CHAPTER 3

Policy Interventions to Address Digital Inequalities in Latin America in the Face of the Pandemic

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1 Introduction

After the outbreak of COVID-19 in Latin America at the end of February 2020, the governments of the region established preventive isolation and mandatory social distancing measures designed to mitigate the spread and contagion of the virus. The population was asked to remain at home and there was a sudden increase in the activities that relied on telecommunications networks, including various forms of telework, distance education, telehealth, electronic commerce, digital entertainment and virtual social interactions. All this led to a surge in the use of online services, particularly video streaming, and a growth in data traffic, as several of the activities that were usually carried out offline began to take place online. In order to facilitate access conditions for the population, the governments

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implemented a series of public policy initiatives, including regulations on connection speeds, pricing, data traffic, digital infrastructure, and use of the radio spectrum, along with recommendations on the responsible use of networks.

This chapter analyses these public connectivity policies introduced in different Latin American countries during the first months after the outbreak of COVID-19 reached the region (March–June 2020). The analysis has a three-fold objective: (a) to give an overview of the status of connectivity in five big Latin American countries – Argentina, Brazil, Chile, Colombia and Mexico; (b) to study comparatively the public connectivity actions implemented by the governments of each country to face the pandemic; and (c) to provide insights in relation with telecommunications policies in the context of pandemic emergence at a regional level.

The research is a comparative qualitative study. The mentioned countries have been chosen for two main reasons: they are the biggest in the region terms of population, economies and per capita gross product (ECLAC, 2019), and they have exhibited responses to all the variables selected for the analysis. After a preliminary inquiry about the main policy initiatives taken in each country, we determined that it was possible to make a comparative study around four variables:

1. access and continuity of connectivity services
2. traffic, data consumption and content
3. Infrastructure, network management and radio spectrum
4. Compensations for telecommunications companies

The study draws on an analysis of the set of regulations and specific policy-making actions introduced in the field of connectivity in the countries under review, as well as official documents prepared by the public sector, particularly by the telecommunications ministries and regulatory bodies in each country. It also draws on documents from the private sector, and statistics on ICT access and usage in the region.

The argument is put forward that Latin American governments, through various strategies, responded quickly to the spike in demand for connectivity posed by the context of the pandemic, partly because they had learned from what had happened in other latitudes and partly because of the legacy of public policies resulting from previous experiences in the sector (Balán & Montambeault, 2020). Thus, they implemented a series of efforts designed to address the situation and mitigate possible damages.

However, the digital divides that persisted from previous structural inequalities lessened the impact of the actions implemented during the first months of the pandemic. Likewise, these actions revealed that inequalities tend to increase, as a digitally underserved segment of the population becomes deprived of access to education, health information, entertainment, and work-from-home services in their various forms in this context.

After this first introductory section, the conceptual approach is explained. The third section provides a regional overview of Latin America in terms of connectivity and digital access to information and communication services, emphasizing the inequalities that are identified between countries. The fourth section deals with the actions implemented by the governments of Argentina, Brazil, Chile, Colombia and Mexico in terms of connectivity during the first stage of the pandemic (March–June 2020). Finally, we provide some insights on connectivity policies in the context of pandemic emergence at a regional level.

2 Public Policies and the Digital Divide: A Conceptual Approach

Public policies consist of a set of actions and decisions in specific fields of public management (economic, labor, social, cultural, communications, telecommunications, etc.), which undergo a social process with interactions and negotiations between several actors (Califano, 2015; Oszlak & O'Donnell, 1984; Vilas, 2011).

As Van Cuilenburg and McQuail (2003) have pointed out, the main elements of media and telecommunications policy, leaving aside differences between contexts, consist of the

- Goals or objectives to be pursued
- Criteria by which these goals are recognized
- Various content and communication services to which policies apply
- Different distribution of services
- Appropriate policy measures and means of implementation

Telecommunications policy as a field has been thoroughly studied in Latin America, mainly focused on the political dynamics of market-oriented reforms in the late twentieth century (Murillo, 2009). The implications that regulatory convergence entails for the telecommunications

and ICT services sector have also been studied at a regional level (Wohlers, 2008), together with country-specific case studies (Barrantes, 2008; Galperin & Cabello, 2008; Mariscal, 2007).

Latin America and the Caribbean as a region displays a structural and distinctive socioeconomic fracture (it is the region of the planet where the gap between rich and poor is the greatest), combined with the need to provide different sectors with access to connectivity. The region shows a direct correlation between said socioeconomic fracture and the gaps that can be identified in terms of connectivity, access, coverage, and affordability of ICT services (Becerra & Mastrini, 2017).

Based on studies that reveal the uneven impact of the digital revolution enabled by the dissemination of ICT convergence, as discussed by García Canclini (2004) and Castells (2009), among others, digital and communicational gaps cannot be approached in isolation, without considering the structural inequality of societies that contain them. As Jan van Dijk (2005) points out, the distribution of technological resources that underpins the concept of "digital divide" creates various forms of unequal access, through the mechanisms of social exclusion, exploitation and control.

