Finally, the permit-granting procedure is set forth in Article 7 of this Directive. Important obligations for Member States include providing electronic means for the application of permits required for Civil Works, ensuring authorities' decisions for the grant or refuse of permits are taken within four months from the date of receipt, and that all requesting parties are compensated for suffered damages for the non-compliance of the deadlines for reaching a decision.

Applying similar guidelines such as those set forth in the Directive could present benefits for infrastructure deployment in Chile. First, applying these guidelines would create clear and efficient processes for co-location and/or for coordination between parties in civil works, as well as a mechanism through which a public national entity would have the faculty of reaching a binding decision regarding co-location or coordination in civil works between network operators.

Such guidelines would also endow the process with legal principles and reasonable justifications that could be used to deny requests or proposals of co-location and civil works coordination. These justifications would also serve as a mandatory guide for the national entities in charge of civil works and co-location issues.

In addition, implementing similar guidelines would substantially reduce the time needed for all relevant processes regarding civil works or infrastructure sharing. In fact, implementing such guidelines would oblige the competent entity to reach its decision regarding the acquisition of a permit in as little as four months. In cases of dispute over co-location or civil works, the entity would be obliged to reach a binding decision within a timeframe of one month.

Moreover, national entities would be obliged to pay for all expenses caused by any government's delay in resolving a dispute or in obtaining permits.

Infrastructure deployment in Colombia

The Colombian case is particularly relevant for Chile, since similar infrastructure deployment barriers existed in Colombia before the OECD's "Review of Telecommunication Policy and Regulation in Colombia".

As stated in the OECD Review, "[a] number of bodies or agencies in Colombia have direct or indirect responsibility over the communication sector". Colombian agencies in charge of policy and regulation of telecommunication included:

- The Ministry of Information and Communication Technology (*Ministerio de Tecnologías de la Información*, MINTIC) which is responsible for telecommunication policy-making and has the main responsibility for overseeing ICT industries. Nonetheless, its role is not limited to policy, but its powers include spectrum assignment or enforcement of regulation.

- The National Planning Agency (*Departamento Nacional de Planeación*, DNP), responsible for universal access policy in conjunction with the Ministry, as well as the power to approve investment projects.

- Colombia's communication regulator, CRC, responsible for promoting competition in communication markets, preventing the abuse of dominant positions, and delivering ex-ante market regulation for networks and services to ensure the efficient provision of services. CRC lacks the faculty or jurisdiction to enforce regulation, due to the lack of sanctioning powers. The Minister is the Chairman of the CRC.

- The Spectrum National Agency (*Agencia Nacional de Espectro*, ANE) in charge of spectrum planning, management, and control.

Similarly to Chile's current regulation, network or communication operators encountered barriers when deploying infrastructure related to requests of rights of way, access to third party facilities, environmental permits, and more. According to the Review, barriers have further been aggravated due to a lack of harmonisation between municipalities with respect to rights of way. In fact, Urban Planning rules ("Planes de Ordenamiento Territorial" in Spanish) in Colombia differ from city to city.

Therefore, the regulator CRC and the MINTIC issued a set of guidelines ("Code of good practice") for municipalities aiming at increasing coordination in urban planning regulations for infrastructure deployment. However, the guidelines are non-binding due to constitutional and legal barriers. Therefore, the voluntary nature of the code unfortunately undermines its attempt to improve harmonisation of Urban Planning Rules. It was also stated in the Review, that CRC should monitor developments to measure the progress of municipalities in implementing these guidelines.

Additionally, municipalities in Colombia could ban tower deployment at will by creating artificial requirements for tower deployment.

However, according to the Review, required infrastructure sharing regulation already existed in Colombia. By way of example, the CRC, in coordination with the Energy Regulator -CREG- issued the Resolution 4245 of 2013 to encourage infrastructure deployment by means of infrastructure sharing. The Resolution established the conditions under which electricity networks and elements, such as poles, ducts and channels could be used by network operators to provide telecommunication services. This regulation also provides rate formulas to determine price caps for compensation for the use of electric grid by network operators.

Another example is the in-building wiring sharing regulation (*Reglamento Interno para Redes Internas de Telecomunicaciones*, RITEL), which led to Resolution CRC 4262 of 2013. This regulation included instructions for building owners and, in general, to all operators providing telephony, Internet access or cable services. In particular, this regulation provides that all operators must have free access to the internal network for telecommunication in buildings. Therefore, as it was stated in the review, barriers in infrastructure deployment focused on the impossibility of coordination between regulatory entities with municipalities regarding Urban Planning Rules and RITEL rules.

These problems were mostly solved with the issuance of a National Law that, despite not giving more power to MINTIC and CRC, enabled these entities to work hand-in-hand with municipalities in the structuring of Urban Planning Rules. By way of example, Law 1978 of 2019 declared infrastructure deployment as a necessity and a means to guarantee constitutional rights such as education, knowledge, science, and culture, as well as the massive adoption of digital procedures.[32] This Law also provides that the Ministry of Information and Communications Technology and the CRC

32. Article 10 of Law 1978 of 2019 establishes the following: "With the purpose of guaranteeing the effective exercise and enjoyment of the constitutional rights of communication, life in emergency situations, education, health, personal security and access to information, knowledge, science and culture, as well as to contribute to the massification of digital procedures and services, in accordance with this Law, it is the Nation's duty to ensure the continuous, timely and quality provision of public communication services, for which it will ensure infrastructure deployment of telecommunication networks (…)"

should in all cases evaluate the possibility of including differential measures or rules that encourage infrastructure deployment and the provision of services in rural areas.[33]

This Law improved infrastructure deployment because it enabled MINTIC and CRC to work jointly with municipalities in the creation of Urban Planning Rules taking into full account the "Code of Good Practices". Therefore, this Law worked as a tool for coordination between authorities for the creation of an effective regulation regarding infrastructure deployment.

As a result of such coordination, MINTIC has stated that *"756 of the 1,103 municipalities on the country adopted the regulations that promote the installation of antennas and network connections by Network and Telecommunication Services Providers in the National Territory."*[34]

Therefore, at least in terms of law and regulation, a better scenario has been created for infrastructure deployment in Colombia.

The Colombian experience demonstrates that Chile could benefit from a National Law that enables SUBTEL to work with municipalities and their Civil Works Directorates in determining Urban Planning Rules for infrastructure deployment and erasing artificial requirements created by municipalities. Working hand-in-hand with municipalities will enable SUBTEL to clarify arguments regarding radiation, and will allow the entity to be at the center of regulation on infrastructure deployment.

Finally, declaring that infrastructure deployment is a necessity and a means to guarantee other constitutional rights, would oblige municipalities to implement the best practices to encourage infrastructure deployment throughout the entire Chilean territory.

Infrastructure deployment in Mexico

Another example of complex regulation regarding infrastructure deployment is Mexico's case which was explained in the OECD Telecommunication and Broadcasting Review of Mexico 2017. According to Article 15 of Mexican's Constitution, state and municipal authorities are designated to manage and oversee the use of public property and rights of way within their jurisdiction. Hence, each local or federal government is in charge of all regulation regarding requirements, condition, and fees. This resulted in the creation of different regimes throughout the nation, and the establishment of several barriers for infrastructure deployment such as a lenghty obtention of rights of way, access to passive infrastructure, the need to incur in complex administrative procedures, and the imposition of subsidising unrelated public facilities and services.

The Ministry of Communications and Transports (*Secretaria de Comunicaciones y Transporte*, SCT) and the Federal Telecommunications Institute recognised the absence of clear rules on the powers of federal, local, and municipal authorities relative to civil works and rights of way, generating barriers to infrastructure deployment derived from the legal uncertainty to service providers. Uncertainty for network operators also increased with the challenge of accurately estimating implementation costs as a result of the unclear and divergent local regulation with respect to related fees. Additional costs could range from 15% to 50% of each project's base cost.

Industry players expressed their concerns regarding permits and fees requested by the local authority which could be excessive. In addition, industry players also stated that local governments usually asked for "in-kind donations" to benefit the local community as a condition for the granting of permits for infrastructure deployment.

33. Article 31 of Law 1978 of 2019 establishes the following: "The Ministry of Information Technology and Communications and the Communications Regulatory Commission must always evaluate, in the development of any type of regulatory project, the possibility of establishing differential measures or rules that encourages infrastructure deployment and service provision in rural areas."

34. See: https://mintic.gov.co/portal/inicio/Sala-de-Prensa/Noticias/124733:En-2019-68-de-los-municipios-se-acogio-a-la-norma-que-regula-el-despliegue-de-infraestructura-TIC-MinTIC

Considering these limitations, the OECD made several recommendations to eliminate barriers to infrastructure deployment. Some of these recommendations are explained below.

First, the OECD recommended that the SCT develops co-ordination agreements with different players, including municipal governments. Under these agreements, municipal governments would implement a model statute that would apply to all infrastructure deployments requests by network operators. By doing this, the regulation would seek to eliminate bureaucratic barriers generated by the legal uncertainty in this area.

Regarding rights of way, the OECD recommended that SCT co-ordinates at the national, state, or municipal level to co-ordinate the requirements and procedures for the access of rights of way on public property. This co-ordination included the determination of fees or prices solely based on factors influencing deployment in order to guarantee the existence of telecommunication infrastructure.

Private network operators and actors highlighted the importance of the creation of a centralised platform to process deployment requests where authorities are obliged to explicitly mention the reasons for every rejection to allow applicants to remedy potential issues.

Chile could benefit from similar policies. Through a co-ordination by SUBTEL with municipalities and their Civil Works Directorate, the same criteria could be applied to all infrastructure deployment requests by the use of a model statute that would apply in all municipalities all over the nation.

Co-ordination with municipalities would also mean defining the national requirements and procedures for the access of rights of way of public property in hands of municipalities. This would encourage network operators to engage in infrastructure deployment since legal certainty is guaranteed.

Infrastructure deployment in the United States

On September 27, 2018, the United States' Federal Communications Commission (FCC) released a compliance guide with the purpose of "[a]ccelerating Wireless Broadband Development by Removing Barriers to infrastructure Investment". The guide provides a set of good practices that can be considered and implemented by the Chilean government and SUBTEL as the government's agency for Telecommunications.

The Addition to Rule 47 to the Code of Federal Rules requires state or local government entities to take timely action on a sitting application or request for infrastructure deployment. By way of example, section 1.6003(C) of Rule 47 provides that the following sitting authorities must act within the timeline of each type of application, as follows:

- Application to collocate a small wireless facility using an existing structure: 60 days.
- Application to collocate a facility other than a small wireless facility using existing structure: 90 days.
- Application to deploy a small facility using a new structure: 90 days.
- Application to deploy a facility other than a small wireless facility using a new structure: 150 days.

In addition, the FCC recognised that local fees and other charges associated with the deployment of wireless infrastructure can effectively prohibit the provision of service. Therefore, the FCC states that *"fees are only permitted to the extent that they represent a reasonable approximation of the local government's objectively reasonable costs and are non-discriminatory."*[35] The term "reasonable costs" refers to administrative costs of local governments incurred for the issuance of a decision regarding infrastructure deployment.

35. See: https://www.federalregister.gov/documents/2018/10/15/2018-22234/accelerating-wireless-and-wireline-broadband-deployment-by-removing-barriers-toinfrastructure

Particularly, the FCC reveals that high fees have relevant effects in the near-term deployment of Small Wireless Facilities. In some cases, high fees in particular jurisdictions will lead to reduced or inexistent near-term deployment. In other cases, high fees in one area may impose a barrier to deploy Small Wireless Facilities elsewhere. Hence, high fees are intrinsically prohibited by Sections 253 and 332(c)(7) of the Communications Act.

Further, the FCC establishes a range of fees for Small Wireless Facilities deployment that are presumably reasonable costs and non-discriminatory and would not be prohibited by Section 253 or Section 332(c)(7): *"(a) USD 500 for non-recurring fees, including a single up-front application that includes up to five Small Wireless facilities, with an additional USD 100 for each Small Wireless Facility beyond five, or USD 1,000 for non-recurring fees for a new pole (i.e., not collocation) intended to support one or more Small Wireless Facilities, and (b) USD 270 per Small Wireless Facility per year for all recurring fees, including any possible ROW access fee or fee for attachment to municipally-owned structures in the ROW."*[36]

Establishing such practices in Chile would be beneficial since municipalities would have a short time frame or *"Shot Clock"* to approve infrastructure deployment, with a maximum of 150 days to approve the installation of tower antenna over 12 meters high.

In addition, requiring a reasonable fee related to local government cost will encourage network operators to engage in infrastructure deployment, particularly in the near-term installation of Small Wireless facilities, which are important for the deployment of 5G.

3.6 IMPLEMENTATION ACTION PLAN

Ensuring Low Barriers to Enter the Telecommunication Market and Facilitate Infrastructure Sharing

POLICY ACTION 1:

Create a mechanism through which operators can file appeals against decisions by Municipal Public Works Departments regarding infrastructure deployment authorisations.

The Law 20 599 ("Antennas Law") grants complete jurisdiction to Municipal Public Works Departments (*Direcciones de Obras Municipales*, in Spanish), to authorise infrastructure deployment projects in municipalities by granting permits. This may create artificial barriers for obtaining permits to roll-out networks.

In addition, there is no mechanism through which operators can appeal against Municipal Public Works Departments' decision in the granting of permits for infrastructure deployment. Hence, decisions from these entities are final, and infrastructure deployment for all operators may be delayed or impeded by them.

An appeal mechanism is necessary for operators and beneficial for the functioning of the sector. Since SUBTEL is the governmental agency in charge of telecommunication services, it can be considered as the competent body to resolve appeals.

Objectives:

- Developing a mechanism through which operators can appeal Municipal Public Works Departments' decisions regarding permits for infrastructure deployment, or where they can identify infrastructure deployment barriers.
- Through this mechanism, operators could file an appeal to SUBTEL indicating the barriers, prohibitions or restrictions that obstruct infrastructure deployment in the respective municipality.

36. See https://www.federalregister.gov/documents/2018/10/15/2018-22234/accelerating-wireless-and-wireline-broadband-deployment-by-removing-barriers-toinfrastructure

- It could be determined that SUBTEL must reach a decision within 30 days and issue its opinion to the respective municipality informing it about the need to guarantee the rights of operators in the aim of eliminating barriers to infrastructure deployment.

- Upon notification of SUBTEL's opinion, the respective municipality would have a maximum period of 30 days to inform SUBTEL of the actions to be taken within six months to remove the identified barrier or restriction.

Actions and timeframe:

- Establish a legal framework through which an appeal mechanism is created. This legal framework can be included as a part of the Antennas Law or could be a regulation issued by SUBTEL (through resolution) in fulfillment of its functions. This should be implemented within one year.

- The issuance of a law that regulates operators' appeals should ideally take no more than one year. If instead this mechanism is adopted through resolution, this process should take a maximum of six months.

Institutions/stakeholders involved:

- SUBTEL – Ministry of Transportation and Telecommunications.
- Chilean Congress.
- Municipal Public Works Departments.

Policy instrument:

- Law that creates a legal framework for appeal.
- SUBTEL Resolution that regulates operators' appeals for decisions regarding infrastructure deployment permits.

Milestones, indicators and evaluation:

- Number of appeals formulated by operators against Municipal Public Works Departments' decisions
- Number of appeals granted by SUBTEL in favour of operators engaging in infrastructure deployment.

POLICY ACTION 2:

Elimination of high fees for cellular sites deployment to ease infrastructure deployment and facilitate market entry.

Chilean regulation regarding infrastructure deployment establishes high fees for obtaining necessary permits. In particular, the Antennas Law establishes that all operators seeking to install cellular sites (i.e. macro tower sites) over 12 meters high must pay an amount of 30% of the project's budget for the improvement of public spaces surrounding the tower.

Therefore, reducing and/or capping these fees would be beneficial to encourage deployment by new players, since potential entrants are less likely to be able to pay high fees. That is, the elimination of high fees could reduce barriers to entry, thus, creating a *"contestable market"*.

Objective:

To reduce or cap the fees that operators pay for antenna site installation in municipalities.

Actions and timeframe:

- Adopt the necessary mechanism in order to amend current laws that stipulate the high fees that operators must pay for infrastructure deployment. Through the amendment, rates in all municipalities shall be equal and oriented to cover the issuance of the permit.

- Maximum amounts of fees could be defined as was done in the United States.
- The amendment of all laws should ideally take no longer than six months to one year.

Institutions/stakeholders involved:
- SUBTEL – Ministry of Transportation and Telecommunications
- National Government
- Municipalities
- Operators

Policy Instrument:
- Law that expressly repeals or amends all provisions that contain high fees for infrastructure deployment and establishes equal fees for all municipalities.
- Governmental action to repeal or amend all laws regarding high fees for infrastructure deployment

Milestones Indicators and Evaluation:
- Time taken for the issuance of a law that repeals or amends
- Time taken for a governmental repeal or amendment
- Statistics regarding entrance of new operators, and/or infrastructure deployed in municipalities.

POLICY ACTION 3:

Create an infrastructure sharing system between sectors through a regulation for the use of poles, pipelines, cables, and other infrastructure of the electricity, aqueduct, and sewer sectors.

In Chile, there is currently no mechanism through which different sectors can share infrastructure. Chilean regulation does not contain a provision requiring sectors to share their infrastructure with other sectors, except those regulating the fees and services associated to the use of parts of the electrical infrastructure. As a result, the electricity, aqueduct, and sewer sectors are not required to share their infrastructure (pipelines, poles, cables, among others) with the telecommunication sector.

Therefore, Chile could benefit from a provision that expressly provides the obligation of all sectors to share infrastructure with other sectors. Such an infrastructure sharing system should be governed by regulations for the use of poles, pipelines, cables, and other infrastructure of the electricity, water and other sectors. Telecommunication operators can benefit from already existing infrastructure of other sectors to deploy communication infrastructure, which would in turn reduce costs and increase the speed of deploying essential telecommunication infrastructure.

Objective:
- To incorporate a rule in the GTL, and other relevant law and/or regulation concerning the aqueduct, electricity, and sewer sectors that requires providers of public services to share their infrastructure.

Actions and timeframe:
- Incorporating a rule of this nature would require the issuance of a law, and or the issuance of regulation (through resolutions) by the competent agency.
- The issuance of a new Law should ideally take no longer than six months to a year.

Institutions/stakeholders involved:
- SUBTEL – Ministry of Transportations and Telecommunications
- Chilean Congress
- Any other competent agency

Policy Instruments:

- Law that incorporates a new rule to the GTL that obliges all operators and providers to share their infrastructure with members of other sectors.
- Resolutions of competent agencies to incorporate a rule of that nature.

Milestones and Indicators:

- Total infrastructure shared between other sectors such as the energy sector and telecommunication operators.

Evaluation:

- Statistics regarding deployed infrastructure in shared infrastructure.
- Telecommunication operators' evaluation on the new legal framework.

POLICY ACTION 4:

Create a simplified licensing procedure through which operators are authorised to provide all types of telecommunication services.

The existing regulation for concessions - an individual concession scheme for each type of service - is burdensome for operators. Currently, public, intermediate, and broadcasting services each require a different authorisation. Chile should consider replacing the individual concession model with a single concession regime, such that there would be one kind of licence for all services. The license would be based on a registry where any company or legal entity interested in obtaining a license would simply report requirements and agree to operate under SUBTEL's regulations.

Objective:

- Creating low barriers to entry for telecommunication markets and providing a simplified procedure through which operators are authorised to provide all kind of communication services.

Actions and timeframe

- Eliminate the existing individual concession model created by Article 8 of the GTL where public, intermediate, and sound broadcasting services are differentiated.
- Creation of a single licensing regime by modifying Article 8 of the GTL. Amendments to the regulation should ideally take place within six months to one year.

Institutions/stakeholders involved:

- SUBTEL – Ministry of Transportation and Telecommunications
- Tribunal for the Defence of Free Competition
- Chilean Congress

Policy instrument:

- Any Law that modifies Law 18.168 (GTL).

Milestones, Indicators and Evaluation

- Legal reform
- Entrance of new operators and/or new services provided by incumbent operators.

Reviewing Power Density Regulation and Addressing Public Concerns

POLICY ACTION 5:

SUBTEL and the competent authorities in Chile could review the current EMF limit regulation to align it with international standards as well as with growing demands for IP traffic.

In light of the increasing demands of IP traffic inherent to the digital transformation, it is important to take into account the potential benefits of deploying network infrastructure, while balancing health concerns. One way to tackle this trade-off would be by harmonising EMF limits to those accepted by the WHO (i.e. as provided by the EMF Guidelines of the ICNIRP).

Objective:

- Review the current EMF limit regulation to align it with international standards as well as with growing demands for IP traffic.

Actions and timeframe:

- Train entities in charge of the authorisation of the installation of towers by SUBTEL. Training should overview the effects of antenna emissions, the EMF and existing international regulation. This can be done by also relying on external experts.
- The development of the training by SUBTEL should take from six months to a year.

Institutions/ stakeholders involved:

- SUBTEL – Ministry of Transportations and Telecommunications
- Ministry of Environment

Policy Instruments

- The aforementioned trainings by SUBTEL

Milestones, Indicators and Evaluation:

- Entities' awareness of the effects of emissions and the EMF Guidelines of the ICNIRP.
- Changes in EMF limit regulation
- Statistics regarding changes in entities knowledge on EMF limits and the effects of emissions.

POLICY ACTION 6:

SUBTEL (or the National Government) could initiate a national campaign with the Ministries of Health and Environment in order to ensure a better understanding of the health concerns generated by non-ionising radiation of antennas, so as to reduce public concerns.

The Antenna Law prohibits the installation of cellular sites near "public or private schools, nurseries, kindergartens, hospitals, clinics, urban premises with high voltage towers, nursing homes, or other sensitive areas of protections so defined", except for cases of antennas between 3 and 12 metres high. In addition, Article 2 of the Antenna Law gives SUBTEL the power to "declare a specific geographical area as a saturated area or radiating telecommunication systems, when the power density exceeds the limits determined by the technical regulations dictated for that purpose by SUBTEL." The scope of the campaign would need to be based on a careful assessment of the number, distribution and content of the complaints filed by citizens.

