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EXECUTIVE SUMMARY

Productivity in the
Telecommunications Sector

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Productivity in the Telecommunications Sector

The Internet provides substantial economic advantages and has the potential to enhance individual well-being significantly (ITU, 2022). Connectivity acts as a catalyst for sustainable development, aligning with the objectives of the Sustainable Development Goals (SDGs).

This study is divided into two main sections: the first focuses on regulatory aspects, while the second delves into the digital divide. These sections are further broken down into three and four chapters, respectively, offering a comprehensive analysis of the telecommunications sector and pinpointing the key challenges it faces. The following outlines the principal conclusions of the study.

Regulatory Aspects

Authorizations for the Telecommunications Infrastructure Deployment

To provide a telecommunications service, interested parties must navigate through a series of sector-specific authorizations. For public and intermediate services, a concession from SUBTEL is required. Following this, procedures for territorial access need to be completed, involving either private entities or public organizations, such as the Ministry of National Assets. The final step involves obtaining additional authorizations for the deployment of infrastructure from various entities, including municipalities and SERVIU.

- **The process for obtaining and modifying concessions experiences significant delays beyond legal timelines.** From 2012 to 2021, the average duration for granting and amending concessions for public and intermediate services was 400 and 263 days, respectively.
- **The current concession system in Chile issues a separate permit for each service type, contradicting the principle of service convergence.** In contrast, other jurisdictions have moved towards eliminating entry barriers for network exploitation and telecommunications service provision, shifting from preemptive to subsequent regulatory control.
- **Despite specific regulations facilitating the installation of telecommunications infrastructure on public lands, the preference often leans towards private properties for setting up antenna towers,** possibly due to municipalities not fully adhering to regulations.
- **The authorization process for erecting antenna towers, overseen by the Municipal Works Directorate, extends well beyond SUBTEL's contest deadlines.** This issue is partly attributed to public opposition rooted in concerns over electromagnetic wave exposure.

- **The process for obtaining Serviu's authorization for pavement disruption and replacement also extends past legal deadlines.** While not mandatory for initiating operations, delays in this process hinder the introduction of new projects, impacting the productivity of the telecommunications sector.

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Efficient Radioelectric Spectrum Management

The Radioelectric spectrum is a vital and finite National Public Good crucial for wireless telecommunications. Its scarcity means that proper management is key to determining market outcomes such as service offerings, geographic reach, competition levels, and more. In Chile, the oversight of this resource falls to SUBTEL, which grants operational rights to private entities via concessions.

- **The methodology for allocating these spectrum concessions in Chile is outdated,** remaining popular globally until the '90s but now only used by Chile and Japan among OECD nations. Current evidence suggests that this approach is unsuitable given the modern demands for this scarce resource.
- **In the OECD, Chile's concessions for the radioelectric spectrum have the longest durations,** with some even set indefinitely, showcasing a need for modernization in concession terms.
- **SUBTEL faces challenges in executing its mandate to manage the spectrum effectively throughout the concessions' lifetimes.** Issues include difficulties in terminating permits that are used inefficiently and reallocating spectrum segments to accommodate emerging technologies.
- **Innovative strategies have been developed internationally to promote the spectrum's efficient utilization,** including enhancing the fluidity of concession trades and sharing spectrum segments. These strategies have not yet been adopted in Chile, indicating potential areas for policy and regulatory improvement.

Institutionality

The governance framework of the telecommunications sector encompasses the entities tasked with setting standards and regulations, as well as overseeing and regulating the sector's operations. The leading body in this domain is the Undersecretariat of Telecommunications (SUBTEL), charged with the creation of sector-specific policies, enforcement, and sanction imposition.

- **SUBTEL holds the dual responsibilities of policy formulation and regulatory oversight.** This consolidation of roles places SUBTEL in a unique position relative to other nationally regulated markets, where such functions are typically distinct.

- **The proposal for a Superintendency Law marks progress toward establishing a new regulatory figure within the sector.** Yet, to become an effective technical regulator, it needs to undergo certain modifications. International bodies have advocated the establishment of an independent regulatory authority.
- **Historically, SUBTEL's approach to oversight has been mainly reactive.** The adoption of a risk-based, preventive supervision model in 2018 has, however, yielded positive outcomes in terms of management efficiency.
- **The General Telecommunications Law lacks a system for the gradation of offenses,** leaving the determination of their severity to the discretion of the Minister of Transport and Telecommunications. This approach risks the disproportionate imposition of fines.

II.- Digital Divide

Coverage Gap

The International Telecommunication Union (ITU) in 2021, a telecom agency under the United Nations, emphasizes the necessity for governments to invest resources in bridging the digital divide, beginning with the enhancement of the supply infrastructure. The significance of addressing coverage shortfalls lies in the premise that establishing infrastructure capable of delivering high-quality telecommunications services creates a strong foundation for overcoming disparities in both access and utilization.

- Despite widespread agreement on the need for further infrastructure development in Chile, the exact extent of the existing coverage gap remains uncertain.
- **The National Commission for Productivity (CNEP) has calculated that an additional 21,600 kilometers of fiber optic cable is required to achieve comprehensive high-speed internet coverage throughout the country.** The Metropolitan, Valparaíso, and Biobío regions face the most substantial obstacles, lacking 4,200, 3,000, and 2,500 kilometers of fiber optic cable, respectively.

Quality Gap

To adequately satisfy the requirements set forth by users, businesses, or individuals—facilitating area interconnectivity and acting as a catalyst for economic growth—it is crucial to maintain networks that are dependable, resilient, and swift. Otherwise, a disparity in quality emerges when the network fails to meet both the explicit and tacit needs of users, despite the availability of internet coverage (ITU, 2007). Broadband speed stands as the primary metric for assessing service quality, given its positive correlation with various other indicators (Bauer et al., 2010). Additionally, metrics related to service disruptions or outages play a significant role in evaluating network performance.