The "digital divide" is a concept that, at the time it was coined, alluded to the difference between those who had access to the Internet and those who did not. Over time, the notion became more complex, as the commoditization of mobile connectivity technologies and the gradual growth in fixed access modes made evident that in fact there are, among those who access connectivity, many forms of access. Van Dijk (2005) puts forth the thesis that the digital divide deepens as it stops widening, that is, once most of society statistically reaches material access to an (uneven) range of info-communicational goods and services –e.g., having a mobile device-, the disparities in use, in the ways of accessing a segmented service offer, and in the acquisition and build out of capabilities and abilities, become deeper.

Even when telecommunications public policies in Latin America have suffered great challenges, they did not change much when it comes to digital divides after the 1990s, when almost all countries privatized their telecommunications sector, and new infrastructures and services were located in the main cities (Andrés et al., 2007). Public policies did not change the objective of providing good services to the upper and upper middle social classes, which has relegated the rest of the population to the condition of a minimal or lack of access (Becerra & Mastrini, 2017). Therefore, the path dependence on the conceptual framework of privatizations persists in the regulatory field.

3 Connectivity Landscape in Latin America

Regarding access to information and communication goods and services as the main variable of analysis for this work, four subsets can be identified across Latin American countries, in relative terms: first, Argentina, Chile and Uruguay have a record of higher levels of social access to media and cultural industries and telecommunications compared to the regional average. Second, Colombia, Venezuela and Peru, although with lower access indicators than the above mentioned Southern Cone countries, are also positioned above the regional average. Third, Brazil and Mexico, the two giants in terms of their respective populations and the scale of their markets, despite their strength in absolute terms, are slightly below the Latin American average in per capita access. Fourth, Ecuador, Paraguay, Bolivia, and Central America and the Caribbean (with the exception of Costa Rica, whose indicators resemble those of the Southern Cone) lag behind in social access to cultural activities, with levels well below the regional average.

On average, during the first quarter of 2021, the countries in the region as a whole reported an internet penetration rate of 75.6% according to Internet World Stats; that is, above the world penetration average of 65.6%, outperforming the Middle East, Oceania/ Australia, Asia and Africa regions (see Fig. 3.1).

However, these numbers show, on the one hand, that a significant portion of the population in Latin America and the Caribbean has no connection and, on the other, that a more thorough understanding should be sought regarding what type of connection that 75.6% of the population have. In 2021, the aggregate population of all countries in the region stood at 659 million inhabitants (8.4% of the world population). This implies that, towards the end of March 2021, some 498 million people were internet users, albeit with major disparities in terms of connectivity quality, speed and frequency of use. However, there were 161 million inhabitants disconnected.

Although internet penetration rates have been increasing over the past few years, they are still far from reaching figures comparable to those of North American and European countries. In Argentina, Brazil, Chile, Colombia and Mexico, Internet users have increased more than 90% between 2010 and 2020, as shown in Fig. 3.2.

However, a comparison between internet users and fixed broadband subscriptions in each country, reveals an unequal access to information

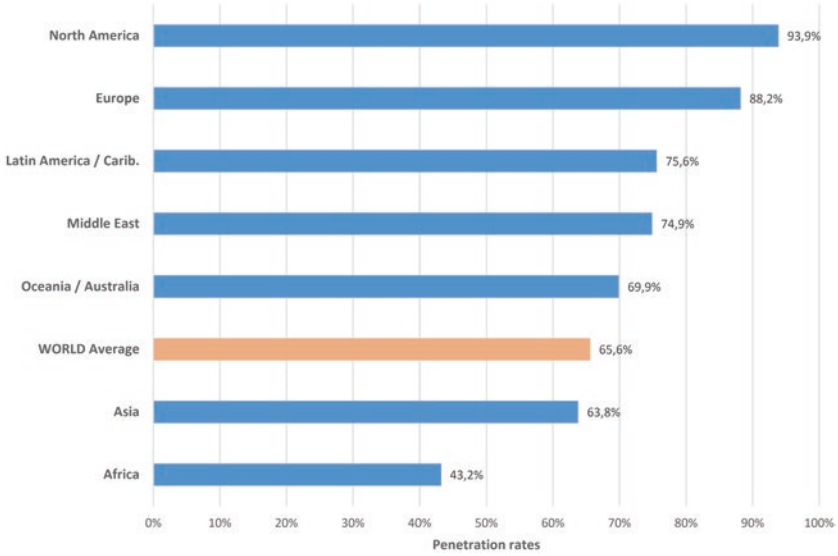
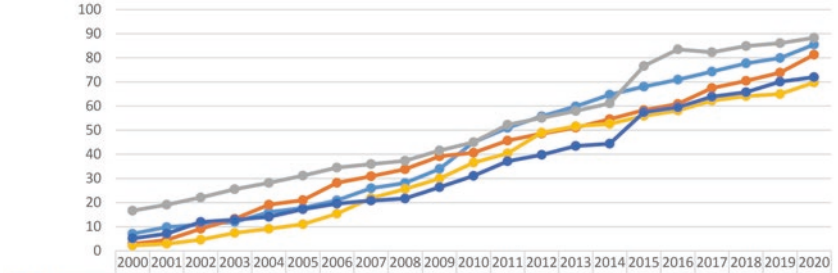