Objective

- Better inform and educate the population regarding concerns on EMF

Actions and timeframe

- Develop a campaign by SUBTEL with the Ministry of Health and the Ministry of Environment in order to educate the population on EMF issues.
- This campaign will further result in the recommendation of a modification of the Antennas Law.
- The issuance of the campaign should take from six months to a year.

Institutions/stakeholders involved

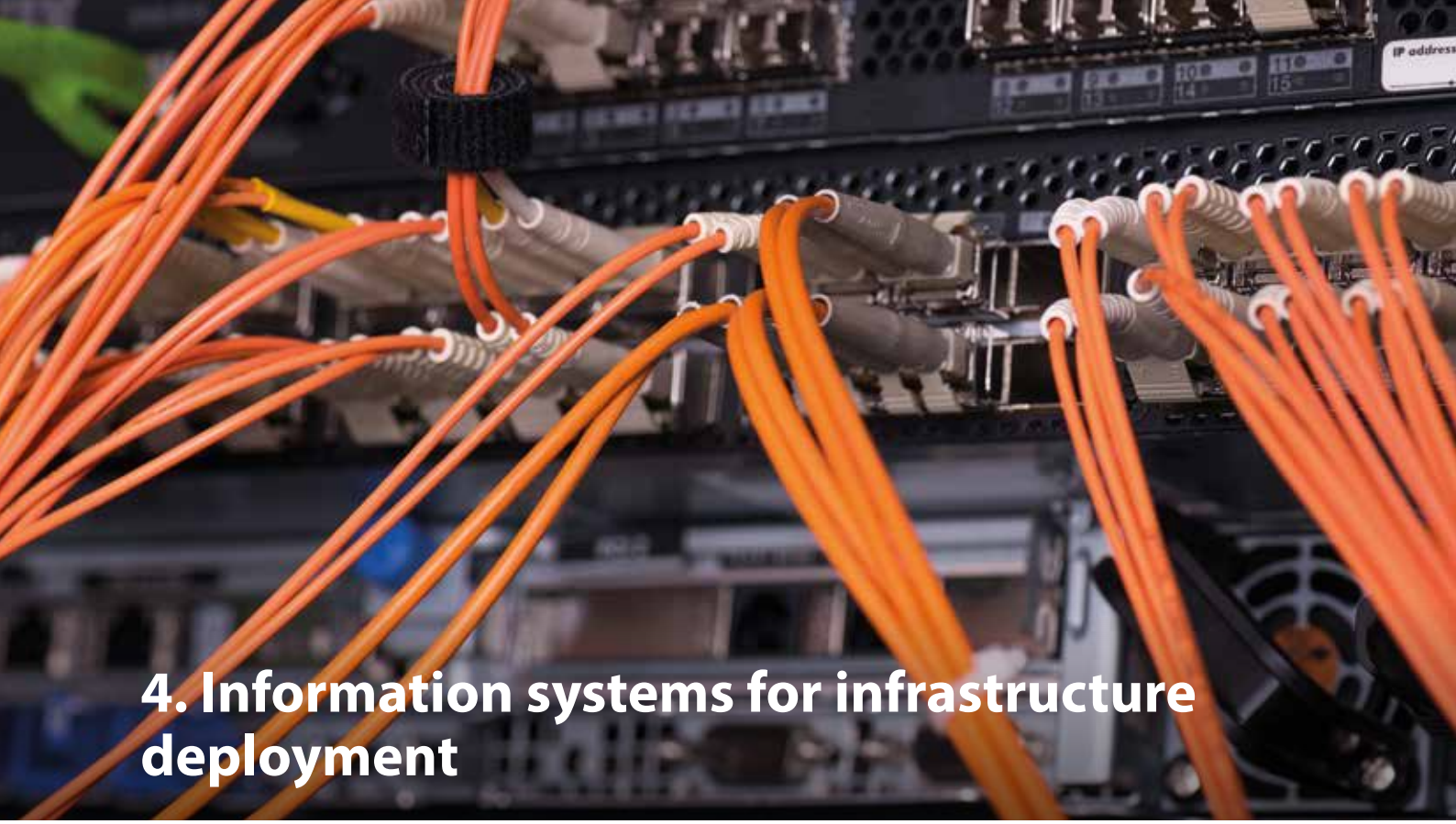
- SUBTEL – Ministry of Transportations and Telecommunications
- Ministry of Health
- Ministry of Environment
- Chilean Congress

Policy Instruments

- The aforementioned campaign by SUBTEL with the Ministry of Health and the Ministry of Environment

Milestones, Indicators and Evaluation:

- Number of complaints filed by citizens against the installation of antennas and towers.
- Statistics that demonstrate the reduction in the denials of all Municipal Works Directorates through the application of the precautionary principle.



4. Information systems for infrastructure deployment

4.1 THE CHILEAN INFORMATION TRANSFER SYSTEM (STI): LIMITATIONS

The general regime of information management in Chile is based on Resolution No. 159. This resolution creates the Information Transfer System (Sistema de Transferencia de Información, STI), a platform that allows telecommunication operators to electronically submit the information they are required to report. STI was created by SUBTEL in 2006 and directly derives from the powers of SUBTEL, set in letter K of article 6 of Decree Law No. 1,762 of 1977 and subsection 2 of article 37 of the GTL.

The STI is *"an application supported by an Internet platform through which telecommunication service providers send the required information to SUBTEL in a simple, expedited and secure manner."*[1] Under the STI, providers of Voice and pay-tv services must report the information specified in the annexes of the Resolution. The annexes also include the periodicity with which concessionaires must report and clarifies how the requested information should be disaggregated.

The information that must be reported by concessionaires includes:

- Information about communication access lines
- Traffic (voice and data)
- Number of mobile subscribers
- Prepaid services
- Blocking and unlocking mobile terminal devices
- Quality of the Mobile Network
- Assigned Numbers
- Internet Network Quality and Availability
- Internet connections
- Subscribers
- Other characteristics SUBTEL may define

1. See: http://sti.subtel.cl:8080/sti/jsp/login.jsp

However, STI does not work as a mechanism or platform where operators can share the number of sites or buildings that could be suitable for infrastructure deployment. Thus, operators have limited resources to know the possible sites suitable for this purpose.

In conclusion, the STI is mainly a mechanism to provide SUBTEL with data on the sector, including some quality indicators. This system could be complemented by an information transfer system containing an inventory of the State's assets that could be used for communication infrastructure deployment, as well as private assets and operators' infrastructure available for co-location. Access to the exact location of said national and private assets would eliminate search costs and administrative processes for infrastructure deployment.

International good practices

A good practice with regard to information systems for infrastructure deployment is the ARES[2] platform in Mexico. ARES allows nearly 110 000 state-owned structures to be used and shared by concessionaires (licensees), permission holders and infrastructure developers as passive infrastructure for communication networks under non-discriminatory, equal-access and non-exclusive conditions. Information pertaining to the relevant properties, including geo-referenced location as well as physical, economic, technical, safety and operational conditions, is available on this online platform since May 2017. The information on economic conditions (i.e. price of the space to be leased) aims at fostering competition in the sector and encouraging more operators to use the infrastructure. The leasing price depends on the municipality, but on average, operators will only pay around USD 160 for a maximum rented area of 190 square metres. Interested parties can use the platform as a search engine and indicate their interest for a particular building and the platform will serve as a one-stop portal for all the requests. Apart from the 110 000 federal buildings, other interested public institutions, for instance at the municipal level, can become a member of the portal and present their properties that fulfil the necessary technical conditions (OECD, 2017[4]). This portal is an innovative approach for shortening administrative processes, keeping fees at moderate levels and thus easing infrastructure deployment. It further facilitates locating properties that are suited for deploying infrastructure (OECD, 2017[4]).

The Mexican law further includes the National Infrastructure Information System (*Sistema Nacional de Información de Infraestructura*, SNII). This system includes useful information on rights of way geared towards allowing concessionaires to deploy telecommunication infrastructure within those assets. Regulations in Mexico oblige both concessionaires and public agencies to inform the telecommunications regulator, IFT, of all relevant information on the federal public sites, ducts, posts and rights of way for their registration in the SNII and its eventual availability to telecommunication and broadcasting operators to expedite the deployment of their networks.

The OECD further advised the Mexican Government (OECD, 2017) to deepen their passive infrastructure project and the National Infrastructure Information System, so that it is available to all operators, under equal-access conditions, federal real estate and rights of way that can be used for the deployment of telecommunication networks and equipment.

This good practice is also applicable to the Chilean legal system. The Government could include recommendations to states/municipalities to standardise and simplify requirements for infrastructure sharing, lease of government real estate for telecom infrastructure, and authorisations needed to expedite the deployment of infrastructure, under SUBTEL's guidance. SUBTEL should therefore be empowered, as the IFT, to determine the infrastructure deployment policies across the country and establish guidelines to access information on public infrastructure, jointly with other government agencies, including the Administration of National Property or the Energy Regulatory Commission when information regarding the electrical infrastructure is required.

Another good practice is Directive 2014/61/EU of the European Parliament and the Council which also includes provisions regarding information sharing. Article 4 provides that all Member States shall be transparent regarding information on physical structure. Therefore, Section 1 provides that all Member States shall ensure an information system through

2. At the time of writing, the webpage ARES is currently reworked by INDAABIN, but soon available again.

which, when information of physical infrastructure is requested by Network Operators, the following minimum information shall be given:

a. location, and route;
b. type and current use of the infrastructure; and
c. a contact point.

Sections 2 and 3, although not obligatory, recommend Member States to implement a unique (or single) electronic information system that ensures all network operators have access to such information promptly.

In absence of an electronic transformation system, Section 4 of Article 4 requires Member States to ensure that competent bodies give access to such information to the requesting party in a period of no more than two months from the receipt of the information request. Such access shall be given under proportionate, non-discriminatory and transparent terms.

In addition, Article 6 provides that Member States may require the following information regarding current civil works or related to future physical infrastructure for permits granted, where a permit granting procedure is pending or for a first submission to the competent authorities that is envisaged in the following six months:

a. the location and the type of works,
b. the network elements involved,
c. the estimated date for starting the works and their duration; and
d. a contact point.

Network operators shall answer this request within two weeks from the date of receipt of the written request under proportionate, non-discriminatory, and transparent terms.

Finally, the Directive provides for a dispute settlement mechanism where parties can refer the dispute to a national dispute settlement body which shall issue a binding decision within two months, except in exceptional circumstances.

Applying similar information sharing rules would benefit Chile. First, applying these rules would mean creating a centralised and efficient information sharing system where network operators have access to a National Inventory of public property where infrastructure can be deployed within a short time frame.

Such guidelines would also oblige network operators to share information regarding their existing or future physical infrastructure, with the aim of informing other network operators about possibilities for co-location.

Finally, such guidelines would provide a dispute resolution mechanism regarding information sharing for infrastructure deployment and Civil Works. This guarantees information sharing between national and local authorities with existing and incumbent network operators.

4.2 ANTENNAS LAW

The Antennas Law is relevant for information platforms as it aims at enabling both the community and the operators to know the state of the existing infrastructure throughout the entire national territory.

With respect to this and in accordance with article 116 bis F, municipalities shall determine the *"areas with municipal or national public goods where operators preferably will have the right of use for the location of antenna support towers of more than twelve meters."*

Thus, municipalities are obliged to define the preferred, but not exclusive, places for companies to build antenna support towers between three and twelve meters. Operators can thus access information about areas where they can preferably deploy their infrastructure.

However, municipalities do not have the obligation to share the information with other authorities, including at the national level, such as SUBTEL, the Ministry of Transportation and Telecommunications, or the Ministry of Housing and Urban Planning.

Therefore, operators who want to deploy their infrastructure in a specific place need to look for respective ordinances of the municipality where they plan to deploy their infrastructure. In addition, municipalities do not necessarily have a digital and effective publication system for information sharing, which can make it very hard for operators to obtain the relevant information. Indeed, more than 50% of the overall 345 municipalities in Chile may be classified as semi-urban with low or medium development (see http://www.dipres.gob.cl/598/articles-114713_doc_pdf.pdf).

Article 2 of the Antennas Law, which modifies Article 7 of the GTL, provides for a second mechanism through which information is transmitted. The article obliges SUBTEL to maintain an information system on its website "that allows citizens to know the state of authorisation procedures in progress, the cadastre of antennas and authorised radiating systems, the levels of exposure to electromagnetic fields in the vicinity of said systems, and the certifying companies that perform said measurements and used protocols" . However, this system is not aimed at facilitating infrastructure deployment or the extension of information services for operators, but informing consumers whether an antenna is about to be authorised.

4.3 PROMOTE INFORMATION MANAGEMENT AND SHARING IN CHILE TO FOSTER INFRASTRUCTURE DEPLOYMENT

As explained above, information sharing regarding co-location and possible shared infrastructure for deployment needs to be increased, in particular regarding the access to passive infrastructure, information on passive infrastructure location and obligations for both public and private undertakings to publish such information. If such information is available, operators can negotiate to get access to the terms and conditions to access said infrastructure.

SUBTEL should also be empowered to intervene when infrastructure sharing is essential to provide telecommunication services. Thus, all concessionaires and authorised entities should be obliged to inform SUBTEL on their active infrastructure and transmission means, as well as on their passive infrastructure and rights of way in order to be able to develop their Information System.

Currently, information regarding infrastructure deployment is not shared and made available in the Information Transfer System managed by SUBTEL. Only information regarding the quality of telecommunication services is shared. Although Article 116 bis F of the Antennas Law requires municipalities to determine the best areas to deploy infrastructure, there is no legal obligation that binds municipalities to report their preferential areas to SUBTEL, the MTT, nor to the Ministry of Housing and Urban Planning. As a result, the current system creates excessive search costs for interested agents, which may prevent investments in new infrastructure. Therefore, a National Information System containing all information for deployment would help network roll-out efforts.

Therefore, the creation of an information platform to ease market-oriented transactions that promote contractual agreements between operators and public and private owners of properties would complement existing measures, when made available on a public and non-discriminatory basis to telecommunication licensees.

In addition, Chile should take advantage of state-owned infrastructures to deploy telecommunication networks, by providing space that could be used for infrastructure deployment in state-owned and state-operated buildings to operators and licensees at market prices. For both initiatives, information systems should be implemented, as done in Mexico.

4.4 IMPLEMENTATION ACTION PLAN:

Creation of a National Information System that facilitates Infrastructure Deployment

POLICY ACTION 7:

Consider the creation of a provision that obliges Municipal Public Works Departments to share land registry information regarding preferential zones for infrastructure deployment with relevant Ministries and national authorities.

Although Article 116 bis F of the Antennas Law requires municipalities to determine the best areas to deploy infrastructure, there is no legal obligation for municipalities to report their preferential areas to SUBTEL, the Ministry of Transport and Telecommunications (MTT), nor to the Ministry of Housing and Urban Planning. In addition, municipalities do not necessarily have a digitalised and effective publication system for information sharing, which can make it very hard for operators to obtain the relevant information. As a consequence, the current system creates excessive search costs to interested agents, which may prevent investment in new infrastructure.

The Antennas Law – and other relevant legislation – should be amended in order to include an obligation for Municipal Works Directorates to periodically share cadastre information about the preferential zones for infrastructure deployment with SUBTEL, MTT, the Ministry of Housing and Urban Planning, or other national authorities. This would increase operators' incentives to verify preferential areas for infrastructure deployment throughout the national territory and rural zones.

Objective:

- Create an information transfer system that obliges all Municipal Public Works Departments to share information regarding land registry where preferential zones for infrastructure deployment are determined.

Actions and timeframe:

- Incorporate a rule, either in the GTL or in the Antennas Law, that obliges all Municipal Public Works Departments to share land registry information regarding preferential zones.
- The incorporation of a new rule in a law should take from six months to a year since the only way to do it is by means of a new law.

Institutions/stakeholders involved:

- SUBTEL – Ministry of Transportations and Telecommunications
- Chilean congress
- Municipal Public Works Departments

Policy Instruments:

- A law that incorporates a new rule either to the GTL or the Antennas Law, regarding the obligation of all Municipal Public Works Departments to share cadastre information determining preferential zones.

Milestones, Indicators and Evaluation:

- Statistics regarding a number of municipalities sharing information and/or operators' ease to access such information.

POLICY ACTION 8:

Implement a National Information Transfer System with an inventory of all State's assets (e.g. public buildings) that can be used for communication infrastructure deployment. Ideally, this system would also include private real estate with geolocation details.

Even though the GTL establishes the right for all operators to use State owned infrastructures to deploy telecommunication networks, no information regarding public assets is shared. Therefore, a National Information Transfer System where information pertaining all State's assets (inventory) is shared is desirable, ideally in a digital way which is easy to access.

Objective:

- To develop a national, one-stop portal to share all information regarding public assets where infrastructure can be deployed, and at what price. The Mexican ARES portal, launched in May 2017, which geo-references public buildings with respective leasing prices can serve as good practice.
- Also include private buildings on the one-stop portal as well as private infrastructure that could be used for colocation.

Actions and timeframe:

- If required, modify SUBTEL's regulation regarding the National Information System (Exempt Resolution No. 159 of February 28, 2006).
- If a new resolution is to be issued, it should be ideally be done within six months to a year.
- Develop an online one-stop portal.

Institutions/stakeholders involved:

- SUBTEL – Ministry of Transportations and Telecommunications
- Ministry of Housing and Urban planning
- Ministry of National Infrastructure

Policy Instrument:

- If required, a SUBTEL Resolution that modifies the Exempt Resolution No. 159 of February 28, 2006.

Milestones, Indicators and Evaluation:

- One-stop portal is live on the government's website.
- Quality measures of the portal
- Statistics regarding the number of private and public assets in the one-stop portal and their location.

5. Spectrum management

5.1 SPECTRUM POLICY AND REGULATORY FRAMEWORK

Radio spectrum management

The GTL mandates that concessions and licenses for spectrum use by public and intermediate telecommunication services are authorised for a fixed 30 years period, renewable for an equal amount of time, besides setting the principles of free and equal access to the radio spectrum and the criteria for the allocation of this resource. The law does not provide for the possibility to trade spectrum in a secondary market.

The GTL also determines that SUBTEL is in charge of ensuring that telecommunication services, depending on their specific characteristics, are subject to a technical regulatory framework, and of defining the *Plan for Radio Spectrum Use* for this purpose.

The first *General Plan for Radio Spectrum Use* was approved in 1983 by the Supreme Decree 15. Subsequently, a new plan was approved by Supreme Decree 127 of 2006.[1] The GTL also determines that concessionaires, permit holders and telecommunication licensees that require the use of radio spectrum to provide their services, need an official authorisation. In addition, they are subject to the payment of fees related to this resource according to the specific characteristics of each service (Articles 31 and 32).

Spectrum and national ICT policies

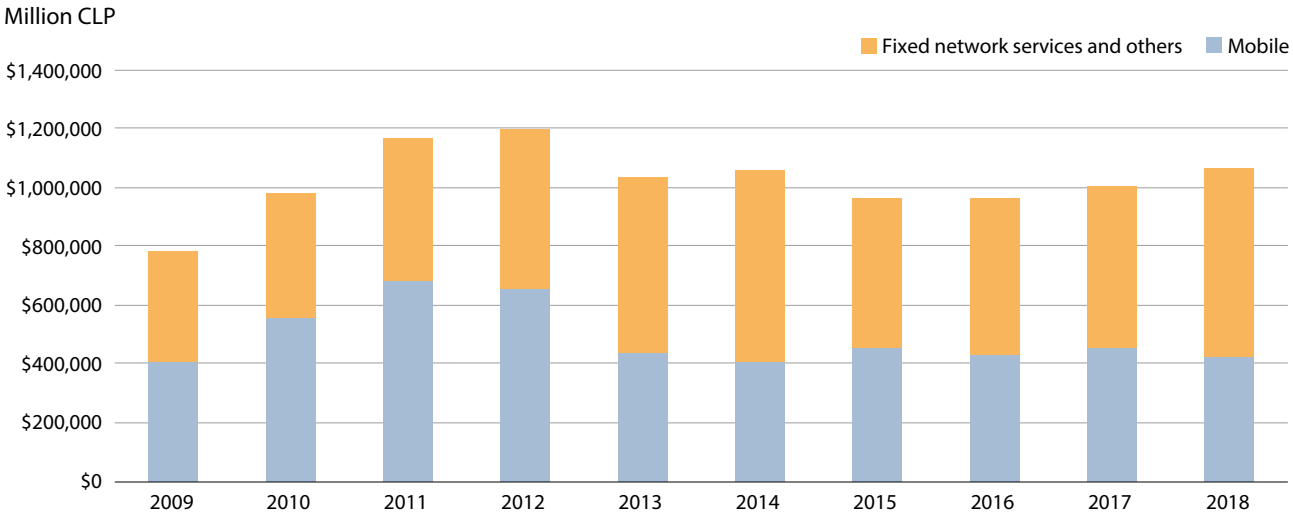
Consistent with the liberalisation of the telecommunication sector, the use of spectrum has become a key factor for mobile communication services. As such, spectrum allocation has become an important mechanism for public policy to expand access to telecommunication and promote network deployment and digital transformation in the country. In addition, spectrum allocation is an important tool to foster competition in the market.

In light of the importance of spectrum for telecommunication services, the Chilean government introduced the digital agenda "Chile Towards the Information Society" in 1999. In this context, the government expressed the need to reallocate the spectrum bands occupied for broadcasting to digital transmission services, and to guarantee that operators entering the market could use this resource in transparent and non-discriminatory terms.

The central role of spectrum is also reflected in the *Imagina Chile 2013-2020 Digital Agenda*, which aims at an evolution towards a new generation of higher quality communication services at lower cost and greater coverage. In the same Agenda, the Chilean government defined that mandatory coverage in rural or isolated areas must be considered in spectrum assignment processes.

1. Modified in specific parts by Decree 956/2008, Decree 31/2009, Decree 156/2010, Decree 240/2011, Decree 141/2012 and Decree 19/2016.

