

Latin American Telecommunications – Status, Trends and Future Policy Guidelines

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The focus of this chapter is to assess the status, and summarise the most important trends, of the telecommunications sector in Latin America. Its purpose is to define a set of public policy and regulatory guidelines for future industry development. For context, we begin by presenting the principal trends of the industry on a worldwide scale and then zoom into the current situation in the region in order to highlight similarities and differences.

Worldwide Telecommunications Industry Trends

The growth of the worldwide telecommunications sector is slowing down. Adoption of telecommunications services is reaching a saturation point, albeit with different levels by market and service. In aggregate terms, future industry growth remains primarily in some emerging regions (see Table 1).

Table 1. World telecommunications service and device penetration and growth

Region	Trend	Internet	Mobile telephony connections	Unique mobile telephony subscribers	Unique mobile broadband subscribers	Fixed broadband (*)
North America	2018 Penetration	77.70 %	117.89 %	83.85 %	74.61 %	88.99 %
	CAGR 2013–17	2.02 %	4.65 %	2.42 %	7.09 %	2.44 %
	CAGR 2018–22	3.06 %	9.25 %	0.30 %	1.32 %	2.28 %
Western Europe	2018 Penetration	82.88 %	121.39 %	86.30 %	75.24 %	90.11 %
	CAGR 2013–17	2.62 %	1.94 %	1.52 %	7.53 %	2.58 %
	CAGR 2018–22	2.26 %	4.73 %	0.29 %	2.17 %	3.00 %
Asia Pacific	2018 Penetration	46.27 %	101.74 %	67.91 %	48.87 %	62.59 %
	CAGR 2013–17	8.98 %	5.56 %	5.08 %	12.31 %	9.16 %
	CAGR 2018–22	8.99 %	3.87 %	1.06 %	6.04 %	7.30 %
Latin America	2018 Penetration	58.88 %	107.08 %	68.41 %	52.95 %	48.03 %
	CAGR 2013–17	6.58 %	-1.03 %	2.04 %	8.50 %	7.45 %
	CAGR 2018–22	2.54 %	2.11 %	1.27 %	3.88 %	5.69 %
Sub-Saharan Africa	2018 Penetration	40.86 %	117.91 %	45.60 %	35.05 %	15.49 %
	CAGR 2013–17	15.71 %	4.60 %	5.89 %	17.00 %	19.55 %
	CAGR 2018–22	5.92 %	1.61 %	1.96 %	9.31 %	8.29 %

Note: (*) Percent of households, CAGR, compound annual growth rate

>5%
 3%–5%
 <3%

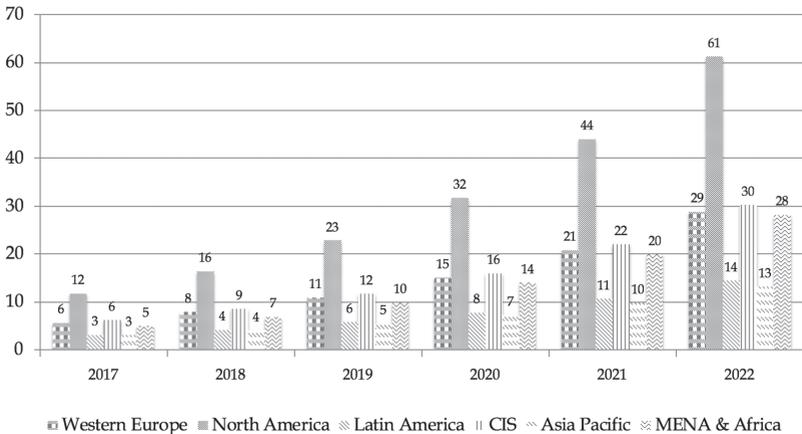
Sources: Cisco; GSMA Intelligence; International Telecommunications Union; Telecoms Advisory Services, analysis

While the future growth for all services and markets will decline in comparison with past years, robust growth is still forecast in sub-Saharan Africa and Asia Pacific in internet fixed- and mobile broadband.