Fig. 3.1 Internet World Penetration by Regions – 2021 Q1. (Source: Own analysis, with data from Internet World Stats)



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Argentina	7,04	9,78	10,8	11,9	16,0	17,7	20,9	25,9	28,1	34,0	45,0	51,0	55,8	59,9	64,7	68,0	71,0	74,3	77,7	79,9	85,5
Brazil	2,87	4,53	9,15	13,2	19,0	21,0	28,1	30,8	33,8	39,2	40,7	45,7	48,6	51,0	54,6	58,3	60,9	67,5	70,4	73,9	81,3
Chile	16,6	19,1	22,1	25,4	28,1	31,1	34,5	35,9	37,3	41,5	45,0	52,2	55,1	58,0	61,1	76,6	83,6	82,3	84,9	86,1	88,3
Colombia	2,21	2,85	4,60	7,39	9,12	11,0	15,3	21,8	25,6	30,0	36,5	40,4	49,0	51,7	52,6	55,9	58,1	62,3	64,1	65,0	69,8
Mexico	5,08	7,04	11,9	12,9	14,1	17,2	19,5	20,8	21,7	26,3	31,1	37,2	39,8	43,5	44,4	57,4	59,5	63,9	65,8	70,1	72,0

Fig. 3.2 Percentage of individuals using the internet by country (2010–2020). (Source: Own analysis, with data from ITU, World Telecommunications Indicators Database, 2021)

and communication technologies within these countries. In the five cases analyzed, less than 22% of the inhabitants have a fixed broadband subscription (see Fig. 3.3). These statistics are particularly disturbing in a pandemic context, when people are most in need of access to the internet at home for educational, health, social and working purposes.

Despite the increase in the rate of digital technology usage, inequalities arising from the disparity in digital access persist among the countries of the region. While in 2020 more than 80% of the population had an active mobile subscription in Brazil, Chile Costa Rica and Uruguay, and between 60% and 80% in Argentina, Colombia, Mexico, Paraguay and Peru; that figure did not reach 50% in Belize, Cuba, Honduras and Venezuela, and fell below 30% in Guatemala and Haiti.

Furthermore, there are major gaps in terms of connectivity quality and data download speeds, both via fixed and mobile broadband. Within Latin American countries, Chile led the ranking in terms of average data download speed over fixed broadband in June 2020 (108 Mbps), followed by

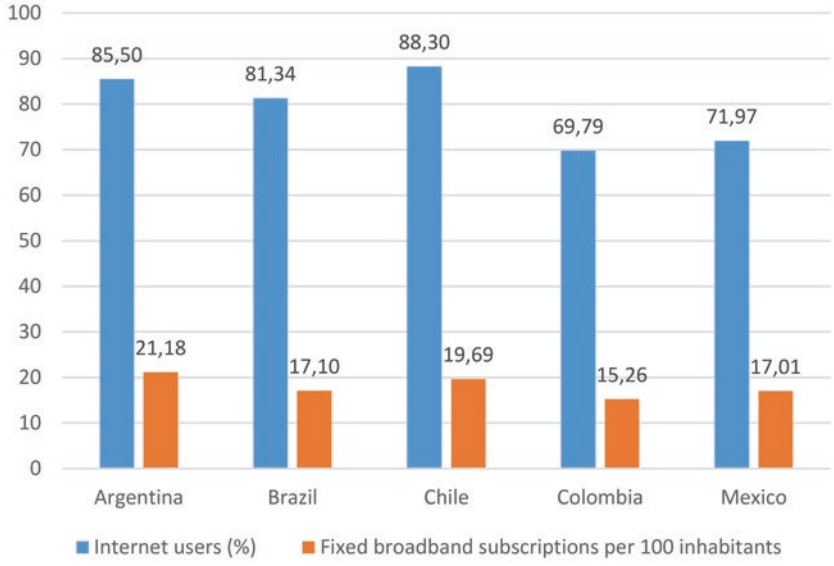


Fig. 3.3 Internet users and fixed broadband subscriptions in the selected countries (2020). (Source: Own analysis with data from ITU, World Telecommunications Indicators Database, 2021)