Figure 5.1. Total investment in telecommunication in Chile has been stable between 2009 – 2018



Source: *SUBTEL. Documento Sector Telecomunicaciones 2018.*

The *Digital Connectivity* axis of the *Digital Agenda 2020 - Chile Digital para Tod@s* targets the deployment of high-speed mobile networks throughout the country. It also considers coverage obligations when assigning spectrum frequency bands, in accordance with the development and territorial integration of the country. For this purpose, a specific action includes the deployment of telecommunication services in the 700 MHz and 2.6 GHz bands in order to offer high-speed mobile broadband services and voice communications.

In addition, the *Digital Matrix 2018-2022*[2] initiative envisages the implementation of the fifth generation (5G) mobile technology, as well as a projected 30% increase in national investment in telecommunication. According to SUBTEL[3], the estimated value of mobile services investment has been stable since 2013, reaching around CLP 400 billion (USD 570 million) (Figure 5.1).

The evolution of spectrum assignation for mobile communication services

In Chile, spectrum assignation for mobile communication has experienced significant evolutions over the past 30 years. This section provides an overview of how this evolution unfolded over time and discusses how this has led to the spectrum-related challenges that Chile faces today. Overall, Table 5.1 portrays the current state of International Mobile Telecommunications (IMT) spectrum assignment in Chile.

The operation of mobile communication services in Chile began in the early 1990s. Initially, following the first spectrum assignments, specifically in the 850 MHz band. At the time, two concessions were granted, which are currently held by the operators Telefónica and Claro.

As technological advances were made towards the digitalisation of communication services, SUBTEL worked on allocating blocks in the 1900 MHz band. As a result, in 1997, the authority assigned spectrum to Chilesat (currently Claro), Entel PCS and Entel Telefonía Móvil[4], allowing these operators to have the spectrum for the implementation of 3G technology during the following years.

In 2009, the process for assigning spectrum in the AWS bands (1700 MHz paired with 2100 MHz) was undertaken, with the objective to facilitate the entrance of new competitors to the market, granting 60 MHz to Nextel (today WOM) and

2. National Plan that will allow Chile to position itself at the technological forefront of the region and that will shorten the existing digital and telecommunications gap in the country. Source: https://www.gob.cl/matrizdigital/

3. SUBTEL. Documento Sector Telecomunicaciones 2018. https://www.subtel.gob.cl/wp-content/uploads/2018/09/PPT_Series_JUNIO_2018_V1.pdf

4. In the first decade of the 21st century, Telefónica participated in a new bidding process, obtaining a portion of 30 MHz in the 1900 MHz band.

30 MHz to VTR. This process restricted the participation of the three existing operators by fixing spectrum caps. On 27 January 2009, the Supreme Court determined that *"if the amount of radioelectric spectrum held by any of the current operators exceeds the fixed limit of 60 MHz, spectrum must be released in ways allowed by the law in the necessary amount to adjust to the established limit"*.[5]

Since 2010, Entel is authorised to use the spectrum in the 900 MHz band, which was granted for the operation in the metropolitan area of Santiago and other regions of the country.[6]

Subsequently, the first process to assign spectrum for 4G technology took place in 2012 in the 2.6 GHz band. In addition, in response to the coverage arrangements proposed by the participants in the bidding process, SUBTEL included the obligation to provide mobile broadband service for 543 isolated localities, and subsidies were included for mobile telephony and data expansion projects for 360 such locations, with an aim to increase the connectivity of the country to 98% of the population. Given a condition of equality in the technical qualification score[7], the operators underwent a bidding process. Finally, three blocks of 40 MHz each were awarded to Claro, Movistar and Entel. This process meant that these operators, in addition to complying with the required conditions, had to make payments for each of their respective spectrum blocks.

Thereby, in 2012 Movistar, Claro and Entel had a 98.75% market participation in terms of number of subscribers, positioning themselves as the companies with the greatest presence in the Chilean market.

The most recent spectrum assignment for mobile services was in 2014 for the 700 MHz band. As a result of the process, 30 MHz were assigned to Entel, 20 MHz to Movistar and 20 MHz to Claro.

Table 5.1 Current state of International Mobile Telecommunications spectrum assignment in Chile

Assigned spectrum by operator

Operator	700 MHz	850 MHz	900 MHz*	1.7 GHz	1.9 GHZ	2.6 GHz	TOTAL
ENTEL	30 MHz	–	20 MHz	–	60 MHz	40 MHz	150 MHz
MOVISTAR	20 MHz	25 MHz	–	–	30 MHz	40 MHz	115 MHz
CLARO	20 MHz	25 MHz	–	–	30 MHz	40 MHz	115 MHz
WOM	–	–	–	60 MHz	–	–	60 MHz
VTR	–	–	–	30 MHz	–	–	30 MHz

Source: SUBTEL and communication operators.

In 2014, the National Consumer and User Corporation (Corporación Nacional de Consumidores y Usuarios, CONADECUS) filed a lawsuit calling into question the effectiveness of spectrum caps of 60 MHz which were defined in 2009. In 2018, the Supreme Court ordered the three companies that had been assigned spectrum in the 700 MHz band (Entel, Movistar and Claro) to return the spectrum which exceeded the referred caps.[8]

In response to this decision, SUBTEL proposed a modification to the National Spectrum Plan in 2018, recognising spectrum caps that reflect the needs for mobile services. After that, in March 2019, SUBTEL presented a new proposal to TDLC based on a dynamic approach, which determined a cap of 32% per operator per spectrum band. By the end of 2019, TDLC issued Resolution 59, in which it defined new spectrum caps based on percentages assigned for five macrobands, as follows:

5.. The Supreme Court established that on the basis of the AWS contest "it should be noted that, if the amount of radio spectrum held by any of the current operators arrives in the same way to exceed the limit set at 60 MHz, they must be released in any of the ways that the law allows for the amount of spectrum that is necessary to adjust to the established limit ".

6.. Through the acquisition of Transam and Will.

7.. According to Title X, related to concessions awarding, this condition would occur when the difference between the qualification achieved by the applicant who obtained the highest score and that obtained by other applicants differed by less than two points.

8.. This decision mandates Movistar, Claro y Entel to revert the same amount of radio spectrum that was acquired by each one in the 700 MHz band contest, having the possibility the spectrum bands for those returns (Causa 73923/2016. Resolución 113 - Corte Suprema, Sala Tercera (Constitucional), June 25th 2018)

Table 5.2. TDLC Resolution 59 / 2019: spectrum caps rules

Spectrum band	Spectrum cap	Remarks
Low < 1 GHz	35% per operator.	--
Low-Medium 1 -3 GHz	30% per operator.	--
Medium- 3 -6 GHz	Short Term	Blocks at a size of >40 MHz per operator (in a first assignment process, at least 80 MHz should be offered to two operators)
	Medium Term	SUBTEL shall ensure at least four operators with a minimum of 40 MHz contiguous blocks each.
	Long term	Spectrum cap of 30%, with a minimum of 80 MHz contiguous blocks each.
Medium-high 6 -24 GHz	No	No current International Mobile Telecommunications (IMT) spectrum allocations and assignments for mobile services in this macroband. SUBTEL must consult TDLC regarding the maximum spectrum limit by each operator, when decides to open a process into these bands.
High >24 GHz	Short Term	SUBTEL shall ensure blocks at a size of >400 MHz per operator (in a first assignment process, at least 800 MHz for two operators should be offered)
	Medium Term	SUBTEL shall ensure at least four operators with a minimum of 400 MHz contiguous blocks each.
	Long term	Spectrum cap of 25%, with a minimum of 800 MHz contiguous blocks each.

Source: TDLC9

Based on the TDLC decisions, in January 2020, SUBTEL opened a public consultation in order to assign spectrum for 5G services for separate bands (Table 5.3), and announced the timelines on 1st of August of 2020 for the public tender.

Table 5.3. SUBTEL 4-processes proposal for 5G Spectrum assignment

Process	Available spectrum	Number of blocks	Block size	Total spectrum offer
700 MHz	703-713 and 758–768 MHz	1	20 MHz	20 MHz
AWS	1.755-1.770 and 2.155-2.170 MHz	1	30 MHz	30 MHz
3.5 GHz	3.300-3.400 and 3.600-3.650 MHz	15	10 MHz	150 MHz
26 GHz	25.900-27.500 MHz	2	400 MHz	800 MHz

Source: SUBTEL10

For the first two processes (700 MHz and AWS), SUBTEL proposed the use of LTE advanced or 5G or higher technologies. For the bands in the 3.5 GHz and 28 GHz spectrum bands, the regulator proposed only 5G or higher technologies. The consultation process was closed in February 2020.

As a final remark, there were two specific challenges that needed to be overcome in order to have more clarity for the overall spectrum assignment and spectrum holdings by different operators and thus the future provision of the different voice and data services and the market structure: (i) the current availability of the AWS band; and (ii) the conditions to be applied for the 3.5 GHz band for the 5G spectrum assignment.

First, the VTR operator stopped using the spectrum assigned to it in the AWS band since 2014, because the operator became a Mobile Virtual Network Operator (MVNO) using Movistar's network. SUBTEL should thus consider options to get this spectrum back and whether the block could be included in the new spectrum assignments in the near future or whether it should be defined for other uses.

9. Adapted from TDLC: https://www.tdlc.cl/nuevo_tdlc/category/lexsoft/resoluciones/

10. https://www.subtel.gob.cl/wp-content/uploads/2020/01/20200113_Texto_Ficha_Tecnica_consulta_ciudadana_5G.pdf

Second, in 1999, SUBTEL issued technical regulation applicable to fixed wireless local telephone services in the 3,400 – 3,600 MHz band (3.5 GHz).[11] Consequently, assignments for fixed wireless services were given to some operators during the first decade of the 21st century[12]. Additionally, in 2011, SUBTEL determined that the 3.5 GHz band could be used to provide both fixed and/or mobile services, and that current fixed concessionaires interested in providing mobile services should update their frequency band concessions.[13]

In 2018, SUBTEL studied whether spectrum is used in an efficient way in the frequency range between 3400 and 3800 MHz, and the results indicated that operators were not making an efficient use of this band.[14] Based on that study, SUBTEL stopped the operations of all telecommunication services that have previously been authorised in this band and suggested the use of the 3.5 GHz band for the development of 5G mobile services in its National Spectrum Plan. [15]

After a long discussion, SUBTEL proposed a mandatory obligation for operators in the 5G spectrum assignment processes to return current assigned blocks in this band in order to be able to participate in the process and obtain a new 30 years license. Furthermore, the bid proposal for this specific process was based on a combinatorial model, in which the participants need to indicate the number of blocks in which they are interested, and the price offered for the sum of these blocks.

Several groups and companies, including the consumer protection group CONADECUS and the companies Netline and WOM, had filed claims at the Supreme Court, questioning the new spectrum caps. On 13 July 2020, a new Supreme Court's ruling confirmed the spectrum caps of TDLC's Resolution 59 almost entirely, with the exception of spectrum caps in the low frequency band, with the aim of allowing for more operators to hold spectrum in this band. The Court further ruled that the gradual procedure in differentiating between the short-, medium and long-run in two spectrum bands was not required. Table 5.4 shows the determined spectrum caps for the different spectrum bands:

Table 5.4. Spectrum caps based on the Supreme Court decision (July, 2020)

Spectrum band	Spectrum cap	Remarks
Low < 1 GHz	32% per operator	
Low - medium 1 -3 GHz	30% per operator	no differentiation between short- medium and long-term
Medium 3 -6 GHz	30% per operator	
Medium-high 6 -24 GHz	No spectrum caps	
High >24 GHz	25% per operator	no differentiation between short- medium and long-term

Source: Supreme Court, Decision July 13, 2020.

In addition, according to the Supreme Court ruling[16], adjustments in the overall spectrum holding limits should be implemented in connection with future auctions, such as the one proposed by SUBTEL above. The ruling further states that incumbent operators shall prove that they do not exceed the spectrum caps at that time or "within a period that will not exceed six months" in each of the spectrum bands (c. 17). As a consequence, SUBTEL is required to modify its proposal for the 5G spectrum allocation contest following the rules and instructions established by the judiciary.

11. Adopted by Resolución Exenta 1498 / 1999.

12. Entel has currently assigned 100 MHz and Claro 50 MHz for nation-wide operation. Also, VTR has 50 MHz assigned for operation in regions RM, IX, VIII, VII, VI, V, IV, III, II y I. Movistar has 50 MHz assigned for regions XI y XII, and also other 50 MHz for region X through its subsidiary Telefónica del Sur.

13. Change adopted by Resolución Exenta 6554 / 2010

14. This determination by SUBTEL was based on the measurements made by the inspection department which found that, for each 60 municipalities in Chile, nearly a 73% had no signal. According to the report, anomalous situations were happening; technical samples proved some companies were operating with a greater power than the authorised, or commercially exploiting it irregularly.

15. Adopted by Resolución Exenta 1289 / 2018.

16. Corte Suprema, Sentencia de 13 de julio 2020, Rol 181-2020. Justices: Jorge Dahm, Sergio Muñoz y Leopoldo Llanos (concurrent opinion); María Eugenia Sandoval y Ángela Vivanco (dissenting opinion).

The Supreme Court's decision also made significant changes to infrastructure and spectrum access regulations. These orders, although considered complementary measures, produce an important set of changes in spectrum and infrastructure regulation in Chile. These measures include:

a) the obligation for so called "incumbent operators" to provide national, compulsory and temporary roaming to operators that are still in the deployment stage of the necessary infrastructures to compete fully with the former (see section 5.1.1).

b) the obligation for incumbent operators that have a national coverage network to publish a "viable" reference offer including access to facilities and resale plans for MVNOs so that they can provide to the public all the services that are provided by the incumbents. These offers and their modifications must be approved by the FNE, after a report from SUBTEL. As for the national roaming obligation, it will be important for subsequent regulation to define the term "incumbent", as well as to specify how the term "viable" should be interpreted, as this will be crucial for the effectiveness of such a measure.

c) The Court mandated SUBTEL and FNE to permanently and independently monitor the roaming and network sharing obligations above, and to sanction non-compliance as needed. The monitoring should be similar to FNE's supervision of merger control matters, through an independent auditor that reports to FNE and SUBTEL.

d) In the context of spectrum allocation processes, all assignees will be required to present and commit to an effective ("real") use plan and efficient use of spectrum (optimal) which must be valid for the entire duration of the auctioned concession. In addition, the requirement of effective use also includes all other frequencies that were previously allocated to the operators. The spectrum use plans needs to be approved by SUBTEL. Frequencies that are not effectively used in accordance with the committed plan must be made available to interested third parties, in various ways:

   i. Assignment of use to other (preferably new) entrants or smaller mobile network operators, through non-discriminatory mechanisms that allow the transferor to only recover efficient costs.

   ii. Divestment to third parties or return to the State of concessions for non-compliance with the use plan.

e) A final rule consists in an obligation for the regulatory authority to analyse whether the incumbent operators can – either immediately or after network optimisation undertaken in a reasonable time and costs – reasonably offer new services or technologies using their current spectrum holdings. If so, the new market entrants or smaller operators should be privileged in spectrum allocation processes.

The additional measures d) and e) entail several challenges: Determining the efficient use of spectrum is a complex task and will not only require an in-depth analysis of historical, geographical and granular data from incumbent operators, but also significant preparations for the establishment of such plans before new spectrum allocations can take place. The efficient use of spectrum, a scarce resource, is an important policy objective. One method to achieve this objective from the start is to move from a comparative selection assignment model to an auction model, in order to allocate this scarce resource in an efficient way (see also Policy Action 13). In addition, this decision introduces a retroactive regulation as it applies to all spectrum holdings of an operator and not just the new frequencies that will be allocated. The spectrum divestment to smaller operators on the secondary market might allow for more players to have spectrum in the different frequency ranges, but it can be questioned whether this will automatically translate to a globally more efficient spectrum use.

Additionally, defining whether an operator can offer new mobile services with existing spectrum, as determined in e), is another complex task as this depends on multiple factors. It will be important to further clarify this measure to ensure that operators with significant customer bases can participate in future allocation processes, i.e. that the measure is designed in a way that ensures continued innovation by all players in the market, while, at the same time, also fostering competition in the market.

Overall, this new set of measures and obligations, including the asymmetric measures for new entrants and smaller operators, has an important effect on the design of the rules applicable to the forthcoming spectrum allocation processes. In line with OECD practices, this allocation processes should be designed carefully to avoid a high level of market concentration, and the Supreme Court rules contribute to this. New allocation processes should be designed with careful attention to what has been stated by the Supreme Court, in order to avoid further litigations. At this stage, the decision by the Supreme Court is very open to interpretation, given its wide sets of concepts. Some additional clarifications might be necessary – through decrees or resolutions – so as to ensure investment certainty for operators, while also ensuring that the regulator is not further limited in its independency, technical analysis and capacity to effectively structure future spectrum allocation processes. Overall, further efforts should work to ensure continued innovation in the mobile market and to avoid creating a less competitive mobile communication market by only allocating spectrum to companies that may be less efficient players.

5.2 ANALYSIS OF THE CHILEAN SPECTRUM ALLOCATION FRAMEWORK

Priority actions for spectrum bands

In order to create a stable and business-friendly market environment, it is fundamental to apply the recently defined criteria for spectrum caps. In general, that definition of caps reflects the position of many actors in the market related to the use of groups of spectrum bands and the model has proven to be effective in several Latin American and Caribbean countries.[17]

In that sense, another important competition aspect for Chile is the determination of the future use of the 3.5 GHz band. This is because the assignments originally granted for fixed services have been extended to mobile services in recognition of technological developments and subsequently, SUBTEL temporarily limited its use as a regulatory measure. As the 3.5 GHz band represents a strategic band for the development of 5G, and considering the proposal for discussion issued by SUBTEL on January 2020 and SUBTEL's 1 August 2020 announcement on the timelines for the public tender, it is essential to adopt an effective transition regime for the use of the blocks by the current assignees, as well as for the adoption and execution of possible rearrangement schemes to be applied within this band. In addition, the tender will need to be amended in line with the Supreme Court's decision of 13 July 2020.

Spectrum assignment and management

In Chile, the spectrum allocation for mobile technologies has been timely and kept pace with technological developments. The adoption of 2G technology was carried out in the 90s, while 3G technology was deployed in the country since the middle of the first decade of the 21st century in the previously assigned spectrum. Likewise, the implementation of 4G technology began around 2013 with first spectrum assignments for 4G in the 2.6 GHz band.

Although these spectrum assignment processes have been developed in a timely manner, it does seem that the planning lacked a long-term vision. In some OECD countries, both short- and long-term technological developments have been taken into account in order to anticipate spectrum needs for different types of users. [18]

Although these assignments have allowed Chile to become the Latin American country with the third largest amount of spectrum assigned to operators, this is still smaller than developed telecommunication sectors such as Canada and the United States (Figure 5.2).

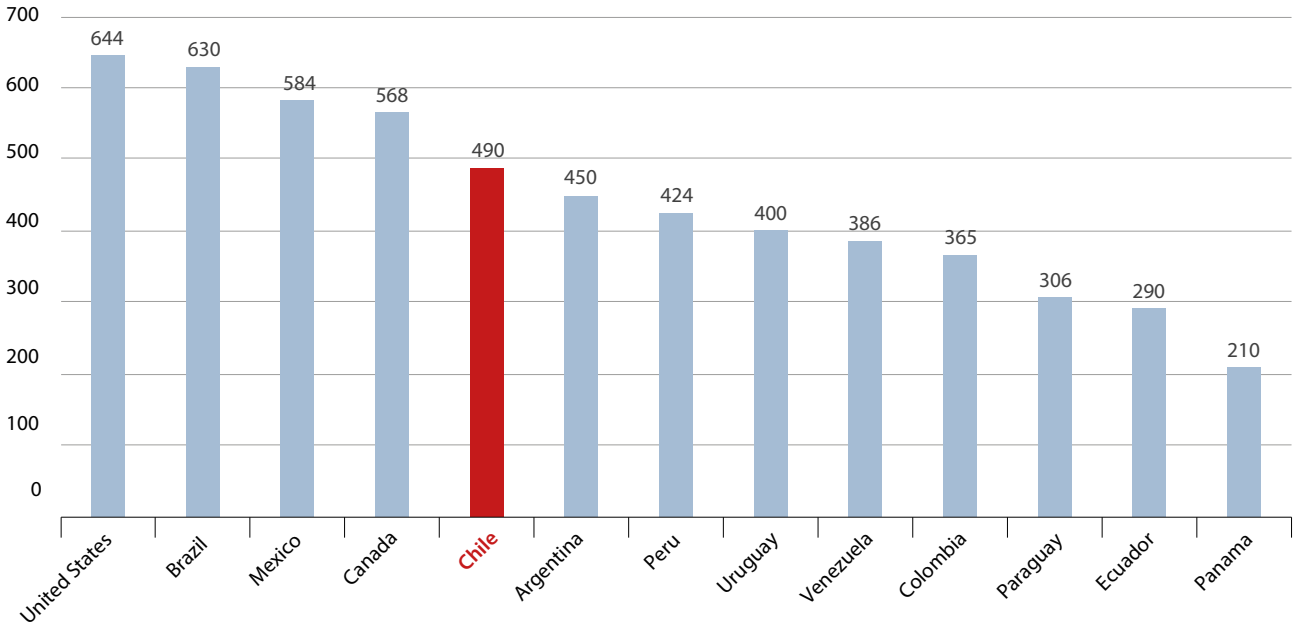
17. The OECD, in its document of Broadband Policies for Latin American and Caribbean countries, establishes that the use of spectrum caps is common among the countries that make up the organisation, focusing its use on facilitating the entry of new agents and on the management of situations related to dominance

18. As a reference, the document Spectrum Management The Key Lever for Achieving Universality published by IDB in 2015, shows that countries like Australia, Germany, the UK, and the United States, had high percentage of wireless broadband penetration, as well as advanced mobile technologies in comparison to most, being ahead in terms of innovative approaches in the use of spectrum. For this purpose, these countries determined their spectrum availability, and also applied innovative policies like TVWS. All these countries also included recently 5G technology into their spectrum plans.