On the other hand, while services penetration growth rate is generally declining, telecommunications traffic by user and device is continuing to increase at a 25% annual rate worldwide, primarily driven by the growth in video traffic, use of over the top (OTT) platforms and file sharing.¹ Traffic is projected to grow in all internet-access devices, although differences exist by region, revealing varying usage intensity. For example, while smartphones generate 5.73GB per month in Latin America, they originate 22.81GB in North America (see Figure 1).

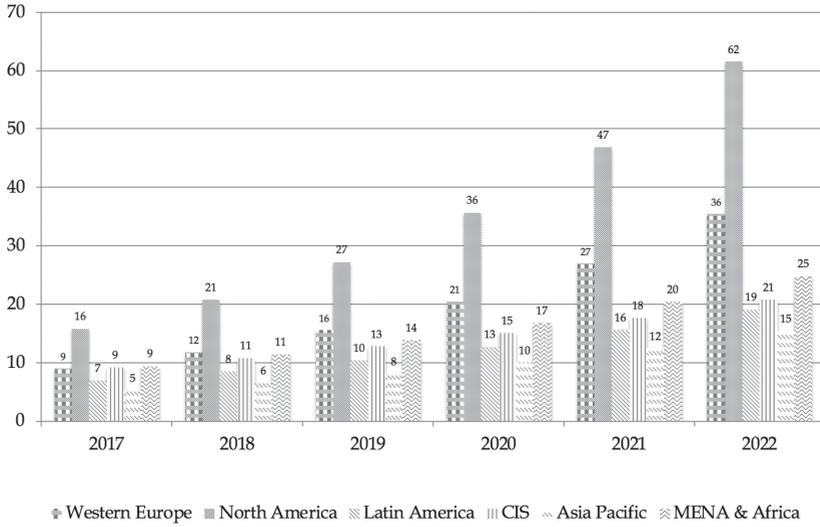
Figure 1. Monthly traffic by device and region (in GB) (2017–22)