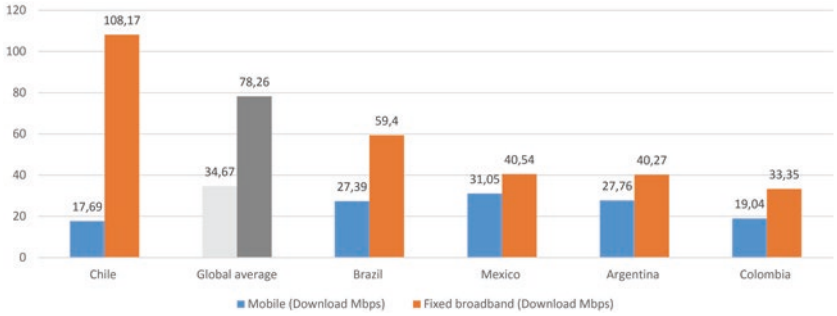


Fig. 3.4 Fixed and Mobile Broadband Data Download Speeds (June 2020). (Source: Own analysis, with data from Speedtest.net)

Panama (90.9 Mbps). However, they were the only two countries in the region above the world average (78.3 Mbps). The rest of the countries reported download speeds that were well below the average as shown in Fig. 3.4.

It should be noted that the data download speed via mobile connectivity exceeded in June 2020 that of fixed broadband in several countries (Venezuela, Cuba, Guatemala, Nicaragua, El Salvador, Honduras, Bolivia and Jamaica). These are, in general, the poorest countries in the region, probably having the lowest investment in physical telecommunications network infrastructure. It is interesting to note that no Latin American country exceeds the world average for data download speed through mobile connectivity (34.67 Mbps).

4 Public Actions for Connectivity to Face the Pandemic

In the field of telecommunications, Latin American governments' implemented several strategies to avoid the collapse of networks and to facilitate a range of remote activities as the pandemic emerged. This study addresses the public actions for connectivity implemented in Argentina, Brazil, Chile, Colombia and Mexico around four variables:

1. Access and continuity of connectivity services, including pricing of different subscription plans

2. Traffic, data consumption and content, which involves some kind of policy effort to address skills and usage digital divides
3. Infrastructure, network management and radio spectrum
4. Compensations for telecommunications companies

4.1 Access and Continuity of Connectivity Services

In several countries, measures were adopted to ensure the continuity of access to connectivity services and the continuity of ICT services (fixed and mobile telephony, and internet). These initiatives have included the declaration of these services as essential or fundamental, the establishment of minimum connectivity commitments, the prohibition of discontinuing services due to non-payment, and/or the freezing of prices during the period of mandatory social isolation.

In Argentina, the government ordered by decree[1] the prohibition of cancelling or discontinuing due to non-payment the services of fixed or mobile telephony, Internet and cable TV, by radio-electric or satellite link, for users of disadvantaged sectors (recipients of social assistance, retirees and pensioners, low-income workers, beneficiaries of unemployment insurance, among others), and for small and medium-sized companies, labor cooperatives, healthcare institutions and certain public welfare entities. Telecommunication service providers were also required to provide a reduced service that guaranteed connectivity for users with a prepaid mobile phone or Internet service system, without paying a surcharge to enable consumption. This measure was successively extended during the quarantine.

In addition, new price increases for mobile and fixed telephony, Internet and pay television services were barred until August 31, 2020, a measure that was later extended by decree until the end of the year.[2] So-called "inclusive plans" were introduced for fixed and mobile telephony and internet services, in both postpaid and prepaid modalities, for a fixed price agreed with the companies until September 30. The objective of this measure was to enable people facing economic hardship during the

[1] Decree No. 311/2020, 03/24/2020, https://www.boletinoficial.gob.ar/detalleAviso/primera/227120/20200325.

[2] Decree No. 690/2020, 09/21/2020, https://www.boletinoficial.gob.ar/detalleAviso/primera/233932/20200822.

pandemic to have the possibility of changing their plan and accessing a connectivity service at an affordable price (ENaCom, 2020b).

In Brazil, a decree[3] declared that telecommunications and the Internet qualify as a public service and are considered essential, as are medical and hospital services, social assistance, public security, and national law-enforcement and civil defense, among other activities. Thus, the continued provision of these activities must be guaranteed as they are essential to meet the needs of the community.

Likewise, the National Telecommunications Agency (ANATEL) signed a public commitment with various associations and companies in the industry in which they agreed on measures to "keep Brazil connected". This commitment includes ensuring the continuity of telecommunications services; giving priority in terms of connectivity to agencies that provide public health and safety services; considering the difficulties that consumers may have in meeting their bill payments; and the sending, by the providers, of alert messages and information to the population as requested by the authorities (ANATEL, 2020a). A crisis committee made up of all the signatories was also created to permanently evaluate the capacity of telecommunications networks and to adopt, if necessary, new measures or emergency solutions.