    In the same way, the European Union, in the Directive (EU) 2018/1972 referred to the European Electronic Communications Code, describes that "it should be possible to adopt multiannual radio spectrum policy programmes, where appropriate. The first such programme was established by Decision No 243/2012/EU of the European Parliament and of the Council (19), setting out policy orientations and objectives for the strategic planning and harmonisation of the use of radio spectrum in the Union. It should be possible for those policy orientations and objectives to refer to the availability and efficient use of radio spectrum necessary for the establishment and functioning of the internal market, in accordance with this Directive"

Figure 5.2 Allocation of spectrum in Chile is significant but still lagging behind more advanced communication markets

Assigned Spectrum (MHz) allocated in selected American countries as of June 2019

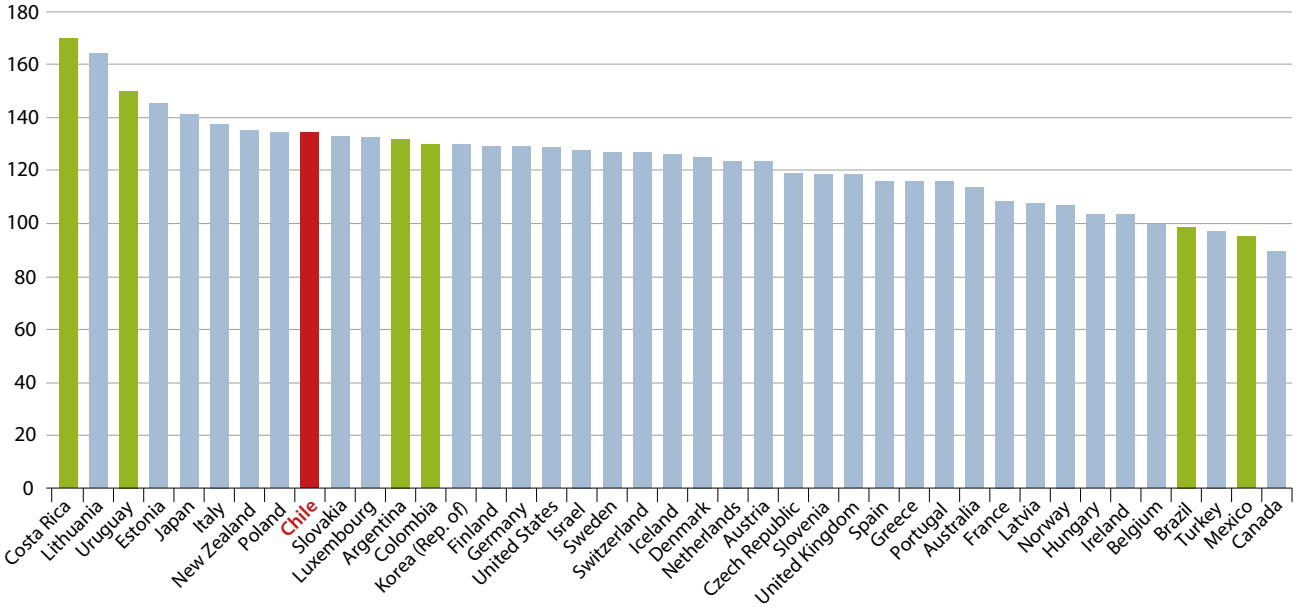


Source: 5GAmericas.

In terms of market performance, the mobile penetration in Chile is higher than in other Latin American countries as of 2018 and even higher than in some OECD member countries. This phenomenon is evident both in terms of voice and, to a lesser degree, data, as set out in Figure 5.3 and Figure 5.4. Chile also has a higher monthly per user consumption of mobile data than the OECD average (Figure 5.5).

Figure 5.3. Subscriptions to mobile services in Chile are high

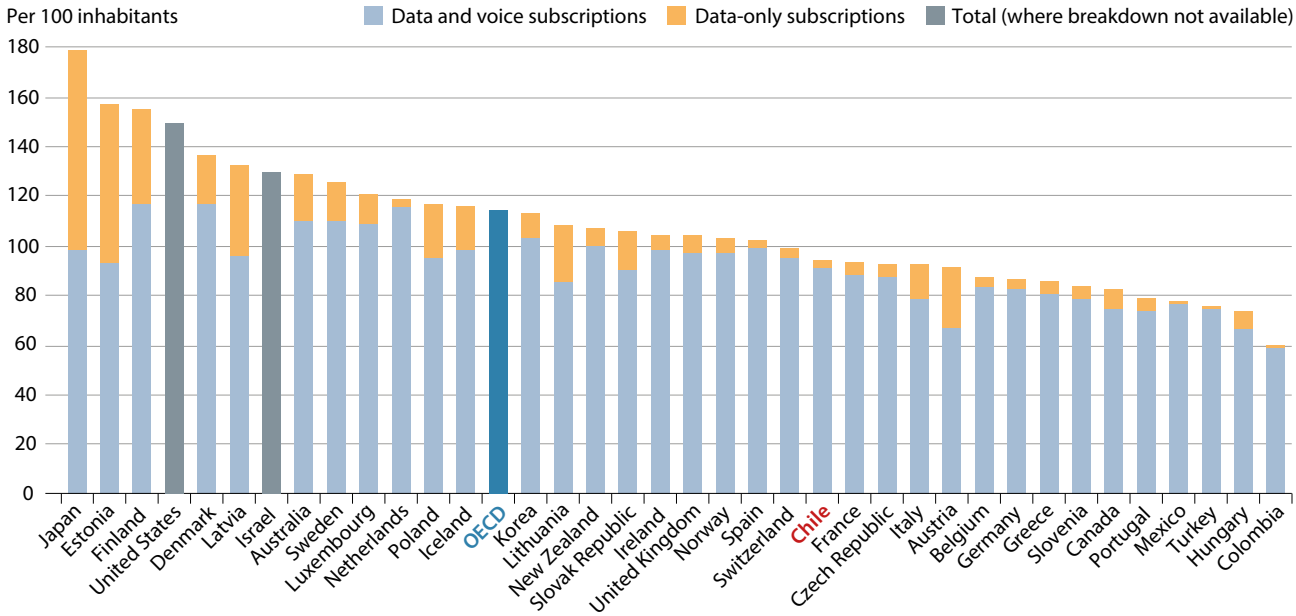
Mobile subscriptions per 100 inhabitants in OECD countries and selected Latin American Countries – 2018



Source: ITU World Telecommunication/ICT Indicators Database 2019, http://www.itu.int/pub/D-IND-WTID.OL.

Figure 5.4. Mobile broadband subscriptions are high in Chile compared to other American countries but below OECD average

Mobile broadband subscriptions per 100 inhabitants, December 2019

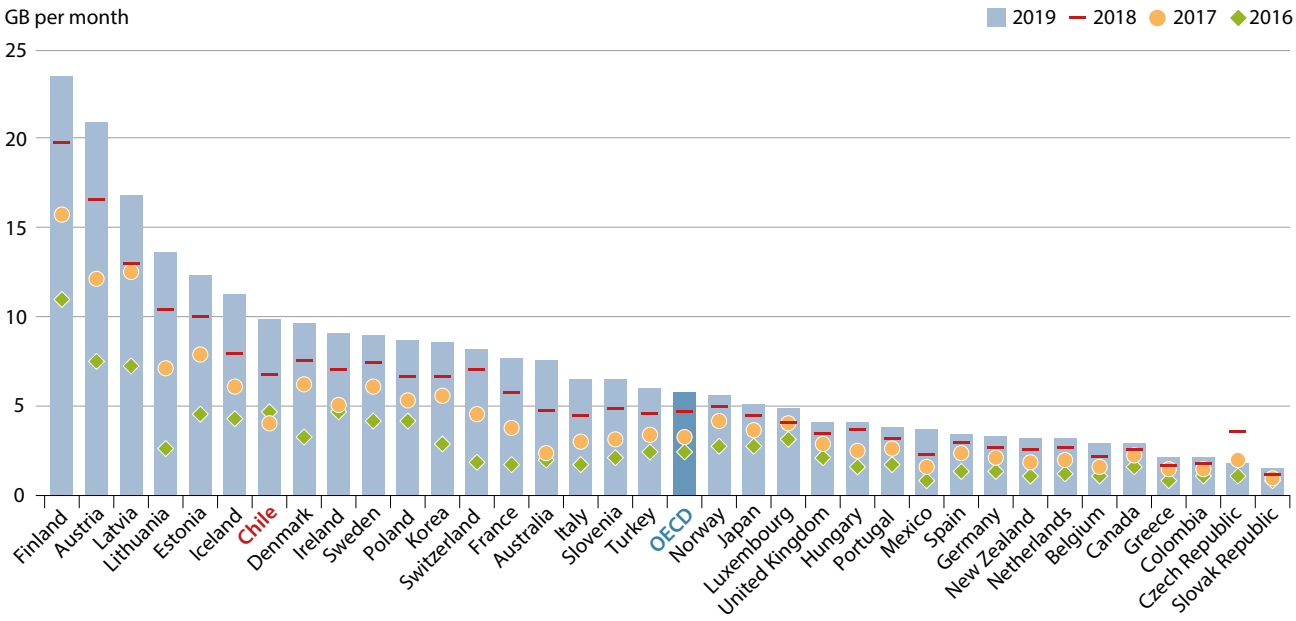


Notes: Australia: Data reported for December 2018 and onwards is being collected by a new entity using a different methodology. Figures reported from December 2018 comprise a series break and are incomparable with previous data for any broadband measures Australia reports to the OECD. Data for Canada and Switzerland are preliminary. Data for United States are OECD estimates.

Source: OECD, Broadband Portal, http://www.oecd.org/sti/broadband/broadband-statistics/

Figure 5.5. Consumption of mobile data in Chile is above the OECD average

Average monthly mobile data usage per mobile broadband subscription, 2016-2019.

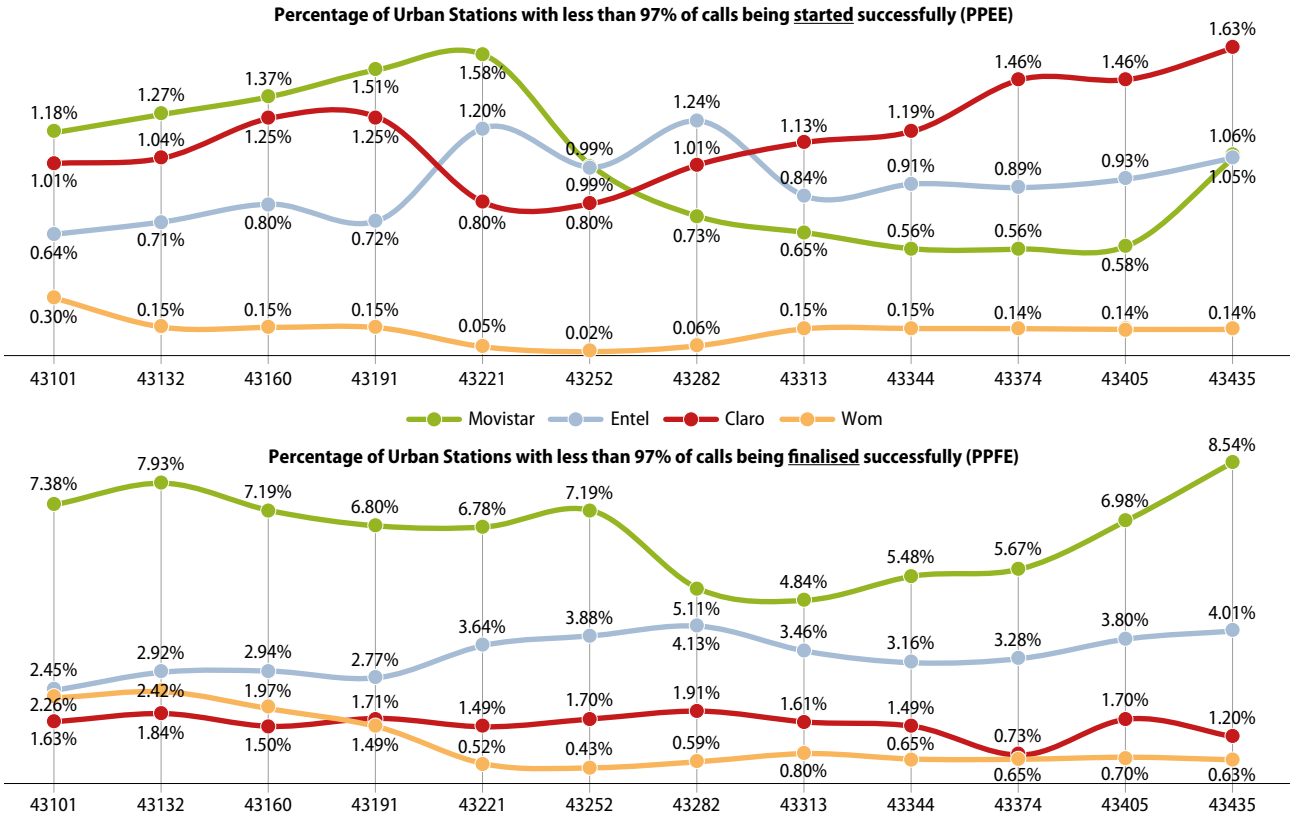


Notes: The multiplier 1024 is used to convert TB into GB; the total amount of GB is divided by the yearly average number of Mobile broadband subscriptions. Australia: Data reported for December 2018 and onwards is being collected by a new entity using a different methodology. Figures reported from December 2018 comprise a series break and are incomparable with previous data for any broadband measures Australia reports to the OECD. Data for Canada and Switzerland are preliminary. OECD average includes estimates.

Source: OECD Broadband Statistics http://www.oecd.org/sti/broadband/broadband-statistics

Figure 5.6. Quality of voice calls is on average relatively high in Chile

Failed calling attempts and dropped calls in urban stations. January – November 2018.



Source: SUBTEL (Information only available until November 2018).

Despite the high mobile penetration, there are differences in coverage with respect to different mobile technologies in each geographical market. This phenomenon is evident when reviewing the coverage maps published by different operators. The technologies available in each city or area and the signal levels differ depending on the region of the country.[19] For example, there are still areas that do not dispose of LTE or have poor coverage in general.

In terms of quality, voice calls have been established successfully, with a relatively high and stable rate in urban areas in 2018. This contrasts with the statistics for successfully terminated calls for some operators, which reflects a lower performance of their networks (Figure 5.6). It should be noted, however, that the measurement unit used is base stations instead of single calls. With respect to mobile broadband services, download speeds show levels below the OECD average, and even lower than those reached by other reference countries in Latin America (Figure 5.7).

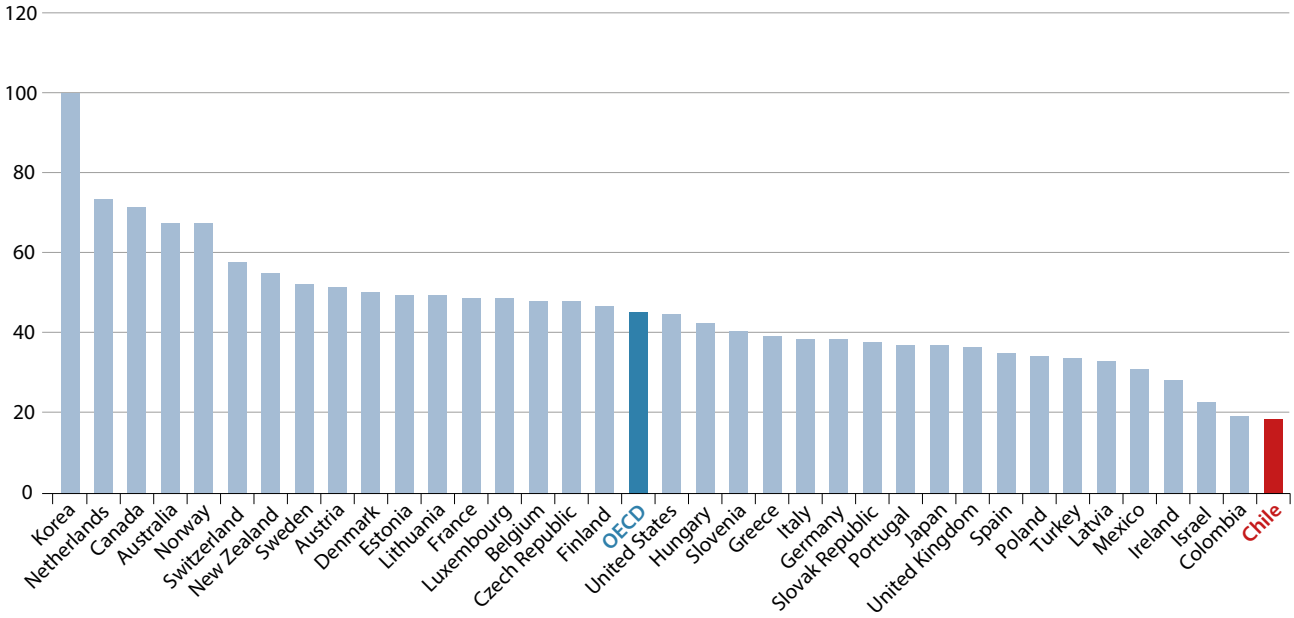
Overall, while Chile shows a better performance for some indicators than some of its peers, with respect to the penetration of voice services and the average usage of mobile data, there is room for improvement when it comes to 4G coverage and download speeds.

While multiple factors influence market performance, the way spectrum as a scarce resource is allocated in the market can be considered as a key factor. Therefore, spectrum management should follow a broader vision that focuses on strategic aspects such as extending coverage, ensuring its efficient use and fostering competition in the market, as it is not only relevant for the telecommunication sector but also for the digitalisation of all sectors of the economy and the society.

19. Data from operator websites accessed on June 22, 2020: https://www.clarochile.cl/personas/servicios/servicios-moviles/consulta-tu-cobertura/; https://www.movistar.cl/cobertura-movil-4g; http://www.wom.cl/cobertura/; https://www.entel.cl/landing/cobertura/movil/

Figure 5.7. Mobile download speed is low in Chile

Average mobile download speed in OECD countries May 2020 (Mbps)



Source: Speed Global Index – Speedtest, https://www.speedtest.net/global-index

This approach has been recognised in the *Digital Agenda 2020 – Chile Digital for Tod@s*, which determines that spectrum management should be aligned with the development of the country and the integration of different demands. The agenda also points to the need to ensure the effective deployment of high-speed communication networks, in order to offer improved voice communications and mobile broadband services. An overarching vision is a prerequisite from a digital transformation perspective and there is the need to implement public policies that not only improve access conditions and reduce digital divides, but also contribute to strengthening other capacities required for the digital economy (OECD, 2019[31]). Transformation strategies should therefore include ways to promote investments in digital tools to increase productivity, the availability of open data and the dissemination of knowledge.

This topic is highly relevant, because in Chile, the spectrum allocation model and the mechanisms available for spectrum block assignments are currently determined by the GTL and are mainly focused on a "comparative selection" scheme. For this reason, these mechanisms have been mainly focused on general *"optimal transmission or excellent service"* criteria and are only considering the possibility of applying an auction model if two or more agents *"offer similar conditions"*. This reduces the possibilities of policy makers to design and develop alternative models of spectrum allocation that have been proven to be successful in other OECD countries, where spectrum auctions are considered the gold standard.

In general, the limitations imposed by law and by the Supreme Court decision, strongly reduce the policy options. Regularly there are four typical approaches for spectrum allocation, namely: (i) auction; (ii) comparative selection; (iii) tender; and (iv) direct assignment. Table 5.5 provides a comparative overview of the former two approaches, given the use of auctions in OECD countries and the comparative selection approach used in Chile.

To date, most OECD countries use spectrum auctions to allocate spectrum. One of the reasons OECD countries introduced auctions for assigning spectrum was to obtain transparent and explainable outcomes. A second reason was to use this as a discovery tool given that, due to their knowledge and experience, industry players are better placed to assess market value. A third reason was that alternative mechanisms for assigning spectrum, such as comparative selection or lotteries, often led to suboptimal outcomes, both in terms of the value captured by successful parties relative to policy objective and due to the fact that sometimes the targets specified in the proposal by the winning party were not always realised (OECD 2014; OECD, 2017). Possible disadvantages include the risk of excessively high fees, which may hinder a faster deployment of communication networks due to limited financial resources of operators.

Table 5.5. Comparison between spectrum allocation mechanisms

Scheme	Characteristics	Potential advantages	Possible disadvantages
Auction	• Definition of blocks and base prices: • Open to multiple qualified actors; • Bid based on economic criteria; • Competitive prices are necessary; • The bidder is financially responsible for their offer, which generates incentives to develop realistic offers.	• Prices defined by the market; • maximization of economic income for the State; • Since supply depends on internal predictions about profitability and market demand, bidders have an incentive to ensure that their predictions are as accurate as possible. • An auction obliges the participants to reveal, via their bids, the future expected stream of profits. Their bids reflect this information. If well designed, the auction will give a clear ranking of operators (OECD, 2001); • Based on relatively simple and transparent rules that apply in the same way to all participants; • Corruption is avoided as final offers are the only thing that matters for the final assignment.	• It can lead to high license fees, hindering a rapid spectrum use; • Increased chance of "winner's curse"* • Increased probability of unassigned blocks; • Risk of transfer of spectrum costs to end user; • Money collected can be used for purposes other than for the telecommunication sector; • Risk of a single company dominating the market if auction is not carefully designed.
Comparative selection	• Definition of minimum conditions to participate; • Open to multiple qualified agents; • Bid based mainly on technical criteria.	• Resources focused on the telecommunication sector priorities; • All participants are obliged to provide the same information and, in theory, the same criteria are used to value offers.	• Spectrum value depends on the State and not on the market; • Information asymmetry can underestimate the resource; • A lower degree of transparency compared to auctions • Past experience has shown that technical targets of the winning proposal were not always realised.

Note: *Situation in which the assignee allocates such a significant volume of resources across the spectrum, which leads him to limit his investment possibilities in the deployment of networks, putting his business model at risk.

Source: OECD.