Smartphones

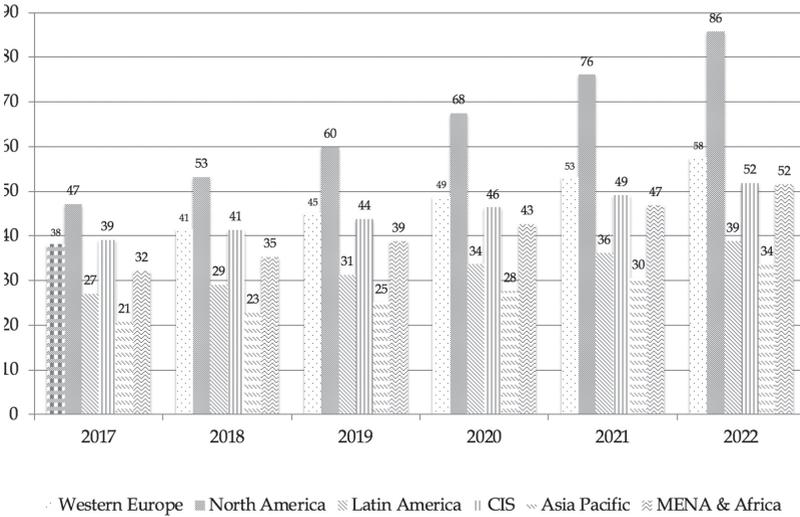


1 Source: Cisco Visual Networking Index, 2019

Tablets



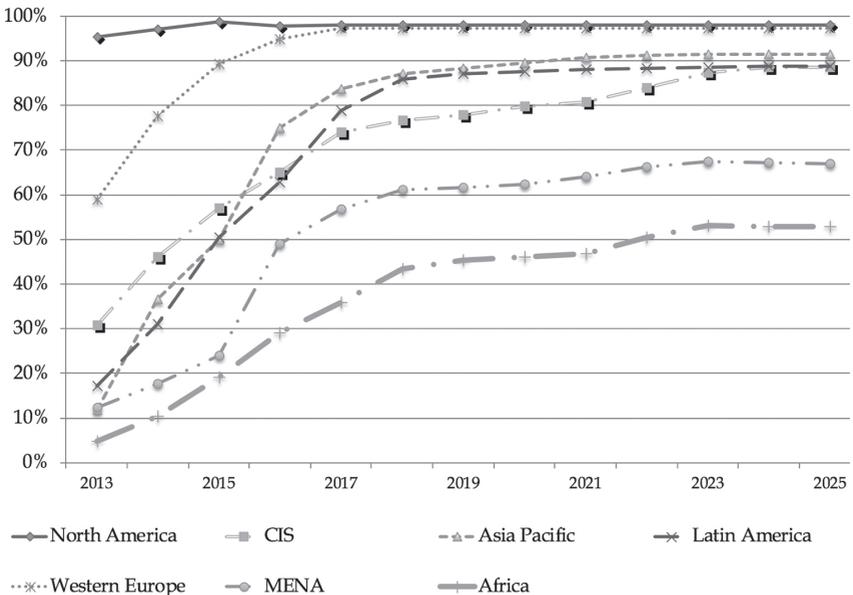
PCs



Sources: Cisco Visual Networking Index; Telecoms Advisory Services, analysis

In order to accommodate the growing traffic, telecommunications operators need to continue investing in the deployment of last-generation technology, such as ultrabroadband fixed networks and 5G wireless. For example, Western Europe has deployed fibre optics in the distribution portion of fixed broadband networks covering 45% of households. In the case of mobile broadband, by 2025 84% of the world’s population would be covered by 4G, although in Africa, coverage would have reached only 58% (see Figure 2).

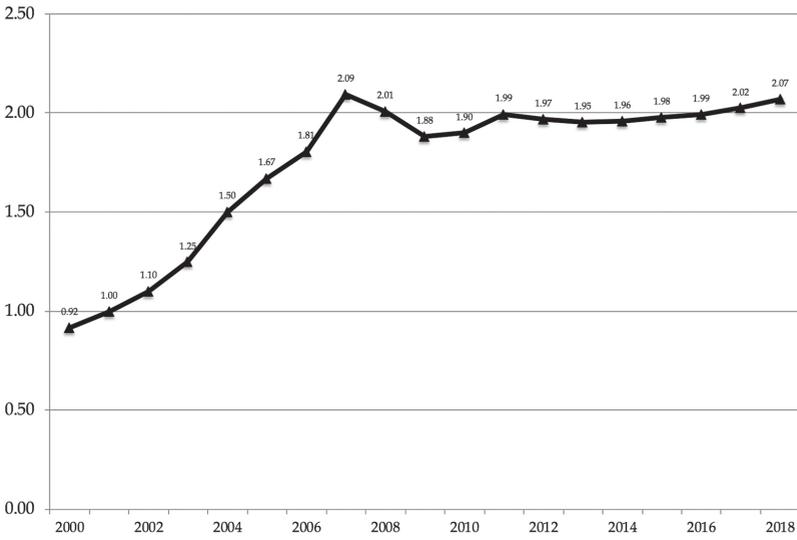
Figure 2. Worldwide 4G coverage (% population) (2013–2025)



Source: GSMA Intelligence

On the other hand, the competitive intensity among service providers, and between them and OTT platforms, is putting pressure on industry revenues, which have stabilised since 2006 (see Figure 3).

Figure 3. Worldwide revenues of telecommunications industry (in trillion US\$)(2000–2018)