In Chile, the Under Secretariat of Telecommunications (SUBTEL) asked telecommunication companies (Claro, Entel, GTD, Movistar, Mundo Pacífico, VTR and Wom) in March to issue reports on the behavior of their networks and share their contingency plans for managing of the expected increase in traffic during the crisis caused by COVID-19. Although some companies pointed out that at the beginning of the pandemic it was not possible to foresee the behavior of users in a situation of exceptionality (ENTEL, 2020), the majority estimated that the networks would respond correctly and that the expected increase in traffic was within a tolerable range. Thus, for example, Claro pointed out that its networks had not shown "any type of saturation or contingency that warrant reporting any problem in the provision of our services or any impact on traffic management" (CLARO, 2020). Other companies suggested that the State introduce more flexibility in the regulation about network neutrality during the emergency period, so that they could prioritize

[3] Decree No. 10.282, 03/20/2020, http://www.planalto.gov.br/ccivil_03/_ato2019-2022/2020/decreto/D10282.htm.

traffic and assign preference to voice calls, communication and teleworking tools, and access to health and educational information websites (GTD, 2020).

In May, after quarantine was decreed in 38 communes in the Metropolitan Region –where more than eight million inhabitants live–, SUBTEL reiterated the request for reports from telecommunications companies, including on this occasion the companies CMET and DirecTV, in order to monitor traffic behavior compared to what had been reported to date (SUBTEL, 2020a).

Furthermore, the Ministry of Transport and Telecommunications of Chile agreed with the companies in the industry to implement a three-month "Solidarity Connectivity Plan". The program was designed to ensure that the economically most vulnerable sectors do not lose access to the network if they cannot afford the subscription they had signed up for. Thus, the companies agreed to provide minimum browsing speeds through fixed internet (2 Mbps broadband speed) and mobile connectivity (256 Kbps data speed), as well as text messages (50 SMS) and voice calls (300 minutes), at the request of users (SUBTEL, 2020b, d). The measure came into effect in April and when the quarantine was extended, it was also extended. According to the Under Secretary of Telecommunications, about 11 million users with prepaid and postpaid plans joined the solidarity plan in less than two months. It is important to note that the plan is for users who were already customers of each company, that is, it only benefits those sectors that already had some type of connectivity at the beginning of the pandemic.

In Colombia, telecommunication services were also declared essential public services (along with broadcasting, television and postal services), and therefore a prohibition to discontinue the provision of said services was enacted, during the state of "economic, social and ecological emergency" decreed by the government.[4] Likewise, measures were established for users with mobile phone plans, both prepaid and postpaid, in order to guarantee minimum of connectivity for them (SMS and data) in case of late payment or non-payment of their subscriptions.

In Mexico, the Federal Telecommunications Institute (IFT), in line with the measures introduced by the national government, issued a statement specifying that telecommunications companies, as providers of a

[4] Decree No. 424, 03/23/2020, https://www.mintic.gov.co/portal/604/articles-126323_decreto_464_23_marzo2020.pdf.

public service, were eligible for the necessary exceptions to carry out their tasks during the pandemic, in order to guarantee the continuity of services (IFT, 2020c). In addition, the IFT entered into some agreements with telecommunications companies, although they came later than those of other countries, and were not as comprehensive. It was not until the end of April that an agreement was reached with some internet and fixed telephone carriers (izzi, Megacable, Telmex, Totalplay and Maxcom) to offer customers the option of temporarily migrating to a low-cost plan (MXN $ 100, around US$ 5). The conditions to qualify were rather stringent: they had to be active subscribers with a fixed residential internet access contract, be current on their payments as of April 30, 2020, migrate once to the "contingency support" package during May and remain in it until June 30, after which they were required to return to the originally contracted plan. The package included internet access with a browsing speed of up to 2 Mbps, but it did not allow video or video games (IFT, 2020e).

Agreements were also made with certain Virtual Mobile Operators, with small licensees of public networks grouped in the Independent Telecommunications Association (ATIM), and with the satellite services operator Hughes, for the provision of certain low-cost connectivity services and/or minimal access, to ease the economic burden of subscribers during the pandemic (IFT, 2020a).

4.2 Traffic, Data Consumption and Content

Following the enactment of mandatory social distancing measures, an increase in internet traffic occurred in all countries. Although the rising trend in fact preceded the pandemic, some more pronounced peaks and variations have been observed since March 2020.

In the case of Argentina, there was a 35% growth in traffic during March and April, after the start of the lockdown on March 20, compared to the average traffic in February. However, a comparison of April 2020 data against the same month of 2019 reveals an increase of 65% (CABASE, 2020). State-run company ArSat, which manages the largest fiber optic backbone in the country, reported that wholesale traffic increased by 40% during the first four months of the sanitary emergency.

Brazil has an average aggregate traffic of around 7.15 Tbps, but in mid-March it reached peaks of up to 10 and 11 Tbps, according to data from the Internet Steering Committee (IX.br, 2020). While traffic reported an

upward curve with 60% increases compared to the previous year, the peaks in March coincide with the beginning of the quarantine, particularly in the State of Sao Paulo, the largest in the country.

In Chile, total fixed and mobile traffic escalated by 40% in March 2020, driven by the pandemic, compared to the same period in 2019 (SUBTEL, 2020c). In the case of Colombia, total Internet traffic increased by 37.62% during March compared to February, and by 25.1% compared to January, according to reports from the Communications Regulation Commission (CRC, 2020). In Mexico, traffic also began to mount in late March, with peaks that exceeded 15Gb/s, according to data from MDC Data Center's MEX-IX internet exchange point, located on the border between the United States and Mexico (Hernández, 2020).