While the approach of a comparative selection ensures that the resources are typically devoted to the communication sector, the overall price paid for the spectrum tends to be low (or non-existent) under the scheme, which implies that the state is granting a subsidy to private actors (OECD/IDB, 2016[5]). Likewise, comparative selections do not allow a true estimate of the economic value of spectrum resources, since the information between regulatory authorities and operators is asymmetric. In general, auctions are on the rise in Latin America, even though comparative selections have been frequent in the past.

Overall, it is important to highlight that auctions can include coverage obligations and, in an extreme case, can be the only decisive factor such as in the case of the auction of the 700 MHz band for the mobile wholesale network in Mexico, the *Red Compartida*. Several recent auctions in OECD countries have been designed to include important coverage obligations such as the 2018 auction in Mexico and the 2019 auction in Germany (Box 5.1). The last auction in Germany, for example, also included the obligation to connect strategic infrastructure such as major highways, railways and main waterways.

In the specific case of Chile, one factor to be considered is the current legal definition of the spectrum assignment period for 30 years. Such a period is relatively long which makes a comparative selection process complex, in particular with respect to the valuation of the spectrum and the applied technical criteria for a 30 years use, considering the technological changes during this period. The current challenge and discussion around the assignment of the 3.5 GHz band which was initially allocated for a fixed-wireless use, but is now an important band for 5G services is an illustration

of the complexity. Therefore, the establishment of the criteria that determine the rationale and proportionality of the obligations in a comparative selection process, whether economic or in kind, may be complex.

An additional consideration for spectrum policy is its role in competition policy. Although the mobile telecommunication market in Chile is considered to be competitive, the influence that radio spectrum management has on competition should be paid attention to. Spectrum allocation and management plays a fundamental role for competition, mainly because of three reasons:

1. Being a limited resource and considering that a minimum amount is required to operate, the number of licenses to be granted is very small, which in turn tends to lead to market concentration;
2. Since all spectrum bands are not equal in terms of their technical characteristics, a larger number of base stations is required for higher operating frequencies. This implies larger investments and an impact on costs which might, in turn, affect prices to the end user; and
3. In general, incumbent operators tend to have higher valuations of spectrum compared to new operators, due both to potentially higher returns on investment and higher financing capabilities. This means that if auctions are not appropriately managed, their effectiveness in terms of competition policy may be limited.

An auction should be designed carefully to prevent a single company from dominating the market, and the new spectrum concessions should be designed with the aim of creating a more competitive mobile communication market (see also OECD, 2017[4]). Likewise, all actors involved in this kind of processes should work closely with the competition authority to ensure that the usage of spectrum fosters effective competition. In this regard, the relationship that SUBTEL maintains with Chile's *National Economic Prosecutor's Office*, (Fiscalía Nacional Económica) can be considered a good practice.

Finally, it is necessary to consider the introduction of flexible models for the usage of spectrum. These include spectrum trading, secondary markets and spectrum sharing. In particular, the development of *secondary markets* and *spectrum sharing* rules brings more flexibility and allows for improved market structures and for a more efficient use of spectrum. This process implies the evaluation of possible legal and competition restrictions, as well as technical issues (e.g. interferences) (OECD/IDB, 2016[5]). OVUM Research shows that as of 2018 a number of countries such as USA, Canada, Australia, New Zealand, India have already adopted the secondary markets model and that this is also planned in the Latin American region for Mexico, Guatemala and Dominican Republic.[20]

20. https://static.pisapapeles.net/uploads/2018/07/Asignaci%C3%B3n-y-uso-eficiente-del-espectro-en-Chile-prioridad-en-la-agenda-de-pol%C3%ADtica-p%C3%BAblica-hacia-la-conectividad-total-OVUM-2018.pdf

BOX 5.1 REFERENCE CASES REGARDING AUCTION-BASED SPECTRUM ALLOCATION PROCESSES

Mexico. Based on the auction design developed by the Federal Telecommunications Institute (IFT) in 2018, 6 blocks of 20 MHz in the 2.5 GHz band were auctioned for a 20 years period. As a result of this process, four blocks were awarded to AT&T, while the remaining two were assigned to Telefónica . In this auction, América Móvil, the operator with the largest market share, did not participate due to applicable restrictions of spectrum caps, and because it is currently authorised to use spectrum it has been originally granted in the same band.

Mexico collected MXN 2 100 million (approximately USD 115 million) and managed to balance the available spectrum between operators. Three main mobile market players have now access to the referred band.

Germany. In March 2019, the German regulation authority Bundesnetzagentur opened an auction that included 41 blocks located in the 2.1 GHz (120 MHz) and 3.5 GHz (300 MHz) bands, all intended for the provision of 5G services for a 20 years period.

Among the conditions, participants were required to have coverage with a minimum speed of 100 Mbps at the end of 2022 for 98% of the country's households and on all federal highways, major highways and railways. Likewise, by the end of 2024, service coverage should be extended with the same reference speed in the rest of the country's highways, and at the same time, coverage at 50 Mbps on all regional and federal highways should be offered for the same date, as well as for ports, the main waterways and the rest of the railways. The spectrum auctioned in the 2.1 GHz band will only be available from dates ranging between 2021 and 2026.

By June 2019, and after a 497 rounds process, Deutsche Telekom paid EUR 2 175 million (USD 2 456 million, 130 MHz), while Vodafone's investment reached EUR 1 880 million (USD 2 123 million, 130 MHz). Telefónica paid EUR 1 425 million (USD 1 609 million, 90 MHz), and the entering operator 1 & 1 Drillisch paid EUR 1 070 million (USD 1 208 million, 70 MHz).

5.3 IMPLEMENTATION ACTION PLAN

Reference Framework for Spectrum Management and Spectrum Allocation

POLICY ACTION 9:

Adapt the conditions for future use of the 3.5 GHz band, considering possible reallocation and refarming schemes.

Based on the obligation established in 2018 by the Supreme Court in response to the lawsuit filed by CONADECUS, and also the decision related to spectrum caps by the Supreme Court in July 2020, actions are expected regarding the return of parts of the assigned spectrum by operators in the 3.5 GHz and 900 MHz bands. Given the effect this measure may have on the provision of services by the current assignee operators in both bands, and especially for the 3.5 GHz band, a coordinated action between operators, the Chilean government and the users is required, in order to minimise the expected impact of said measure, taking into account technical and economic aspects.

Regarding the current spectrum assignments in the 3.5 GHz band, considering that SUBTEL has adopted measures aimed at a temporary restriction in its use, it is essential to determine, confirm and applythe criteria established in an effective way in order to reorganise the spectrum as soon as possible and before the next allocation processes related to this band. For the above, the criteria proposed within the last document published for discussion on the spectrum allocation for 5G were specified and quantified.

In addition, SUBTEL's proposal will need to be amended to fully include the provisions of the Supreme Court decision and avoid further litigations. Some legal and regulatory measures that specify terms and approaches might further be needed for an adequate implementation of the decision by the Supreme Court.

The design of the allocation process should strive to foster competition, to also serve as a reference for future spectrum allocations, while also ensuring continued innovation in the market and an allocation of spectrum to multiple operators, promoting that each agent shall use it in the most efficient way. Overall, the spectrum allocation of this important band with a 30 years licence duration should ideally be conducted through an auction, as specified in Policy Action 13.

Objective

Provide and apply clear rules about the future use of strategic bands to close connectivity gaps and provide services under 5G technology.

Actions and Timeframe

- Determine, along with the operators involved, the possible effects of the return of the spectrum in the 3.5 GHz and 900 MHz bands, and evaluate technical alternatives that allow mitigating potential risks.
- If needed, adopt and develop transition plans that minimises the impact on operators affected by the mandatory return of the spectrum in the referred bands, formalising its application by issuing the regulations with the applicable modifications.
- If needed, apply reference parameters for the concrete spectrum reorganisation and potential reallocation proposals with each of the current assignees in the 3.5 GHz band, and advance approaches with these agents to adopt the measures that may take place, if possible, through consensus mechanisms.
- Amend the proposal for the allocation process for the 3.5 GHz band, based on the Supreme Court's decision of 13 July 2020. Prior to the publication of the allocation conditions associated to the 3.5 GHz band, assess the need for further legal or regulatory measures to specify some terms of this decision (for example roaming and spectrum efficiency), in order to provide clarity and investment certainty to the market.

Institutions/stakeholders involved

- SUBTEL – Ministry of Transportation and Telecommunications
- Assigned operators in the 3.5 GHz and 900 MHz bands
- Tribunal for the Defence of Free Competition
- Supreme Court
- User associations

Policy instruments

- Resolutions regarding spectrum assigned, recovered, refarmed and reallocated.

Milestones, Indicators and Evaluation

- Available and assigned spectrum in the 900 MHz and 3.5 GHz bands
- Quality of service offered to users
- Verification of the release of the bands in the different regions within the timeframe
- User surveys regarding the perception of services

POLICY ACTION 10:

Establish transparent and clear strategic guidelines regarding the current and future availability of radio spectrum for mobile telecommunication services in the country, based on projected needs and technological developments.

The development of mobile communication services implies the need to allocate an increasing amount of spectrum to operators offering their services in the country. In order to achieve allocation levels comparable to those observed in other OECD countries, it is necessary to have strategic guidelines that complement the current spectrum planning exercise, which focuses mainly on strictly technical aspects. These guidelines could start by considering the state of the use of frequencies in Chile, and the projection of future demand for additional bands; together with a planning of which bands could be freed for the use by commercial mobile communication services in the next five to ten years. Where possible, the guidelines should also seek to facilitate the processes of migration of other services for which spectrum is used in order to be able to undertake spectrum refarming and freeing additional frequency bands.

Objective

- Have a long-term reference guide for spectrum management that allows the future uses of the radio spectrum to be managed appropriately and with due anticipation, with a focus on the resources required for mobile telecommunication.

Actions

- Develop a diagnosis to assess the current state of use of radio spectrum bands that can be used in mobile telecommunication in a long-term perspective, in the coming five to ten years and beyond, if possible. The analysis should consider a detailed benchmark of best practices of leader developed countries on spectrum assignment. This should become an ongoing exercise after the publication of the first report.
- Develop strategic guidelines that provide an overview of future spectrum needs, possibilities to free spectrum as well as information on future allocations and spectrum assignments, with an emphasis on the spectrum required for mobile telecommunication services. Identify the relevant bands for future mobile technologies in alignment with international developments. Incorporate also the relevant bands for high capacity transport networks.
- Make regular updates to the guide, based on the assignments that are carried out and with the new definitions of bands that can be used in mobile telecommunication in the future (starting in 2024).

Timeframe

- The studies and the development of the initial guidelines document for long-term spectrum planning should be carried out over a period of one year.
- Subsequent updates should be made, at least every time modifications are adopted based on the decisions taken at the ITU World Radiocommunication Conferences.

Institutions/stakeholders involved

- SUBTEL – Ministry of Transportation and Telecommunications
- Telecommunication operators and other possible organisations of spectrum users
- Academic Organisations that address issues related to spectrum use
- International Organisations related to spectrum management, such as the International Telecommunications Union - ITU and the Inter-American Telecommunications Commission CITEL of the Organization of American States (OAS)

Policy instruments

- Long-term strategic spectrum planning guidelines for Chile. If necessary, some specific measures may be adopted by resolution or decree.

Milestones, Indicators and Evaluation

- First version of the guidance document for spectrum planning for mobile services and high capacity transport networks
- Amount of spectrum available for the allocation to mobile services
- Amount of spectrum allocated for mobile services
- Compliance with the allocation plan as defined in the guidance document
- Number of updates of the guidance document

Adjusting the criteria for allocation and use of the spectrum to the needs of a digital economy

POLICY ACTION 11:

Define technical and economic criteria, in order to contribute to the determination of reasonable obligations for the assignees in future spectrum assignment processes for mobile telecommunication services.

According to the General Telecommunications Law, and considering the Supreme Court decision of 13 July 2020, spectrum assignments for mobile telecommunication services have been supplied under the comparative selection model. The reviews of the processes show that, in general terms, coverage obligations are established for geographical areas, as well as the quality of the services offered, which are defined based on the reference technology that is being implemented.

The determination of these types of conditions is based on a direct interpretation of the provisions of the GTL. However, these allocation processes do not involve conducting reference studies for the establishment of the respective conditions, through which it is feasible to estimate, from a technical and economic approach, the cost of such obligations.

Because these studies are not conducted, it is not possible to estimate the impact of these obligations on the business models of the operators. Considering that the respective allocation period is rather long (30 years), this could potentially generate surplus income to the agents which would mean a general subsidy of telecommunication services by the State. It is thus necessary, before each specific allocation process, to have a set of criteria that can be

applied by the regulator to develop the conditions for the comparative selection model based on a sound technical and economic analysis. In addition, if the comparative selection model is kept in the short run, the regulator should carefully analyse and verify whether the coverage obligations are implemented by operators. In the longer run, however, it is recommended to move to auctions as the main spectrum allocation model (Policy Action 13).

Objective

- Establish bases and criteria to better develop and evaluate the obligations to be imposed on operators in comparative selection processes for the assignment or renewal licenses of spectrum for mobile telecommunication services.

Actions

- Undertake a study analysing the criteria and best practices used internationally for the assessment of spectrum bands for mobile telecommunication services.
- If needed, incorporate the regulations required into the regulatory framework for the implementation of the identified criteria, so that the established rules can be applied on a case by case basis to future allocation processes.
- Strengthen the technical capabilities of the regulatory authority/ies, so that they have the necessary training for an appropriate assessment of the radio spectrum and its value, with an emphasis on mobile telecommunication.

Timeframe

- The definition of the general criteria should be available for all future spectrum assignments in the medium/long term.
- If it is necessary to design one or several allocation processes in the short term, they must be preceded by specific studies that allow the assessment of the spectrum to be assigned.
- Capacity building must begin as soon as possible and a periodic skills upgrading based on new developments, both nationally and internationally must be undertaken.

Institutions/stakeholders involved

- SUBTEL – Ministry of Transportation and Telecommunications
- Ministry of Economy, Development and Tourism
- Tribunal for the Defence of Free Competition

Policy instruments

- Resolution / Decree with general guidelines
- Future process documents for spectrum allocation

Milestones, Indicators and Evaluation

- Number of sites deployed by technology and by spectrum sub-band
- The existence of guidelines for the evaluation of criteria to design the spectrum allocation
- Variation of annual investment amounts in the mobile telecommunication sector.

POLICY ACTION 12:

Include connecting strategic infrastructure (such as highways and ports) and industrial areas as additional criteria for future spectrum assignment processes.

The spectrum allocation processes for mobile telecommunication in Chile have been characterised by prioritising the geographic expansion of **coverage**, as well as the **quality** of the services offered. These two criteria have been highly relevant and continue to be important, but in light of preparing the digital transformation of the country, additional weight could be given to increasing connectivity for industrial applications and the Internet-of-Things, given that 5G is the first standard that has been created with the Internet-of-Things in mind.

To achieve this goal, it is necessary to consider at least two perspectives. The first one focuses on a greater transversality of telecommunication as a driver for the digital transformation of other sectors of the economy. And the second is that, beyond the basic functionalities of telecommunication, its main value is increasingly reflected in the ability to support a growing number of specific applications. Therefore, it is imperative to ensure that industrial areas and strategic infrastructure such as highways, national roads, ports etc. dispose of high-speed, high quality connectivity. It is thus necessary to implement measures that make it possible to broaden the perspective for obligations in future spectrum assignment processes.

Objective

Connect strategic infrastructure such as highways, national roads and ports that boost Chile's digital transformation. Incorporate specific obligations into future spectrum allocation processes.

Actions and timeframe

- Develop or update studies that determine the level of connectivity in strategic industrial areas and along strategic national infrastructure. Identify existing gaps.
- Incorporate into future spectrum allocation processes, and particularly those related to 5G technology, conditions for the ubiquitous connectivity of national infrastructure and industrial areas in the country.
- Determine the baselines that allow for a clear reference to measure the improvements introduced through digital transformation processes.
- The studies for the prioritisation of strategic sectors should be carried out by SUBTEL and the Ministry of the Economy.
- If it is necessary to design one or several allocation processes related to 5G, it should be ensured that they include a preliminary analysis that identifies, in a general way, which main infrastructures should be given priority in the short term.

Institutions/stakeholders involved

- Ministry of Economy, Development and Tourism
- SUBTEL – Ministry of Transportation and Telecommunications
- Ministry of Public Works (Use of strategic infrastructure projects)

Policy instruments

- Base documents for new spectrum allocation processes

Milestones, Indicators and Evaluation

- Number of connected highways, industrial areas, ports etc by 4G and 5G networks
- Evolution of the state of connectivity of highways, ports, and other infrastructure as well as strategic industrial areas

POLICY ACTION 13:

Create new rules in order to achieve more flexible spectrum assignment and use mechanisms, adapted to future requirements of the society and productive sectors in the country. Ideally, spectrum allocations should be based on auctions.

According to the General Telecommunications Law, spectrum assignments in Chile for mobile telecommunication services are based on a comparative selection scheme. Likewise, the legal framework limits the use of the spectrum to those agents to whom it has been assigned by the regulator.

Although this scheme has addressed coverage and quality needs in the past, it is not the most efficient assignment model for spectrum. Ideally, spectrum allocations should be made based on auctions which can be designed in a more flexible way for each allocation process and according to the country's needs, also in light of the developing Internet-of-Things and the need to collect an ever growing number of devices, besides people. Auctions also allow for a closer determination of the value of the spectrum and for a more efficient spectrum allocation. It is important to highlight that coverage obligations can be a main part or even the main part of an auction, depending on a country's need. For this reason, it is advisable that the government has the possibility to conduct spectrum auctions. In addition, more flexibility should be granted for the allocation of spectrum for the different types of use.

Overall, it is necessary to adapt the rules of spectrum allocation, so that they meet the reality of the country's needs, in order to promote the development of the Digital Economy and contribute to the transformation of strategic sectors.

Objective

Make spectrum allocation schemes more flexible, so that they meet the future needs of the country. Allow for the possibility to undertake spectrum auctions. Additional measures can include, for example, a secondary market for spectrum, spectrum trading and innovative spectrum sharing models etc.[1]

Actions and timeframe

- Advance a review that allows a comparison between the different commonly used spectrum allocation mechanisms and the potential impact of their use for the specific case of Chile, as well as the potential demand for secondary spectrum allocations and use by specific agents. This would be implemented with the purpose of having a reference for the use of these schemes, according to the objectives set by the State.
- Based on the results obtained in the aforementioned study, develop and discuss a draft Law in Congress aimed at allowing for more flexible future spectrum allocation schemes, as well as strengthening the technical capacity of the regulator in this matter.
- The time of approval by the legislature of the bill will depend on the priority with which this initiative is processed in Congress.

Institutions/stakeholders involved

- SUBTEL - Ministry of Transport and Telecommunications
- Ministry of Economy, Development and Tourism
- Spectrum assignee operators for mobile telecommunication
- Potential interested in secondary use of the spectrum
- Congress of the Republic

1. As a reference, in terms of OVUM Research, (https://static.pisapapeles.net/uploads/2018/07/Asignaci%C3%B3n-y-uso-eficiente-del-espectro-en-Chile-prioridad-en-la-agenda-de-pol%C3%ADtica-p%C3%BAblica-hacia-la-conectividad-total-OVUM-2018.pdf) by 2018n countries like USA, Canada, Australia, New Zealand, India were using secondary markets model. Also, in Latin American region, it was planned for Mexico, Guatemala and Dominican Republic.

Policy instruments

- Modify the General Telecommunications Law

Milestones and Indicators and evaluation

- Approval of the Law to make spectrum allocation schemes more flexible
- Quantification of obligations arising from future allocation processes
- Increase in the efficiency of the use of the assigned spectrum, based on the methodology established for this purpose.

6. Governance of Chile's telecommunication regulator

Regulatory authorities play a crucial role in ensuring that markets function properly and the public interest is safeguarded. Regulators should act as 'market referees' in the relations between political authorities, businesses and citizens. Regulators' ability to fulfil this function is conditioned by having robust governance arrangements, in particular with regard to safeguarding objective, technical and impartial decision-making. Regulators can fail to deliver essential public services if they are unfairly influenced, and any perception of partiality will hinder their capacity and credibility in acting as referees that mediate between actors and their interests. Impartiality and independence come hand in hand with strong accountability and transparency measures for decision-making, which reinforce legitimacy and trust.

This section provides an overview of the governance of Chile's telecommunications sector regulator, the Undersecretariat of Telecommunications (*Subsecretaría de Telecomunicaciones*, SUBTEL). The analysis benchmarks SUBTEL's governance arrangements to other economic sectors in Chile and e-communications regulators across OECD countries. Based on an assessment of the challenges of the current institutional arrangements and sector requirements, it proposes a way forward that includes the creation of an independent technical and economic regulator for the sector and presents avenues to pave the way for its establishment by strengthening the regulatory capacities of the current ministerial regulator. Robust and effective governance of Chile's telecommunications sector will be key for ensuring the efficiency of the sector, in particular in deploying new technologies and infrastructures, such as future 5G connections.

6.1 STATE OF PLAY AND INTERNATIONAL EXPERIENCES

Overview of the governance of SUBTEL

As discussed in section 3.1., SUBTEL's performs a wide range of functions aimed at developing Chile's telecommunications sector. These range from developing and implementing policy for the telecommunications sector to supervising public and private sector operators and monitoring compliance with laws, regulations and standards of sector actors. This gives SUBTEL both policy-making and regulatory enforcement responsibilities over the sector. SUBTEL holds a variety of powers under its regulatory scope of action, including: issuing / revoking licenses; regulating prices (for access charges in fixed and mobile voice calls and other services or activities defined as monopolies by the Competition Court); providing binding guidance on contract terms; issuing industry and consumer standards (technical regulations); enforcing compliance with standards through legal punitive powers for non-compliance and issuing sanctions and penalties. (OECD, 2019[6]) Table 6.1 illustrates which of these functions are conducted jointly with other public entities.