- **The download speed in fixed and mobile networks has grown exponentially in the last five years, in line with the deployment of new, higher-capacity**

technologies such as fiber optics and 5G. Specifically, by the fourth quarter of 2022, the average download speed in Chile was 2583 Mbps and 760 Mbps for fixed and mobile networks, respectively (Speedtest by Ookla 2022).

- **However, download speeds across the Chilean territory vary significantly.** When comparing the download speed between Chile's best and worst regions, the region with the highest speed is 41 and 22 times greater for fixed and mobile networks, respectively. Moreover, even within the same areas, significant gaps are evident.¹
- **While evidence suggests significant benefits of regulating the quality of internet service, as of June 2023, Chile does not have official measurements.** Even though the Minimum Guaranteed Speed Law, which seeks to regulate internet service speed, was approved in 2020, it has not been implemented. It shows significant opportunities for improvement in the tender process, the definition of crucial measurement parameters, and their use.
- **Internet interruptions in Chile are frequent and costly.** Specifically, an average of 182,469 massive cuts per year are registered. Estimations indicate that if the cuts had affected 10% of households and businesses (only in 2021), they would have implied a cost equivalent to 0.1% of GDP.
- **While maintenance is the leading cause of service interruption, vandalic acts explain 43% of the hours the service was down.** Disruption due to vandalic acts tends to be prolonged; half (median) of the interruptions last for 137 hours.

Access Gap

The access gap corresponds to differences in the availability of goods, services, and knowledge associated with information and communication technologies that households have. In general, literature treats this gap as the affordability of broadband for households. UNESCO has highlighted internet affordability as crucial for sustainable development. Indeed, as the OECD (2021) documented, the advancement of internet access technologies and their impacts on connection quality (speed and capacity) are indifferent to a relevant population group if households cannot afford access to their services.

- **One in four Chilean households would not have access to broadband at their homes through any means, according to the latest information available in 2017.** Those interested in accessing the service cite budgetary constraints as the main reason for not contracting an internet plan.
- **International comparisons place Chile among the three OECD countries with the most expensive fixed broadband.** Low affordability is not present in mobile connections, where prices place Chile in the middle position.

¹ Notably, the average interquartile range within regions is 112 Mbps for fixed networks.

- **Several reference countries have implemented broadband demand subsidies to help households access the service.** In Chile, this idea has been discussed for over 15 years and gained strength recently through parliamentary discussion.
- **The data show that a universal broadband demand subsidy could benefit up to 7 million households, representing a cost of between USD 363 million and USD 1.028 billion, equivalent to 0.1% and 0.3% of the GDP.** The figures are high compared to other service subsidies. Targeting different groups (based on economic vulnerability, presence of minors, and others) can help alleviate the cost of the subsidy.

Usage Gap

Digital information and communication technologies (ICT) - particularly the Internet and its derivatives - facilitate communication, storage, and information processing.² Multiple studies have shown that their access and use can increase societal well-being³ (Castellacci & Tveito, 2018), business productivity⁴ (Bertschek & Niebel, 2013; World Bank, 2022; Grimes et al., 2012), as well as promote greater efficiency and effectiveness of the State⁵ (ECLAC, 2023; OECD, 2020). Thus, the usage gap would be defined by differences in the frequency and type of internet use.

- **Internet use among the population is high. However, it is primarily used for recreational purposes.** While 86% of those over 16 years old claim to use the Internet regularly, compared with OECD countries, Chile lags in productive Internet uses (e-banking, interaction with the state, information searching, etc.).
- **A deficit of digital skills restricts the greater penetration of internet use among individuals and businesses, particularly regarding more advanced uses.** Specifically, 34% of the working-age population (5.5 million people) states that they require more training or education in digital skills.
- **The primary learning method for internet use is through informal channels, highlighting problems developing this knowledge and skills in the Chilean educational system.** On the one hand, the school curriculum does not explicitly contemplate the development of intermediate (such as data and text management software) and advanced skills (such as creating algorithms or coding). While the offer of continuous training is limited⁶ and does not respond to a development plan

² This allows for significant cost reductions in searching, replicating, transporting, tracking, and verifying information (World Bank, 2022).

³ The ways in which the internet affects people's well-being are manifold. First, it enables tasks to be performed more efficiently, resulting in timesavings. Second, it increases opportunities for personal and professional growth. Third, it creates new products and activities that meet people's explicit needs. Fourth, it allows for easier collection, storage, organization, and archiving of information. Fifth, it significantly enhances possibilities for communication and social interaction (Castellacci & Tveito, 2018).

⁴ It increases sales opportunities (OECD, 2020) and promotes greater resource efficiency (Grimes et al., 2012).

⁵ Transitioning to a digital government promotes efficiency and effectiveness in policy design and implementation (OECD, 2020). In that sense, digital technologies can have a significant impact on the government's ability to design and implement policies effectively, transparently, and efficiently. Thus, they not only increase the productivity of public services but also change the way governments deliver services, making them more accessible and tailored to user needs (OECD, 2020).

⁶ Specifically, with the current level of SENCE offerings, the observed training need in 2022 (34% of the working-age population) would be met in about 48 years

based on a clear qualifications framework, it relies on independent, isolated initiatives.

- **The institutional model that encompasses the state's digital transformation presents flaws that would truncate further progress on issues such as interoperability, cybersecurity, and digital identity.** Specifically, it is evident that the institution leading the state's digital transformation process, the Division of Digital Government, lacks regulatory powers to set standards and ensure compliance. Additionally, it has a high turnover of the head of unit (averaging 13 months in the position) and does not have an explicit mandate for the development of cross-cutting platforms.