In this landscape, the authorities of each country implemented measures to prevent their networks from collapsing, and for that purpose they made agreements with the industry. In some cases, the companies came up with their own initiatives. Efforts included commitments by content providers to lower the quality of audiovisual services, initiatives to release "premium" signals or content for no extra charge to existing subscribers, and zero-rating agreements with telecommunication carriers.

Agreements with over-the-top (OTT) content providers to lower the quality of streaming audiovisual services followed the experience of the European Union, which had asked companies such as Netflix, Amazon Prime Video and YouTube to reduce transmission quality on their platforms to help cope with increased traffic and ensure an efficient use of telecom networks.

In Argentina, ENaCom agreed with Netflix to reduce transmission bitrates for a period of 30 days, in order to reduce the bandwidth used by 25%, without compromising the resolution included in the plans hired by users. The same happened in Chile, in line with the Netflix policy at the regional level. The initiative was followed by YouTube, which temporarily reduced the image quality of its videos worldwide to standard definition, to lessen the burden on internet traffic.

In Brazil, Globo Group decided to reduce the quality of the content offered on its Globoplay platform, eliminating the replay of videos in Full HD and 4 K (1080 pixels), while allowing replays in high definition (720 pixels). This measure included the conglomerate's news and entertainment portals (G1, Globo Esporte and GShow) ('O que o Governo está Fazendo para evitar o Colapso da Internet', 2020).

In Colombia, a decree[5] in late March determined that over-the-top video-on-demand services should prioritize streaming their content in standard definition format. For its part, the Mexican regulatory body merely disseminated, at the beginning of the pandemic, informative materials on the responsible use of networks, with recommendations to prevent saturation in the event of a surge in the use of online services, content and applications. Among the main recommendations were to "prioritize the use of the internet for informative, work, education and health-related purposes", "limit the use of videoconferences", preferably use "the landline over the cell phone when at home", use time bands with less data traffic to "watch movies, series and videos, or play online" (IFT, 2020b).

In addition to the reduction in video quality, several pay TV operators in the region opted to release certain content on demand and some "premium" signals at no additional cost to their customers. This strategy was adopted by the Telecom-Cablevisión in Argentina; by Net, Claro, Sky, Oi and Vivo in Brazil; by Movistar in Chile; and by DirecTV at regional level (Hernández, 2020).

A policy that was replicated in all countries was the establishment of zero-rating agreements with telecommunication carriers, enabling citizens to access official information and educational sites from mobile apps, without this being counted as consumption of data in their subscription plans. In most cases, these schemes enabled access to official information and health websites, and to educational portals.

In Argentina, an agreement was reached with the mobile phone carriers to provide free access to use the Cuid.ar health app and the platform of the Ministry of Education for primary and secondary education after schools were closed for face-to-face classes.[6] In April the agreement was extended to facilitate access for university students to the platforms of national universities (ENaCom, 2020a). However, the widespread use of proprietary applications and platforms throughout the educational system is not within the scope of this free access, and this has hindered the delivery of virtual classes due to the pandemic for students and teachers in low-income sectors.

In Brazil, the public connectivity commitment signed between ANATEL and the telecommunications providers included free access to

[5] Article 4 of Decree 464, 03/23/2020, https://www.mintic.gov.co/portal/604/articles-126323_decreto_464_23_marzo2020.pdf.

[6] The "Seguimos Educando" platform is available at https://www.educ.ar.

the Coronavirus application, developed by the Ministry of Health. As part of the implementation of the "Solidarity Connectivity Plan", the Chilean government agreed with companies that mobile phone users, in plans with or without a contract, would access certain social media platforms and official sites on health, education and social programs and benefits, waiving data consumption fees.[7]

In Colombia, mobile phone customers with postpaid plans can also access contents and applications related to the health emergency, including 20 URL addresses without consuming their data credit balance.[8] At these websites, citizens can consult official, labor and educational information, as well as health topics related to COVID-19; access telecommunications and television services; among other applications.[9]

In Mexico, the government agreed with mobile carriers to enable users to access, during the period of the health emergency, official informative content on the novel coronavirus without consuming data on their balance (IFT, 2020b).[10] Likewise, it was decided that mobile phone users would be able to receive free text messages (SMS) from the sender GOBMX, with relevant information about the pandemic.

In addition to the introduction of zero-rating for some services, platforms or applications, the principle of network neutrality was relaxed in the countries under review, by enabling measures of temporary traffic management. For companies and the business chambers they belong to, such as the Inter-American Association of Telecommunications Companies (ASIET), the response of the networks to greater demand from users had to do with traffic management strategies by type of service (not by provider), in particular, the reduction of the volume of data consumed by audiovisual content.