The objectives and functions of the regulator are set in the 1977 Law Decree and SUBTEL updates its strategic programming according to the policy defined by the Presidency of Chile. The priorities of the current administration are put forth in the 2018-2022 strategic plan "*Matriz Digital 2018-2022 Por un Chile Conectado*". They are: to bridge the digital gap and strengthen citizen inclusion; protect consumer rights; increase quality of services; drive market competition in favour

of developing the information society; and promote innovation and development of information and communication technologies (Government of Chile, 2019[7]).

Table 6.1. SUBTEL areas of joint competences and action

Public body	Joint area of competence / action
Ministry of Economy, Development and Tourism *(Ministerio de Economía, Fomento y Turismo)*	Joint work on tariff setting Joint work on setting regulation
Competition authority *(Fiscalía Nacional Económica)*	Joint work on definition of areas for regulation
Consumer protection agency *(Servicio Nacional del Consumidor)*	Joint work on resolution of consumer complaints
National television authority *(Consejo Nacional de Televisión)*	SUBTEL supervises television services
Competition tribunal *(Tribunal de Defensa de la Libre Competencia)*	The Tribunal makes rulings on the application of tariff regulation, competition, mergers, etc.
Supreme Court	The Court makes rulings that are relevant to both short and long term policy issues, such as infrastructure and spectrum access regulations, spectrum allocation and competition

Source: Information provided by SUBTEL, 2019

As a centralised organism of the Ministry, SUBTEL is headed by the undersecretary of telecommunication, who is directly appointed by the President of Chile. The President also has the power to dismiss the undersecretary. The appointment process follows practice for ministerial and political appointments in Chile's public administration and takes place without the input of an independent panel. There are no restrictions regarding the employment history of the head of SUBTEL, and technical requirements or competences are not defined in legislation, aside from high level requirements for the position of undersecretary that are not sector-specific. The public administration law (*Ley orgánica constitucional de bases generales de administración del estado*) instates a six month cooling-off period for all senior public officials that also applies to SUBTEL.

The Undersecretariat is entirely funded by the central government budget. Its budget is defined annually in collaboration with the Budget Directorate of the Ministry of Finance (*Dirección de Presupuestos*, DIPRES) and is approved by Chile's National Congress as part of the annual government budgeting process. The funds of Chile's Telecommunications Development Fund (a public financial instrument aimed at promoting coverage of telecommunication services in rural and poor urban areas) are included in the overall budget of SUBTEL, perhaps explaining the wide fluctuations in SUBTEL's overall budget over the years (Table 6.2). While the proportion has tripled since 2016, the budget of SUBTEL in the overall budget of the Ministry remains below 5%. SUBTEL reports that its regulatory enforcement functions (inspections) are largely underfunded. Currently, income from public tenders or any fines or sanctions paid by the industry are not directly used to fund regulation of the sector and is considered as income to the General Treasury of the Republic.

The budgeting process for SUBTEL is separate from that of the Undersecretariat of Transport, the other arm of the Ministry. The two Undersecretariats are functionally entirely separate and do not share any administrative or support services.

Table 6.2. Annual budget of Ministry of Transport and Telecommunication and of SUBTEL, 2016-2019

Expressed in thousands of Chilean pesos (M$)

	2016	2017	2018	2019
Ministry of Transport and Telecommunications	1,012,032,112	1,047,649,923	1,088,317,565	1,112,992,297
SUBTEL	15,608,561	28,103,143	17,449,885	50,573,411
% of SUBTEL budget in overall Ministry budget	1.5%	2.7%	1.6%	4.5%

Source: www.dipres.cl and information provided by SUBTEL, 2019.

Headquartered in Santiago de Chile, SUBTEL is represented throughout the country via the Regional Secretariats of the Ministry. In 2016, its headcount was 256, with 45% female staff. A majority of staff is recruited through a process that includes public vacancy announcements and selection panels. The Undersecretariat is structured into six Divisions: 1) Regulatory policy and studies, 2) Inspections, 3) Concessions, 4) Management of the Telecommunications Development Fund, 5) Legal affairs, and 6) Administration and finance.

SUBTEL is governed by Chile's whole-of-government transparency and integrity laws that include Law No. 18.595 on general public administration (*Ley orgánica constitucional de bases generales de la administración del estado*), Law No. 20,285 on access to public information (*Ley sobre Acceso a la Información Pública*) and Law No. 20,730 on lobbying (*Ley que Regula el Lobby y las gestiones que representen intereses particulares ante las autoridades y funcionarios*). Internally, SUBTEL applies a detailed code of ethics (Code) that lays out the five values of the institution as: professionalism, transparency, efficiency, engagement, and honesty. The Code includes the creation of an ethics committee that can answer queries from staff on conflict of interest or harassment. Moreover, the Code foresees mechanisms for complaints - while these cannot be anonymous, SUBTEL ensures the confidentiality of the complainant. In case of breach of the Code, sanctions can be administered in the form of a warning, fine, suspension or removal from office.

Finally, while it is not required to do so by law, SUBTEL prepares a yearly report (*balance de gestión integral*) that includes a review of the Undersecretariat's main activities and achievements over the year, financial information, reporting on staffing and human resources indicators as well as reporting on performance indicators submitted to DIPRES. The latter are comprised of eleven indicators, summarised in Table 6.3 according to their relevant strategic output. The reports include a foreword that is signed by the Minister of Transport and Telecommunications and are published on SUBTEL's website. The latest available report refers to 2018 (https://www.subtel.gob.cl/quienes-somos/balances-de-gestion-integral/).

Benchmarking SUBTEL's governance to other sectors in Chile

The 2018 OECD Indicators on the Governance of Sector Regulators analysed the governance of 37 telecommunications regulators (34 member countries and 3 non-member countries) (Casullo, Durand and Cavassini, 2019[9]). These include data on Chile and enable a comparison of the institutional arrangements of Chile's e-communications sector with those of other sectors of the economy.

The indicators provide a snapshot of how governance arrangements vary along three key dimensions: independence, accountability and scope of action. The ***independence*** component maps the degree to which a regulator operates independently and without undue influence from both the political power and the regulated sectors. The ***accountability*** component covers the accountability of the regulator vis-à-vis various stakeholders, including the government, parliament, the regulated industry and the public. Finally, the ***scope of action*** component sheds light on the range of activities that the regulator performs, such as tariff-setting, issuing standards, enforcement activities and sanctioning powers. The sectors covered by the Indicators across OECD economies are air, e-communications, energy, rail and water. The scores are on a scale from zero to six from the most to least effective governance arrangements (0= most effective; 6= least effective).

Figure 6.1 compares the average indicator scores for the network sectors included in the indicators: e-communications (SUBTEL), energy (Comisión Nacional de Energía), rail (Ministry of Transport and Telecommunications), air (Dirección General de Aeronáutica Civil) and water (Superintendencia de Servicios Sanitarios). The indicators show a diversity of governance arrangements with respect to the independence, accountability and scope of action components. SUBTEL's ***independence score*** shows that its governance arrangements in this component are further from good practice than those of regulators in the energy, air transport and water sectors. Its ***accountability score*** shows arrangements further from good practice than arrangements in the air transport and water sectors. Its ***scope of action score*** suggests SUBTEL is empowered to perform a broader range of activities than regulators in all of the sectors except for the water sector. This comparison suggests that while SUBTEL is entrusted with more responsibilities than its fellow sector regulators, its governance arrangements are further from good practice when compared to some of its peer regulators.

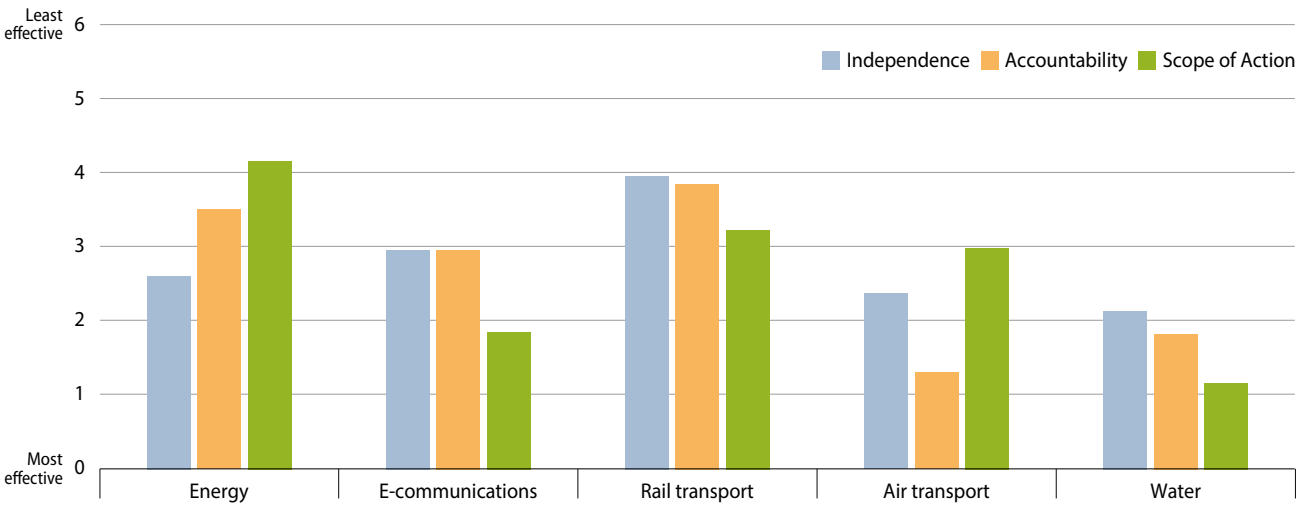
Table 6.3. SUBTEL's 2016 Performance Indicators

Strategic output	Indicator	Formula
Claim resolution and inspections of the telecommunication sector (inspections on services and infrastructure)	Average time to resolve claims filed by users and regulated entities	Number of working days for processing claims in the year t/ total number of resolved claims in the year t
	Average time to resolve repeated claims filed by users against regulated entities	(Number of working days for processing repeated claims in the year t/total number of resolved repeated claims in the year t)
	Percentage of telecommunication users with knowledge of at least one of their rights and obligations	(Number of respondents with knowledge of at least one of their rights and obligations relating telecommunication services in the year t/total number of people surveyed in the year t)*100
Concessions of telecommunication public services, telecommunication and broadcasting intermediaries, permits of limited telecommunication services and amateur radio licences	Average processing time of telecommunication concessions and modification of sound broadcasting	Number of processing time of concessions granted in year t/ number of concessions granted in year t
	Percentage of processing time of limited services permitting (in working days)	Permitting processing time (working days) of telecommunication limited services granted on year t/ number of limited services permits granted during year t.
Legal norms, technical norms, tariff decrees and statistical reports to improve the competitiveness of the telecommunication sector and protect users' rights	Percentage of the population with access to free digital television	(Population with access to free digital television in the year t/total population in the year t)*100
	Percentage of inspected infrastructure sites for addressing emergencies	Number of inspected critical infrastructure sites in the year t/total number of critical infrastructure sites defined by SUBTEL to t-1)*100
	Percentage of penetration of access of fixed and mobile internet	(Fixed internet access + mobile internet access/total of the population)*100
	Price index of a 'basic' internet plan, 15 megabit (USD)	(Annual price of a 'basic' internet plan, 15 megabit/Base annual price of a 'basic' internet plan, 15 megabit)*100
Subsidies of the Telecommunications Development Fund	Percentage of compliance with the milestones of the Austral Fiber Optic project	(Number of executed milestones of the Austral Fiber Optic project in the year t/total number of the Austral Fiber Optic project)*100
	Percentage of the population with free Wi-Fi access (Zonas Wi-Fi ChileGob programme)	(Population with free Wi-Fiaccess in the year t/targeted population of the Zonas Wi-Fi ChileGob programme)*100

Source: (SUBTEL, 2017[8])

Figure 6.1. Compared to some other Chilean regulators, SUBTEL reports fewer good practice governance arrangements for independence and accountability and a broader scope of action

Governance of Sector Regulators' Indicator scores between Chilean regulators



Note: The indicators range from 0 (most effective governance arrangements) to 6 (least effective governance arrangements)

Source: *OECD 2018 Database on the Governance of Sector Regulators.*

Benchmarking SUBTEL's governance to the OECD Indicators on the Governance of Regulators

Analysis of the indicators for the 37 e-communications regulators that participated in the OECD Indicators on the Governance of Sector Regulators shows that, overall, e-communications regulators tend to perform better than other sector regulators in the independence and accountability components. In particular, the e-communications sector ranked as having the second most effective governance arrangements for the independence component and the single most effective arrangements for the accountability component. Across countries, the e-communications sector was also ranked as having the most effective governance arrangements in the scope of action component, indicating that the breadth of actions regulators have is generally broader than in other sectors, as is the case for Chile.

Figures 6.2 to 6.4 show an international comparison of the indicator scores for the participant countries of the Indicators on the Governance of Sector Regulators. As can be seen, SUBTEL's governance arrangements in the independence and accountability components are further from good practice than the majority of participating e-communications regulators. Additionally, SUBTEL's scope of action score suggests that the range of activities SUBTEL is empowered to perform is narrower than that of most other e-communications regulators included in the survey. SUBTEL's independence, accountability and scope of action scores show a gap between SUBTEL's arrangements and those of its peers in OECD countries, which are closer to good practice. The figures map the performance of SUBTEL as per the three aggregate indicators; more detailed data from the OECD Indicators on the Governance of Sector Regulators is used to highlight specific areas or challenges with regard to the governance of SUBTEL in Section 6.2.

Principles and examples of good practice in the governance of telecommunication regulators (Italy, Mexico and United Kingdom)

The governance structures of regulatory authorities vary considerably across countries and sectors and in general, there is no one-size-fits-all that can be put forward as fit for purpose for all country contexts (OECD, 2019[3]). However, good practices for the governance of regulators can be identified (Box 6.1) and important lessons can be drawn from international experiences.

Good practices can contribute to safeguard important features such as independence and accountability (OECD, 2016[10]). For example, arrangements related to a regulator's relationship with the executive (e.g. guidance, separation of competences), staffing (including nomination, appointment and exit of agency heads) and budgeting (including source and autonomy for allocating resources).

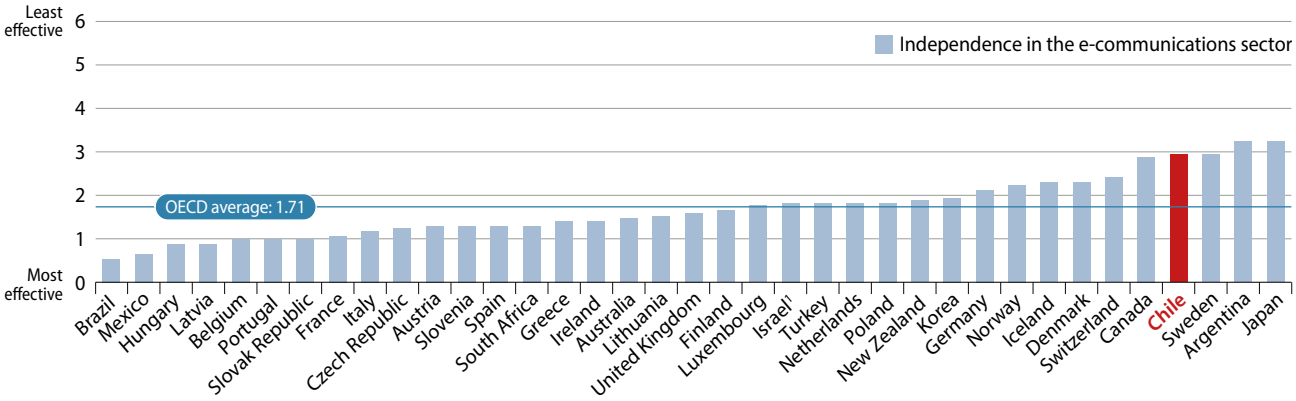
BOX 6.1. SEVEN BEST PRACTICE PRINCIPLES FOR THE GOVERNANCE OF REGULATORS

1. Role clarity. An effective regulator must have clear objectives, with clear and linked functions and the mechanisms to co-ordinate with other relevant bodies to achieve desired regulatory outcomes.
2. Preventing undue influence and maintaining trust. Regulatory decisions and functions must be conducted with the upmost integrity to ensure that there is confidence in the regulatory regime. There need to be safeguards to protect regulators from undue influence.
3. Decision making and governing body structure. Regulators require governance and decision making mechanisms that ensure their effective functioning, preserve their regulatory integrity and deliver the regulatory objectives of their mandate.
4. Accountability and transparency. Business and citizens expect the delivery of regulatory outcomes from government and regulatory agencies, and the proper use of public authority and resources to achieve them. Regulators are generally accountable to three groups of stakeholders: i) ministers and the legislature; ii) regulated entities; and iii) the public.
5. Engagement. Good regulators have established mechanisms for engagement with stakeholders as part of achieving their objectives. The knowledge of regulated sectors and the businesses and citizens affected by regulatory schemes assists to regulate effectively.
6. Funding. The amount and source of funding for a regulator will determine its organisation and operations. It should not influence the regulatory decisions and the regulator should be enabled to be impartial and efficient to carry out its work.
7. Performance assessment. It is important that regulators are aware of the impacts of their regulatory actions and decisions. This helps drive improvements and enhance systems and processes internally. It also demonstrates the effectiveness of the regulator to whom it is accountable and helps build confidence in the regulatory system.

Source: OECD (2014), The Governance of Regulators, Best Practice Principles for Regulatory Policy, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264209015-en

Figure 6.2. SUBTEL reports fewer good practice independence arrangements than the OECD average

Governance of Sector Regulators' Indicators by country, e-communications sector – Independence

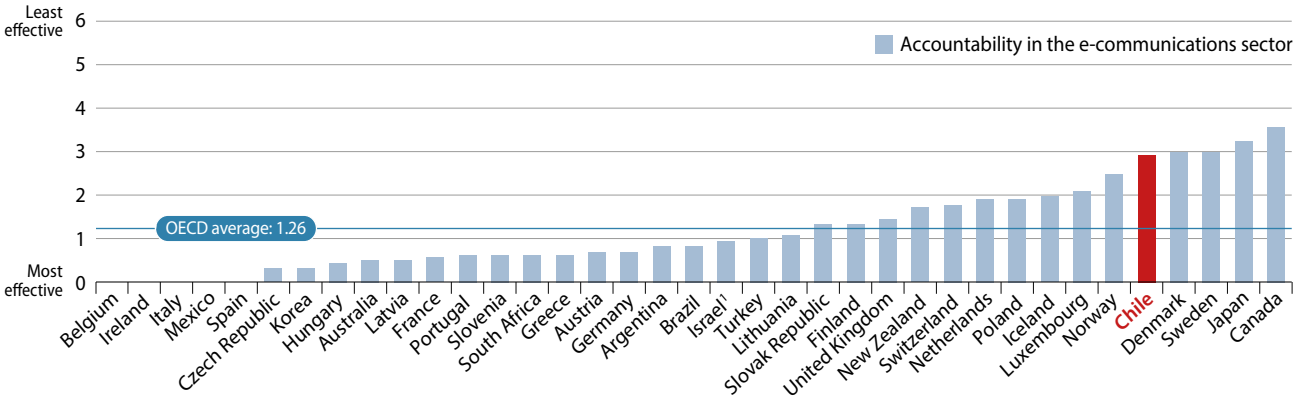


Note: The indicators range from 0 (most effective governance arrangements) to 6 (least effective governance arrangements).

Source: *OECD 2018 Database on the Governance of Sector Regulators.*

Figure 6.3. SUBTEL reports fewer good practice accountability practices are than the OECD average

Governance of Sector Regulators' Indicators by country, e-communications sector – Accountability

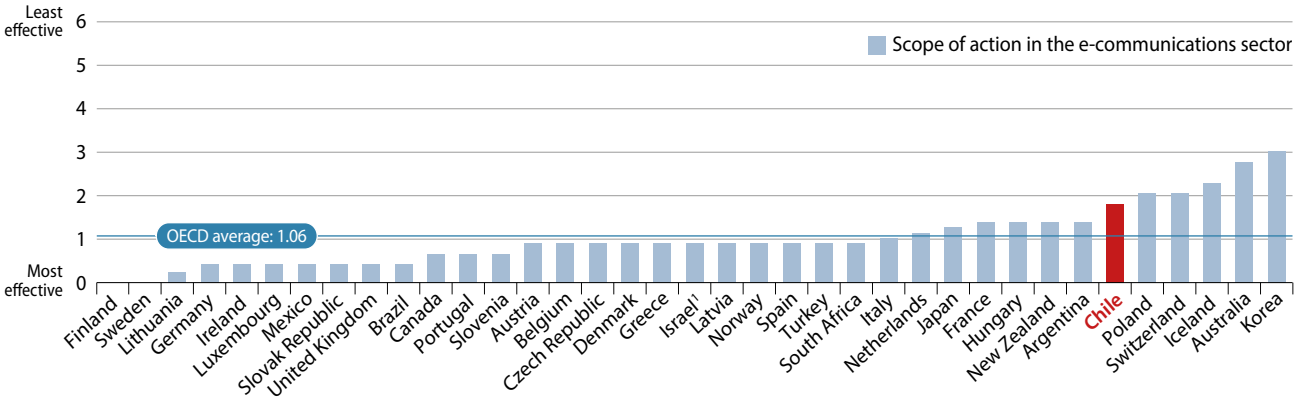


Note: The indicators range from 0 (most effective governance arrangements) to 6 (least effective governance arrangements).

Source: *OECD 2018 Database on the Governance of Sector Regulators.*

Figure 6.4. SUBTEL's scope of activities is relatively narrow

Governance of Sector Regulators' Indicators by country, e-communications sector – Scope of action



Notes: The indicators vary from zero to six from the most to the least effective governance structure. The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The OECD average does not include data from the United States and non-OECD members (Brazil, Argentina and South Africa). The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Source: *OECD 2018 Database on the Governance of Sector Regulators.*

In general, the 2012 OECD Recommendation of the Council on Regulatory Policy and Governance, states that independent regulatory agencies should be considered where:

1. there is a need for the regulator to be seen as independent from politicians, government and regulated entities, to maintain public confidence in the objectivity and impartiality of decisions and effective operation for trust in the market; or

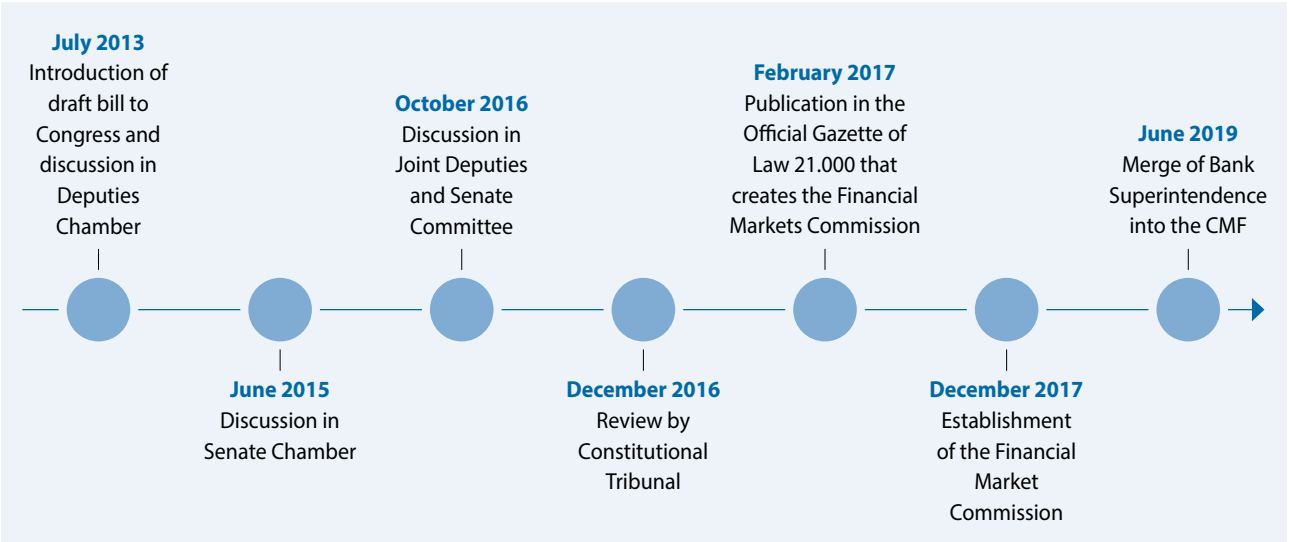
2. both government and non-government entities are regulated under the same framework and competitive neutrality is therefore required; or

3. the decisions of the regulator can have significant impact on particular interests and there is a need to protect its impartiality.

When, in line with these principles, the need for an independent regulatory agency is identified, the agency then needs to be set up in gradual and distinct steps over time. For order of comparison, Figure 6.5 describes the timeline for the creation of Chile's Financial Market Commission (*Comisión para el Mercado financiero*, CFM). (4.5 years from the start of the legislative process to the creation of the agency).

The telecommunications regulators of Italy, Mexico and the United Kingdom exhibit certain good governance arrangements related to independence, accountability and their regulatory practices; Table 6.4 provides an overview of the governance arrangements in selected areas of these regulators.

Figure 6.5. Timeline of legislative process and creation of Chile's Financial Market Commission, 2013-17



Source: (Congreso Nacional de Chile, 2019)

Table 6.4 Overview of governance arrangement in selected countries

Country	Italy	Mexico	United Kingdom
Authority	Authority for Communication Guarantees *(Autorità per le Garanzie nelle Communicazioni, AGCOM)*	Federal Telecommunications Institute *(Instituto Federal de Telecomunicaciones, IFT)*	The Office of Communications, OFCOM
Creation	AGCOM is the Italian communications and media regulatory authority. It was established in 1997 by law 249/97 in order to support the Italian liberalisation of the telecommunication market. AGCOM replaced the former Radio and Publishing Guarantor (*'Garante per la Radiodiffusione e l'Editoria'*) that was responsible for overseeing television and radio broadcasting. The Guarantor was appointed by the President of the Republic and nominated by the Presidents of the two Houses of the Italian Parliament. It had neither regulatory functions nor budget autonomy.	In 2013, Mexico implemented a wide-reaching structural reform that included the aim of modernising its telecommunication and broadcasting sectors, challenging a highly concentrated *status quo*. In June 2013, Mexico's government published a Decree to modify several articles of the Mexican Constitution, including the creation of the IFT as an autonomous constitutional body. In September 2014, the IFT governing statute entered into force. Its creation followed the 2012 OECD recommendations (OECD, 2012[12]) to eliminate the 'double window' by clearly separating competences between the Mexican Ministry of Communications and Transport (*Secretaría de Comunicaciones y Transportes, SCT*) and the former regulator, the Federal Telecommunications Commision (*Comisión Federal de Telecomunicaciones, COFETEL)*. Prior to the reform, both SCT and COFETEL were involved in policy and regulatory activities (OECD, 2017[4])	OFCOM was established under the Office of Communications Act 2002 and operates under a number of Acts of Parliament. These include the Communications Act 2003, the Wireless Telegraphy Act 2006, the Broadcasting Acts 1990 and 1996, the Digital Economy Acts 2010 and 2017 and the Postal Services Act 2011. OFCOM was formally launched in December 2003, inheriting competences of five different regulator (the Broadcasting Standards Commission, the Independent Television Commission, the Office of Telecommunications, the Radio Authority and the Radiocommunications Agency). In 2011, regulatory functions for postal services were transferred to OFCOM.
Functions and powers	AGCOM is the regulatory authority that supervises the telecommunication, television, newspaper and postal services sectors. Its main functions are: • Tariff setting; • To exercise functions as a competition authority; • To impose sanctions. • To protect consumers.	The IFT is charged with regulating, promoting and supervising the telecommunication sector. In addition, the IFT is the competition authority for the telecommunication sector. Its main functions are: • To grant concessions and decide on their extension, amendment or termination. • Tariff setting. • To carry out public tenders for the allocation of spectrum frequency bands. • To exercise competition-related powers in telecommunication services and broadcasting. • To impose sanctions motivated on infringements of laws, regulations or concession titles. • To carry out non-binding public consultation. • To issue guidelines on infrastructure deployment and to develop database of the existing infrastructure. • To define quality service indicators and to publish results obtained while monitoring compliance. *(continued...)*	OFCOM's main legal duties are to ensure that: • the UK has a wide range of electronic communications services; • optimal use is made of the radio spectrum; • a wide range of high quality television and radio programmes are provided by a range of different organisations, appealing to a range of tastes and interests; • people are protected from harmful or offensive material, unfair treatment and invasion of privacy on television and radio; • the universal service obligation on postal services is secured in the UK. OFCOM can enforce consumer law on behalf of consumers but does not have the power to resolve individual consumer complaints about telecoms or postal services, unlike in TV and radio. In addition, OFCOM has competition law powers.

Country	Italy	Mexico	United Kingdom
Functions and powers *(continued)*		• To publish statistical information and metrics referring to the telecommunication and broadcasting sectors on a quarterly basis. • To resolve any disputes relating to content retransmission.	
Strategic planning	AGCOM defines its strategic objectives and annual work programmes independently.	The IFT defines its strategic objectives and annual work plans independently.	Section 2A of the Communications Act 2003 provides the Secretary of State the power to designate a statement of strategic priorities of Her Majesty's Government relating to telecommunication, the management of the radio spectrum and postal services. OFCOM must comply with the statement when carrying out its functions. OFCOM elaborates its work programme independently.
Resources framework	**Budget:** AGCOM is funded entirely by industry fees. The maximum fee is fixed by law. On a yearly basis the regulator proposes a fee which is approved by the Ministry of Economy and the Prime Minister Cabinet (OECD, 2016[10]). The regulator allocates its expenditures independently, within general financial management rules. **Human resources:** The majority of positions are advertised publicly.	**Budget:** The IFT is funded through Mexico's national budget. Following OECD recommendations (OECD, 2012[12]), its funding is autonomous from the Ministry of Communications and Transport budget. The regulator allocates its expenditures independently, within general financial management rules. **Human resources:** The majority of positions are advertised publicly.	**Budget:** The government sets a cap for a period. Within this cap, OFCOM sets an annual budget and the Board approves it. For those costs relating to a specific project that the government has asked the regulator to perform, this is funded through GIA from the Department for Culture, Media and Sport. The Digital Economy Act 2017 allowed OFCOM to keep some spectrum receipts to directly fund the entity. The regulator allocates its expenditures independently, within general financial management rules. **Human resources:** The majority of positions are advertised publicly.
Decision making/ governing body	The Italian Senate and the Chamber of Deputies each elect half of AGCOM's Board members, respectively. The elected members are appointed by a decree of the President of the Republic. The Prime Minister nominates a Chairman, in agreement with the Minister for Communications. The nominee is subject to the binding opinion of parliamentary committees of the Senate and the Chamber of Deputies, which can hold hearings of the nominee. Following a favourable opinion by two thirds of the members of each relevant parliamentary committee, the Chairman is formally appointed by a decree of the President. In 2011, following a spending review, the number of Board members was reduced from nine to five. Board members' mandates last seven years and are not renewable. There are strict incompatibility rules, including the prohibition to perform any type of professional or advisory activity, to be administrator or employed in public or private entities, to hold any type of office, including elected roles or roles at political parties, or interests, also indirect, in sector undertakings. The 'cooling off' period after the termination of the mandate is two years.	The Board comprises seven commissioners who are appointed for a non-renewable nine-year term. The Commissioner President is the head of the regulator. Those aspiring to be appointed as Commissioners need to attest the fulfilment of requirements set in law before an Evaluation Committee composed by Mexico's Central Bank (Banxico), the National Institute for the Evaluation of the Education (INEE) and the National Statistics and Geography Institute (INEGIH). The Evaluation Committee sends to the Executive, a list of candidates that obtained the highest passing grades. The Executive selects one candidate. This decision is sent to the Senate for ratification. The Constitution establishes that Commisioners can be removed because of serious misconduct.	OFCOM has a Board with a Chairman and both executive and non-executive members. The Executive runs the organisation and answers to the Board, while the work of both Board and Executive is informed by the contribution of a number of advisory bodies. There are up to 10 members. The board members are selected by open competition under the Cabinet Office's Governance Code on Public Appointments. The Commissioner for Public Appointments regulates the appointments process. An Independent Panel Member makes the interviews and the Secretary of State makes the final appointment. The Secretary of State for the Department for Culture, Media and Sport ('DCMS') is responsible for appointing the Non-Executive Members to the Board and for approving the appointment of the Chief Executive. Board members can be dismissed through government decisions only in limited circumstances set out in legislation.

Country	Italy	Mexico	United Kingdom
Account-ability and trans-parency	AGCOM is required by law to submit an annual report to Parliament reporting on its activities. AGCOM's Head can be called on to report to the competent parliamentary committees on any matter under AGCOM's competence. AGCOM, like all EU sector Regulators, is also accountable to the EU Institutions, as it is bound to several sectoral rules at EU level. Although not a legal obligation for AGCOM, the authority publishes its strategic objectives within its periodic performance plan and then reports on their fulfilment in a dedicated section of its annual report to the Parliament. In line with legislative requirements, the regulator must publish draft decisions and collect feedback from stakeholders. In addition, the regulator publishes its strategic objectives even with no legislative requirement to do so.	The Commissioner President is required by Law to submit the IFT's annual work plan and quarterly activity reports to the Senate and the Executive. In addition, the agency head can be called upon the Parliament and Executive. Moreover, the IFT has an autonomous internal comptroller appointed by the Chamber of Deputies. Regarding transparency, resolutions and agreements issued by the Board are published in the Federation's Official Gazette. All of the Board's sessions and decisions are published unless they refer to confidential information. In addition, the sense of each commissioner's vote is made public.	OFCOM presents its Annual Report & Accounts to Parliament. OFCOM provides comments on stakeholder responses when it publishes its decisions, and publish how these have been taken into account. In addition, OFCOM publishes on its website all annual reports and plans since 2003 and 2004 respectively.
Examples of the use of regulatory manage-ment tools	AGCOM evaluates the impact of existing regulations when considering new regulatory obligations, either asymmetric (e.g. non-discrimination obligation imposed on Significant Market Power/ SMP operators) or symmetric (e.g., mobile number portability obligations applicable to all market players). AGCOM also carries out public consultation for relevant activities.	Public consultation procedures are mandatory when issuing and amending general rules, guidelines or administrative provisions, unless such disclosure may compromise the effects that the IFT intends to resolve or in emergencies. The IFT provides feedback on stakeholders' comments in line with legislative requirement. In addition, prior to the issuance of rules of a general scope, the IFT must carry out regulatory impact analysis (RIA) in line with Mexico's robust national strategy for regulatory improvement. For carrying out RIA, the IFT co-ordinates with the National Regulatory Improvement Commision (*Comisión Nacional de Mejora Regulatoria, CONAMER*), charged with RIA implementation across Mexico's Public Administration.	OFCOM carries out public consultation. For example, it publishes annual plans for consultation and holds public events for stakeholders in many cities in the UK. The responses are summarised in the plans and attached as an annex. In addition, the Communications Act 2003 requires OFCOM to set up and maintain effective arrangements for consultation with consumers. These arrangements include the establishment of the Communications Consumer Panel, an independent body with the function of advising both OFCOM and other government entities.

Sources: AGCOM (2019), Official Website, https://www.agcom.it/ (accessed 16 December 2020); OFCOM (2019); Official Website, https://www.ofcom.org.uk/home (accessed 16 December 2020); IFT (2019); Official website, http://www.ift.org.mx/ (accessed 16 December 2020); (OECD, 2019[6]); (OECD, 2017[13]); (OECD, 2012[12]).

6.2 CURRENT CHALLENGES IN THE GOVERNANCE OF SUBTEL

The status of the regulator does not match the status of the market

In Chile, the institutional arrangements for the regulation and supervision of the telecommunication sector were devised and implemented in 1977, when SUBTEL was created and when the market was composed of two state-owned operators. The arrangements have not evolved with the transformation of the market, including its liberalisation and the introduction of mobile telephony, mobile, fixed and fibre internet, and pay TV. There have been attempts to modify the institutional governance of the telecommunication sector, the latest with a draft law submitted to National Congress in 2011 proposing the creation of a sectoral superintendency alongside the Undersecretariat. However, no institutional reform has been approved or implemented since 1977 (see Box 6.2).

Moreover, the telecommunication sector is set apart from other sectors in Chile that are supervised by arms-length authorities (*Superintendencias*) (Figure 6.1). In general, the governance arrangements and degree of independence among Chilean regulatory bodies vary widely across the administration and an international comparison shows that Chile differs from institutional practices in most other OECD countries (Figure 6.2). Among Chilean regulators that participate in the Indicators on the Governance of Sector Regulators, the *Superintendencia de Servicios Sanitarios* and the *Dirección General de Aeronáutica Civil* are the only ones that qualify as independent bodies with adjudicatory, rule-making or enforcement powers (OECD, 2019[6]). However, the recent creation of the Financial Market Commission (*Comisión para el Mercado Financiero, CMF*) as an independent agency with a collegial governing body points that the Chilean public administration is maturing towards the model of independent arms-length regulatory bodies found in other OECD countries. Moreover, the 2018 Indicators on the Governance of Regulators, showed that the large majority (84%) of telecommunications regulators in the 37 countries analysed are independent regulators, while only a minority is ministerial (16%).

While there are no public operators in Chile's telecommunications sector, there is a need to bolster the perception of the regulator as being effective and impartial, in particular in the aftermath of recent court decisions to overturn regulator actions and in the run up to the deployment of 5G to the market. More generally, given the strategic importance of the sector for economic development, there is an acute need to ensure that public bodies are able to deliver on their

BOX 6.2. DRAFT LAW FOR INSTITUTIONAL REFORM

On 5 September 2011, the Executive introduced a draft law (BOLETÍN Nº 8.034-1) to create a Superintendence *(Superintendencia)* for the telecommunications sector. It was approved by the Chamber of Deputies in 2013 and moved up for Senate discussion. However, this draft law has not undergone legislative debate since 2014 (the Executive has not marked the bill law as 'urgent' for discussion).

Under the draft bill, this new entity would be 'functionally decentralised' *(funcionalmente descentralizada)* and would have budget autonomy from the sectoral Ministry.

The draft law proposes a separation of competences between SUBTEL and the Superintendence. SUBTEL would remain in charge of the sector policy and the Superintendence would be charged with:

- Enforcement and inspections.
- Imposing sanctions.
- Elaborating technical opinions on concession contracts, as well as permitting and licensing.
- Supervising the correct use of the radio electric spectrum.
- Conducting tariff-setting procedures.
- Collecting relevant data for the telecommunications sector.

Although the creation of a Superintendence could be an improvement to the current model, the draft law focuses on the creation of an enforcement and inspections entity *('organismo estrictamente fiscalizador')* in the terms of Law Decree Nº 3,551, rather than a fully independent regulator (Muñoz, 2019[16]) In addition, the draft law aims to improve sanctioning procedures by introducing a system of administrative appeals. This would require the Superintendency to continue to co-ordinate with a wide range of public bodies and would carry over the fragmentation of regulatory functions for the telecommunications sector.

In addition, leadership would remain unipersonal (the *'Superintendente'*) rather than entrusted to a collegial structure (board of directors). The 'Superintendente' would be nominated and appointed through the National Civil Service proceedings but can be removed at the discretion of the President of the Republic.

Source: (CTT, 2013[17]) (Muñoz, 2019[16])

mandates and to overcome challenges linked to Chile's geographic isolation, high market concentration and regional inequalities.

The concentration of policy, regulation and enforcement functions in one authority creates inherent trade-offs and risks

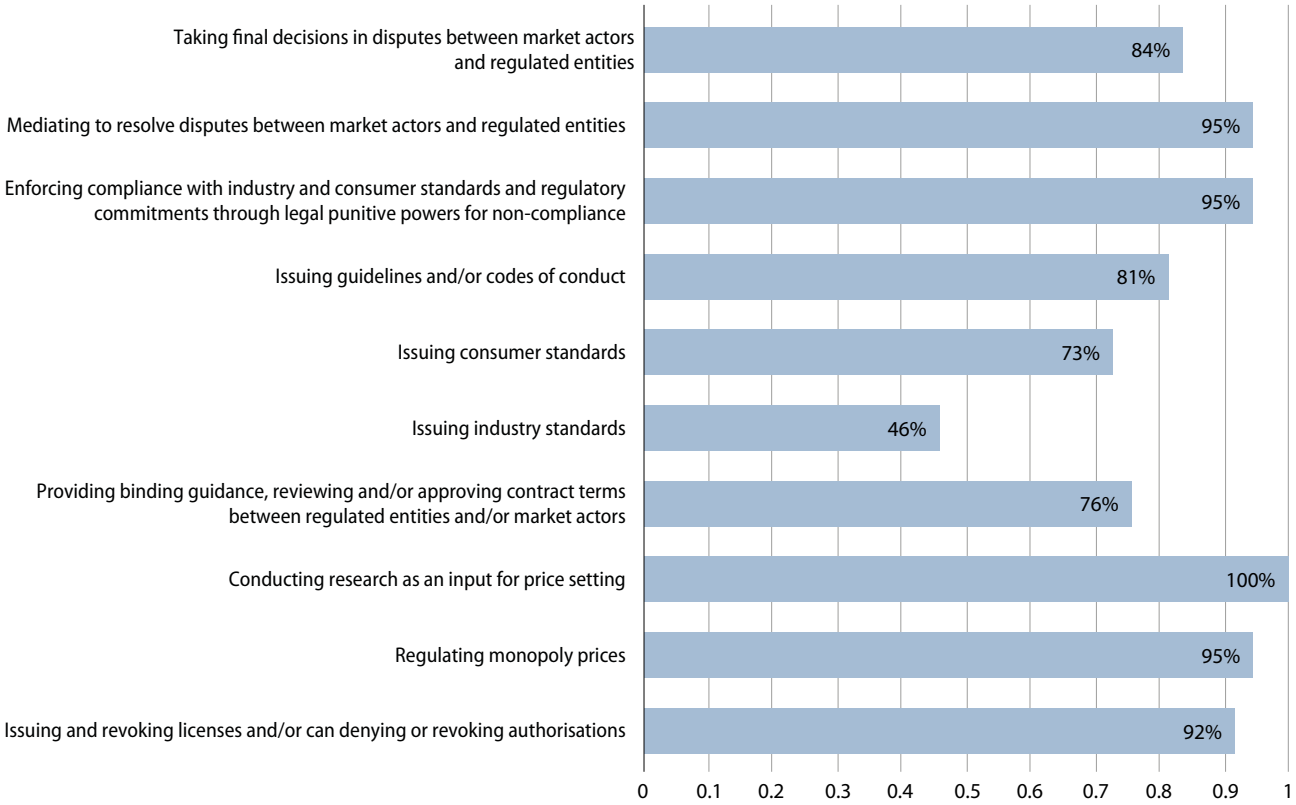
SUBTEL is currently charged with policy design and promoting the development of the telecommunications sector, as well as regulatory and enforcement functions. The Undersecretariat sets its strategic priorities in line with those of the administration and inherent trade-offs exist between its objectives of promoting the development of the sector and supervising its operators. This trade-off is also reflected in resource attribution for policy development between the Telecommunications Development Fund on the one hand, and regulatory enforcement (inspections and sanctioning) on the other, with the latter perceived as lacking adequate resources to be carried out effectively.

As discussed in section 3.1., SUBTEL's regulatory and enforcement functions are broad. It reports performing all of the functions included in the Indicators on the Governance of Sector Regulators (shown in Figure 6.6) except taking final decisions in disputes between market actors and regulated entities and issuing guidelines and/or codes of conduct. Figure 6.6 shows that most other e-communications regulators report performing the same functions (whether individually or with other bodies). SUBTEL is unusual with respect to the issuance of binding industry standards: SUBTEL reports that it does issue these standards while 54% of e-communications regulators do not.

The fact that SUBTEL does not issue guidelines and/or codes of conduct is unusual in a sector where 81% of regulators do. Similarly, SUBTEL is in the minority when it comes to taking final decisions in disputes between market actors and regulated entities (84% of e-communications regulators *do* take final decisions in these disputes).