[7] In Chile, zero-rating websites are: www.registrosocial.gob.cl, https://www.ingresodeemergencia.cl/, https://www.gob.cl/coronavirus/ and **https://www.curriculumnacional.cl/estudiantes/Ingreso**

[8] MinTIC Resolution No. 639, 04/01/2020, https://www.mintic.gov.co/portal/604/articles-126471_res_639.pdf.

[9] The websites within the scope of this agreement are: https://www.minsalud.gov.co/Paginas/default.asp, http://aprende.colombiaaprende.edu.co/cainicio, https://www.mininterior.gov.co/, https://www.mintic.gov.co/portal/inicio/, https://maguare.gov.co/http://www.mintrabajo.gov.co/web/guest/inicio, together with specific websites about coronavirus: https://www.ins.gov.co/Noticias/Paginas/Coronavirus.aspx; https://coronaviruscolombia.gov.co/Covid19/index.html.

[10] Zero-rating access is allowed in https://coronavirus.gob.mx.

4.3 Infrastructure, Network Management and Radio Spectrum

Throughout the first 4 months during which COVID-19 spread in Latin America, governments focused primarily on implementing measures to ensure the continued operation of networks and to guarantee a minimum level of services. Although the digital divide between different regions of each country became evident, particularly in those places without access to any type of connectivity, in this period initiatives aimed at implementing long-term infrastructure plans were not a priority.

The main mobile carriers in the region have explicitly and repeatedly requested governments to expand and accelerate the granting of licenses in spectrum bands, to extend the terms of current services, to grant certain segments for temporary testing, and to eliminate "bureaucratic barriers and restrictions on immediate access to more spectrum" (GSMA, 2020). The recommendations of the ECLAC and of the Organization of American States (OAS)'s Inter-American Telecommunications Commission (CITEL) followed along the same lines. However, in general, the implementation of this course of action was not a priority in the countries under analysis in the period under review.

In Latin America, only Panama, Peru and Ecuador enabled the allocation of radio spectrum on a temporary and free basis. The fact that the countries included in this analysis have succeeded in managing their networks to cope with the spikes of demand during the pandemic reveals that there are other concerns of certain large operators (e.g., savings in network densification) behind the demand for granting temporary spectrum, which are not essential in current conditions.

To supplement the above-mentioned actions, in Argentina a cooperation and reciprocal support agreement was signed in terms of network capacity by the regulator, the state-owned telecommunications company ArSat, and the four wholesale incumbent companies in the country (Telecom, Telefónica, América Móvil and Silica Networks). The agreement was aimed at leveraging the existing infrastructure of the main providers nationwide, which is linked with local connectivity service operators (SMEs and cooperatives) throughout the country for the deployment of last-mile networks.

With a longer-term vision, a new "General Regulation of Universal Service" was promulgated in June, specifying the contributions, in the form of investments, that ICT service providers must make on a monthly basis (1% of total net income from the provision of ICT services), as well

as the guidelines that programs and projects in this area should observe in order to reduce the digital divide.

In Mexico, the Federal Telecommunications Institute announced at the beginning of the pandemic that they would analyze the possibility of temporarily delivering more spectrum frequencies to respond to the growing demand for traffic, although this did not materialize. Regarding infrastructure, the national government issued a statement in support of state and municipal authorities to grant permits and authorizations for the installation, operation and maintenance of telecommunications and broadcasting infrastructure for entities providing such services during the health contingency period (IFT, 2020d).

4.4 Compensations for Telecommunication Companies

In consideration of the agreements and commitments signed between the governments and the telecommunication companies, the latter received some benefits and compensations.

In Argentina, ENaCom suspended a series of administrative procedures, and extended, on an exceptional basis, the term of validity for permits, authorizations, registrations, filings and licenses with expiration dates from March 16 to September 17, 2020.[11] In Brazil, the National Telecommunications Agency deferred the enforcement of fines, liabilities and penalties for late payment by telecommunication companies that were scheduled to expire between March 20 and April 10, 2020.[12] Additionally, the deadline for the payment of taxes on the provision of telecommunications services was extended until August 31, 2020 (versus the original expiration date scheduled for March 2020).[13] The objective was to alleviate the stress on the companies' cash flow and ensure the provision of services in a context that anticipated a rise in subscriber delinquency. Certification processes for telecommunication equipment were also simplified, and companies were asked only to provide the manufacturer's

[11] ENACOM Resolution No. 326/2020, extended by Resolution No. 771/2020, 07/23/2020 http://servicios.infoleg.gob.ar/infolegInternet/anexos/335000-339999/336042/texact.htm.

[12] ANATEL, Resolution No. 8/2020/SAF, 03/31/2020 https://sei.anatel.gov.br/sei/publicacoes/controlador_publicacoes.php?acao=publicacao_visualizar&id_documento=6124827&id_orgao_publicacao=0.

[13] Provisional Measure No. 952, 04/15/2020, http://www.planalto.gov.br/ccivil_03/_Ato2019-2022/2020/Mpv/mpv952impressao.htm.

declaration and were exempted from submitting other types of documentation for products with a valid certificate between March 6 and June 30 (ANATEL, 2020b).

In Colombia, the government deferred the companies' deadlines for paying fees for concessions, licenses, permits, authorizations and approvals for the provision of telecommunications networks and postal services until May 30, including contributions to the universal service fund (Single ICT Fund).[14] The Ministry of Information and Communication Technologies issued the amended payment schedule at the end of March, since there was no waiver of fees but a temporary extension granted in the context of the pandemic.

Similar measures were also taken in Mexico, where the IFT postponed calculation of the terms and deadlines of administrative procedures and economic competition for telecommunications and broadcasting services, with some exceptions for procedures that could be carried out electronically. The measure, first introduced in late March, was then extended throughout the period of the health emergency and until the IFT plenary session issues an agreement for the resumption of the calculation of terms (IFT, 2020f).

5 Conclusions

The comparative study carried out in this work offers some conclusions in order to provide insights on telecommunications policies in the context of pandemic emergence in Latin America.

In the first months of the coronavirus spread, governments in the region developed a battery of public policies, mostly in agreement with large private operators, although there were exceptions. The policies carried out in Argentina, Chile, Colombia, Brazil and Mexico revealed similarities in the fact that they were all aimed at sustaining the networks in the face of growing traffic and data consumption demand, providing access and continuity of connectivity services for customers of telecommunications companies with a lower payment capacity. In other words, public policies were orientated not only to maintain the existing connectivity levels prior to March 2020, but also to support and develop skills and opportunities for social use of ICT through the establishment of zero-rating agreements with telecommunication carriers to enable people's

[14] Article 5 of Decree No. 464 of 2020.

access to official information, education and health services applications. These measures were supplemented by some decisions made by the industry, in some cases requested by governments, to reduce the bitrate of on-demand audiovisual content and to manage network traffic, putting network neutrality principles on hiatus; together with the release of "premium" contents for no extra charge to existing subscribers.

As a counterbalance, telecommunication companies operating in the five countries we have analyzed received some compensations. These benefits ranged from the suspension of deadlines to compel with administrative procedures (e.g. terms of validity for permits, authorizations, licenses), to the deferment of the enforcement of fines, liabilities or tax payments, depending on the country. However, despite the claim coming mainly from mobile operators and telecommunication associations, none of these governments acceded to accelerate the granting of licenses in spectrum bands in the course of the pandemic emergence (March–June 2020).

During the analyzed period, the actions deployed shaped policies that were defensive in nature, that is, governments focused their efforts on preventing the levels of connectivity, ICT consumption and usage prior to March from suffering significant deterioration due to the emergency. This gave the sector a certain stability in terms of fixed and mobile connections, fundamentally in underserved segments, which are the majority in a region where large portions of the population are at poverty levels. For the same defensive reason, initiatives focused on long-term infrastructure plans were not a priority during the analyzed period.

As a result of this study, it is clear that, even in the context of the pandemic, public policies in telecommunications in five of the biggest Latin American countries show the inertia of the private orientation of the sector, the evidence of which is the lack of measures to repair the serious gaps in ICT access, skills and usages. This inertia (path dependence) was more evident in the two largest markets, Brazil and Mexico, whose measures to avoid increases in telecommunications services and to generate inclusion were more timid than in the other three cases surveyed: Argentina, Chile and Colombia.

Nevertheless, mainly in Argentina, Chile and Colombia some measures of an extraordinary nature, such as ensuring the continuity of services in cases of late payment or non-payment, were to be extended in subsequent months. And the special consideration given to the impact of the health and economic crisis introduced by the pandemic on the most vulnerable segments may become a platform for future policy-making in the field of

telecommunications. In this regard, in the period after the scope of this study, the Argentine government issued a decree (DNU 690/2020) that declared ICT activities "public services in competence", created mandatory universal basic plans and empowered the State to authorize price increases, while in the Congresses of Chile and Colombia initiatives advanced to declare as "public services" some resources such as fixed connectivity for home internet.

These latest policies are aimed at addressing one of the aspects that the first exceptional actions did not take into consideration, i.e., the population without access to ICT services and in particular, to fixed or mobile connectivity. For both socioeconomic and geographical reasons, vast social sectors in Latin America are out of coverage or find basic services unaffordable, a circumstance that already existed prior to the pandemic and that will be aggravated by its economic consequences. While digital gaps in terms of material access to network connections and devices are well known, skills and usage digital divides also conditioned ICT connectivity during the pandemic.

The unequal structuring of Latin American societies shows a direct correlation with the materialization of access to ICTs and with the types of access to these technologies. This correlation makes it possible to weigh the relative incidence of sectoral policies and the importance of macroeconomic policies, which have an impact on the income and quality of life of society and, consequently, on the type of access to services necessary for its well-being, such as telecommunications and connectivity services.

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