Figure 6.6. Most e-communications regulators issue guidelines and take final decisions in disputes with market actors

Functions of e-communications regulators as a percent of all answers

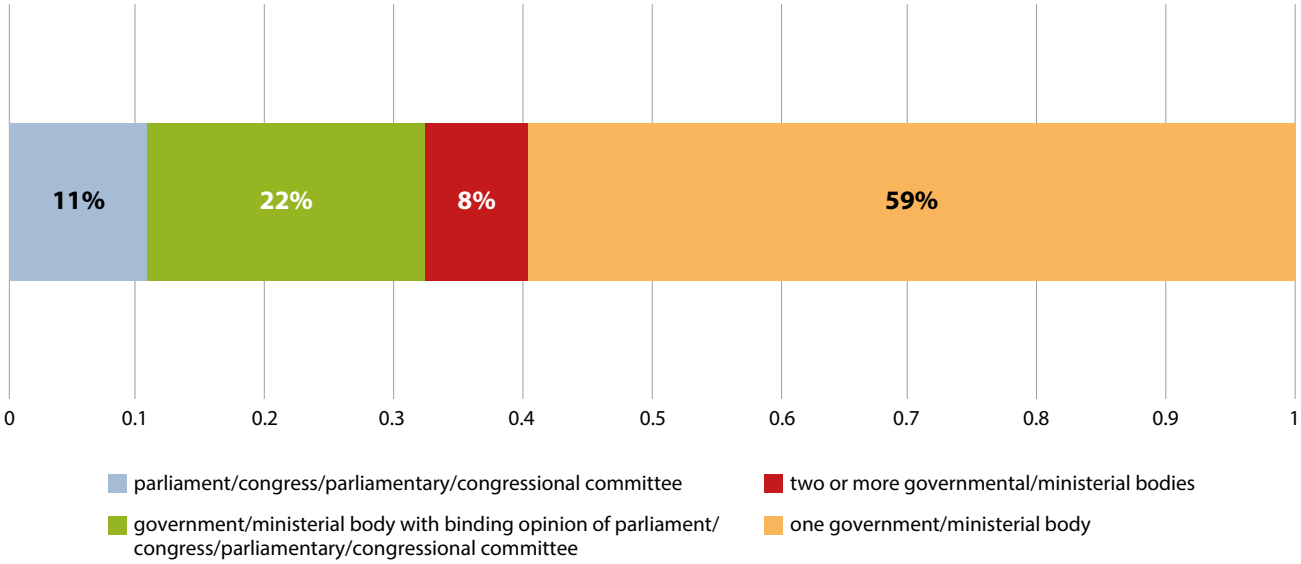


Note: This chart displays the responses for 37 e-communications regulators.

Source: OECD 2018 Database on the Governance of Sector Regulators.

Figure 6.7. A single government body appoints the head of most e-communications regulators

Q: Which body has the legal authority to appoint the agency heads or board members of e-communications regulators? – Percent of all answers



Note: This question was answered as follows in the e-communications regulators surveyed:
– parliament/congress/parliamentary/congressional committee: AUS, ITA, LVA, SVK
– government/ministerial body with binding opinion of parliament/congress/parliamentary/congressional committee: FRA, GRC, HUN, MEX, POL, ESP, BRA, ZAF
– two or more governmental/ministerial bodies: CZE, PRT, LTU
– one government/ministerial body: AUT, BEL, CAN, CHL, DNK, FIN, DEU, ISL, IRL, ISR, JPN, KOR, LUX, NLD, NZL, NOR, SVN, SWE, CHE, TUR, GBR, ARG

Source: OECD 2018 Database on the Governance of Sector Regulators.

The appointment of SUBTEL's leadership and the decision-making process need strengthening

In many OECD countries, regulatory authorities in general are not led by an individual but by a collegial governing board or board of directors (see Table 6.4 for examples from Italy, Mexico and the United Kingdom). The process for selecting and appointing the leadership of the regulatory authority is not only the responsibility of the executive (President or Minister) but the legislative may also be involved. Moreover, OECD Best Practice Principles on the Governance of Regulators propose that mandates of board members are staggered and span over the political cycle. In order to minimise political interference, members of authorities' governing boards have to comply with strict and clear guidelines and policies of conflict of interest (OECD, 2016[18]).

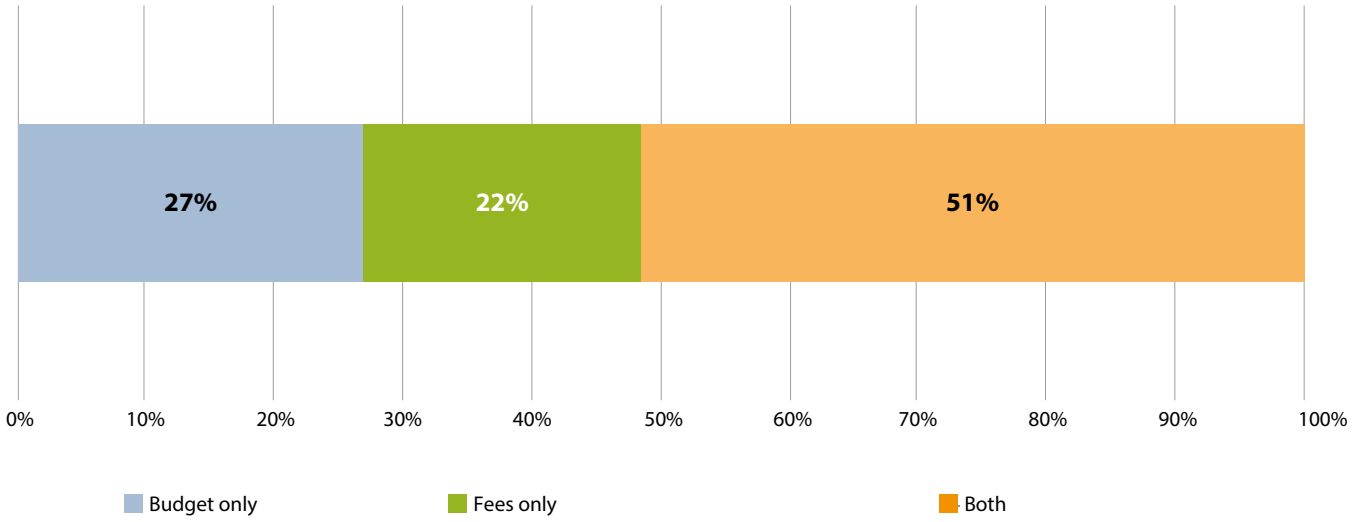
As a ministerial regulator, SUBTEL is led by the undersecretary whose appointment is part of any government's political appointments. As such, a single governmental/ministerial body holds the legal authority to appoint SUBTEL's head. SUBTEL is within the majority here, as 59% of e-communications regulators report the same appointment procedure (Figure 6.7). However, SUBTEL's unipersonal leadership model increases its association to political cycles. The perceived independence, stability and predictability of its regulatory and enforcement regime can be undermined by the political nature of the Undersecretariat as a ministerial body subject to political cycles.

The resourcing framework of SUBTEL seems insufficient for a stable, independent and technical regulator

SUBTEL was created as a new arm of the Ministry of Transport in 1977. It currently only receives under 5% of the total budget of the Ministry, giving it the appearance of the "weaker sibling" of the Ministry of Transport and Telecommunications. Its budget is entirely funded by the government, departing from practices in other OECD countries, where regulatory and enforcement functions are often funded on a cost-recovery basis from fees and levies paid by the industry. The cost recovery model ensures greater stability and visibility in terms of the resourcing of the regulatory authority and provides a certain degree of independence from political interference in the regulator's funding (OECD, 2016[19]).

Figure 6.8. Many e-communications regulators are funded by a combination of government revenues and industry fees

Percent of e-communications regulators funded through budget only, fees only or a combination



Note: This information was derived from responses to two questions. If a respondent answered "not applicable" to the question "If the regulator is financed in total or in part through fees paid by the regulated sector, who sets the level of the fees?," we assumed the regulator was funded through budget only. If a respondent answered "not applicable" to the question: "If the regulator is financed in total or in part through the national budget, who is responsible for proposing and discussing the regulator's budget?",, we assumed the regulator was funded through fees only. If a regulator selected an answer other than "not applicable" for both questions, we assumed the regulator received both budget appropriations and fees.

The e-communications regulators from the countries below fall into the three categories:
Budget only: CHL, CZE, DNK, FRA, DEU, ISR, MEX, POL, SVK, LTU
Fees only: BEL, IRL, ITA, LUX, NZL, PRT, SVN, CHE
Both: AUS, AUT, CAN, EST, FIN, GRC, HUN, ISL, JPN, KOR, LVA, NLD, NOR, ESP, SWE, TUR, GBR, BRA, ZAF, ARG

Source: OECD 2018 Database on the Governance of Sector Regulators.

While the Undersecretariat is perceived to count with technically competent staff, the requirements in terms of specialisation and on-going training for a technical and economic regulator differ from those of a policy institution. Currently, SUBTEL relies often on external consultants for the formulation of technical opinions on regulatory activities, one of its core functions. The rapid transformation of the regulated sectors and increasing data generated by operators highlight the need for technically competent staff and in certain cases, justified departure from government compensation schemes that may not be competitive with private sector salaries.

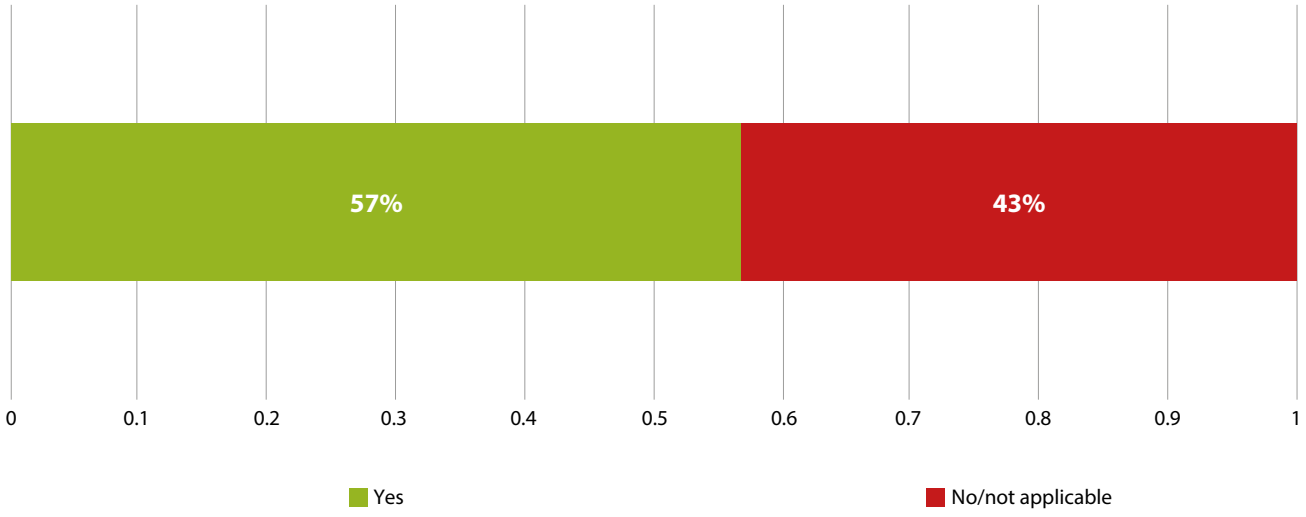
The accountability of regulatory decisions and actions could be increased

SUBTEL currently reports on its performance using strategic objectives and indicators. For these, it sets yearly targets, and publishes its self-assessment in an Annual report (*Balance de Gestión Integral*) on its website. Building on this good practice and institutional culture, the regulator could further develop its strategic planning and reporting system to align reporting with overall strategic objectives, clarifying the narrative of its results, and create opportunities for structured engagement with the legislative branch, regulated entities and consumers.

To maintain accountability to the legislature, OECD guidance states that independent regulators should present a report on their performance to the legislature or legislative oversight committees (OECD, 2014[20]). SUBTEL is not required to do this by law and does not present a report on its activities to Congressional committees. SUBTEL joins a slim minority who do not report in this way to legislative committees, while 57% of e-communications regulators do present a report on their activities (Figure 6.9).

Figure 6.9. Most e-communications regulators present an activity report to parliament

Percent of e-communications regulators presenting a report on their activities to parliamentary/congressional committees



Note: This question was answered as follows in the e-communications regulators surveyed:
– No/not applicable: DNK, SWE, LUX, NLD, CAN, CHL, FIN, ISL, JPN, NOR, POL, CHE, GBR, LVA, SVK, ZAF
– Yes: BRA, NZL, PRT, TUR, LTU, ISR, SVN, FRA, ITA, KOR, AUT, BEL, CZE, DEU, GRC, ESP, IRL, ARG, AUS, HUN, MEX

Source: OECD 2018 Database on the Governance of Sector Regulators.

Moreover, while regulatory reform is a relatively new policy area in Chile, the government has made recent improvements in gradually introducing regulatory quality and policy initiatives, such as those led by the Ministry of Economy (*Agenda de productividad*). The creation of stronger, more specialised independent regulators in Chile would constitute an opportunity for highly specialised authorities to drive forward the regulatory quality agenda. Indeed, in other Latin American countries such as Brazil or Peru, independent regulators have been on the frontlines implementing regulatory management tools (such as Regulatory Impact Assessment or ex-post review) and their experiences in doing so have fed into the development of whole of government regulatory policy. Furthermore, the use of these tools by a strengthened regulator of the telecommunication sector would increase transparency and credibility of decisions linked to the provision of essential services.

Consolidating regulatory functions for the sector would lower co-ordination costs

As stated in Table 6.1, SUBTEL has areas of joint competences or interaction with other public entities. SUBTEL operates within a complex governance system that requires interactions with several public entities, but there are no structured co-ordination mechanisms. SUBTEL regularly interacts with several institutions such as the Ministry of Economy, Development and Tourism (*Ministerio de Economía, Fomento y Turismo*, MEFT) on tariff regulation; the National Service of the Consumer (*Servicio Nacional del Consumidor*, SERNAC) on consumer protection; the National Economic Office (*Fiscalía Nacional Económica*, FNE) on competition matters, the Council for Television (*Consejo Nacional de Televisión*, CNTV), and others. Interaction with other entities is informal and often depends on short-term priorities. However, there are efforts to establish *ad-hoc* working groups (e.g. with SERNAC on inspection activities).

In some cases, these interactions give rise to overlapping functions and conflicts of competencies, which contradict the legal principle of *non bis in idem* and further motivate the need for a single independent authority for telecommunication.

6.3 IMPLEMENTATION ACTION PLAN

Creating an Independent Telecommunication Regulator

POLICY ACTION 14

Set up an independent arms-length economic and technical regulator for the telecommunication sector.

Currently, the governance of Chile's regulatory bodies is irregular across sectors and the public administration. The delivery of the country's policy objectives and the reforms advocated in this report warrant the creation of a dedicated economic and technical regulator with independence from the executive, in line with OECD policy recommendations and practice across OECD member countries. Such a reform of the regulatory governance of the telecommunication sector can provide an opportunity to address the lack of uniformity across the administration and can continue the road towards international best practices started by the creation of Chile's Financial Market Commission (*Comisión para el Mercado financiero*, CFM). The model of Superintendency proposed in the 2011 draft law is not considered fit for purpose, as the Superintendency model of other sectors remains far removed from international best practice and functions resemble those of an inspectorate rather than those of a fully mandated economic and technical regulator.

The creation of such a Telecommunication Regulator (TR) would require the adoption of a law by Congress and its implementation. Two main options are available: 1) the preparation of a new draft law, pre-legislative process, discussion by the legislature and implementation; or 2) a thorough amendment of the 2011 proposal for the creation of a telecommunication regulator.

Objective

- Approval and implementation of law creating an independent arms-length economic and technical Telecommunication Regulator).

Actions

- Prepare draft law, based on work carried out for the 2011 draft and international best practice and defining requirements for a transition phase OR fast track Law Decree 1.762 tabling thorough amendments aligning the agency to international best practice, with particular focus on:
  - functions of TR: separate policy and enforcement functions for the sector and as far as possible, consolidate functions currently distributed among a number of public bodies
  - leadership: move away from unipersonal leadership model tied to political cycles, building in checks and balances and transparency in nominations and appointments and delinking mandates from political cycles
  - resources: introduce concept for (at least part of) funding to be recovered from regulated entities
  - accountability: require TR to report on its results and publish content linked to its regulatory decisions (regulatory impact assessments, stakeholder consultation comments and feedback, outcomes of inspection activities, etc.)
  - co-ordination: ensure efficient and transparent communication and co-ordination mechanisms with other public bodies with responsibilities in the sector
- Lobby for and secure support from the Secretariat of the Presidency to fast track and prioritise discussion of the law in Congress
- Conduct stakeholder consultation on the draft law / amendments
- Carry out analysis of resources necessary for the new regulatory authority to carry out its mandate, benchmarking with similar institutions internationally

Timeframe

- Evaluate which legislative option is best fit for needs of the sector – this decision will define the timeframe and pre-legislative/legislative process

Institutions/Stakeholders involved

- Ministry of Economy, Development and Tourism; Ministry of Justice, Ministry of Transport and Telecommunications, and the General Secretariat of the Presidency
- National authorities for competition, consumer protection, television and the competition court, and other national bodies intervening in the telecommunication sector
- Regulated entities and operators of the telecommunication sector
- Use regional/international networks such as Regulatel and the OECD Network of Economic Regulators as sounding board, for peer experiences and benchmarking

Policy instrument

- New law OR Law Decree 1.762 for the creation of an independent telecommunication regulator
- Guidelines and norms implementing the new law

Milestones, indicators and evaluation

- Completion of draft legislation/amendments to draft legislation
- Approval of draft legislation by both Chambers of Congress
- Completion of secondary legislation
- Creation of the Agency, recruitment of the Board and transfer of staff from SUBTEL
- Time to fast track amended law through legislative process
- Time to prepare related secondary legislation

POLICY ACTION 15

Define and implement a phased approach for the creation of an independent telecommunication regulator.

In parallel to the legislative process, a phased approach for the creation of TR will be necessary to bridge the duration of the legislative process.

Objective

- Ensure gradual transition to an independent TR.

Actions and timeframe

Phase 0: Preparation (TBC depending on chosen legislative approach)

- (Legislative process)
- Update analysis undertaken in 2010-11 regarding separation of functions and resources from SUBTEL to TR based on sector needs. Based on this, map out necessary financial and human resource needs for TR and as far as possible, start advertising positions;
- Build uptake of regulatory management tools such as regulatory impact assessment and stakeholder engagement, including early stage consultations and transparent feedback, in SUBTEL regulatory activities;
- Define an inspections and enforcement strategy that is compliance-focused and takes into consideration risk and focuses on outcomes, and map necessary resource requirements for its implementation;
- Nominate or begin identifying nominees for members of the TR Board, so as to proceed with appointment process of the Board rapidly – transition requirements regarding pre-employment restrictions should apply and the number of board members should be limited to three to five members;

Phase 1: Transition (6 months)

- Creation of Telecommunication Regulator (TR);
- Transfer of functions from SUBTEL and other public bodies to TR;
- Finalise appointment of members of the Board;
- Ensure predictable and transparent co-ordination and information sharing mechanism in place for sector at this crucial stage;
- Begin design of internal processes for predictable and transparent decision making and functioning of TR;
- Define strategic framework including objectives and targets that measure both sector and internal TR performance.

Phase 2: Stabilisation (2 years)

- Implement organisational strategy and monitor the achievement of targets within the strategic framework, and communicate on these in a transparent manner using feedback to reorient or adjust strategic focus;
- At two years from the creation of the agency, implement a scan of institutional functioning and performance for adjustments to internal organisation and management structure and resource allocations;
- Share learning from creation of the independent regulator and its impact on sector performance with Chilean public administration (and in international fora), in the interest of harmonising governance arrangements across sectors in line with international best practice.

Institutions

- SUBTEL
- Telecommunication Regulator (TR)
- Ministry of Economy, Development and Tourism
- Ministry of Finance

Policy instrument

- 2020 and subsequent budgets
- Amendments to laws transferring functions / powers to TR
- SUBTEL internal guidelines on the use of good regulatory practice
- TR internal guidelines and strategic framework

Milestones and indicators

- Creation of TR
- Appointment of TR board members
- Full staff of TR recruited
- Scan of institutional functioning at two years of creation

Evaluation

- Timeliness of regulatory activities by TR (e.g. permits)
- Clarity in understanding of TR role vs other sector actors (Survey of perception of TR by stakeholders)
- Clear institutional mandate and identity (Staff survey)

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Telecommunication is a rapidly growing sector worldwide and a strategic factor of economic development at all levels – from individual firms to regions and countries. The COVID-19 crisis has highlighted the importance of a well-performing telecommunication sector to facilitate teleworking, home schooling and social communication. In Chile, the telecommunication sector has experienced rapid and impressive advances in recent years. Despite significant improvements over time, the digital economy has not yet reached the full potential in Chile. As many other countries, Chile is still facing numerous challenges related to deploying the communication infrastructure; sharing information regarding preferable zones for infrastructure deployment; spectrum allocation; and the governance of the sector.

At the request of the Government of Chile, this OECD Assessment aims at facilitating institutional coordination towards the successful implementation of a number of policy actions to enhance productivity, competitiveness and welfare. It focuses on four areas: 1) ensuring low barrier to entry to the telecommunication market; 2) information management for infrastructure deployment; 3) spectrum management; and, 4) the creation of an independent telecommunication regulator. To help address the cross-sectoral nature of the challenges related to telecommunications, the Assessment was prepared by an OECD multidisciplinary team with experts from the Economics Department, the Directorate for Science, Technology and Innovation, and the Public Governance Directorate. The OECD team worked closely with a number of Chilean institutions, including the Ministry of Economy, the Ministry of Transportation and Telecommunications, and the Subsecretariat of Telecommunications (SUBTEL).

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