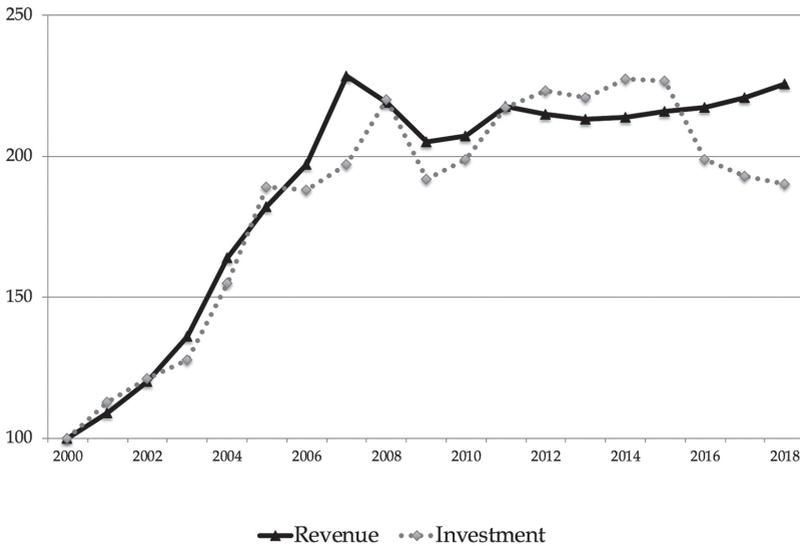


NOTE: Fixed telecommunications revenues for 2017 and 2018 are estimated.

Source: International telecommunications Union; GSMA Intelligence; Telecoms Advisory Services, analysis

This revenue stabilisation has an impact on capital spending, which has not changed substantially since 2007. In fact, in addition to the nearly perfect correlation between revenues and investment, starting in 2015, the capital spending of the telecommunications industry has been declining below the secular trend (see Figure 4).

Figure 4. Revenue and investment in worldwide telecommunications (year 2000 as 100) (2000–2018)



Source: International telecommunications Union; GSMA Intelligence; Telecoms Advisory Services, analysis

In this context, the industry sustainability and its capacity to continue investing to face technological deployment and increase network capacity depends upon a consolidation that generates returns to scale. Furthermore, considering the financial pressure being experienced by private operators, it is reasonable to consider that governments will continue playing a relevant role in the development of the industry through either supporting investment in rural areas and/or funding 5G networks.

These tendencies will have an impact on public policies and regulatory frameworks. Going forward, governments will continue supporting network and service convergence, building symmetric regulatory frameworks which would allow telecommunications operators to compete in a level playing field with OTT players, and migrate to hybrid

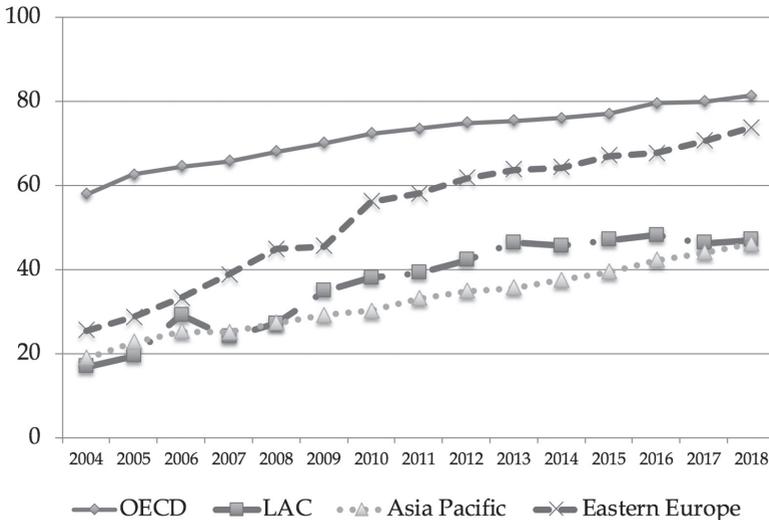
spectrum-management policies that allow for the coexistence of licensed and unlicensed spectrum, as well as the assignment of free spectrum in rural areas. Beyond these sector specific policies, governments will increasingly coordinate the development of telecommunications, with the need to enhance their impact on the digital economy.

The Telecommunications Sector in Latin America

Internet adoption in Latin America has reached 58.88%, while the average of Organisation for Economic Co-operation and Development (OECD) countries is 79.43%.² This difference persists in internet-access devices: Latin America lags OECD countries by 34 percentage points in PC adoption and 15 percentage points in smartphones (see Figure 5).

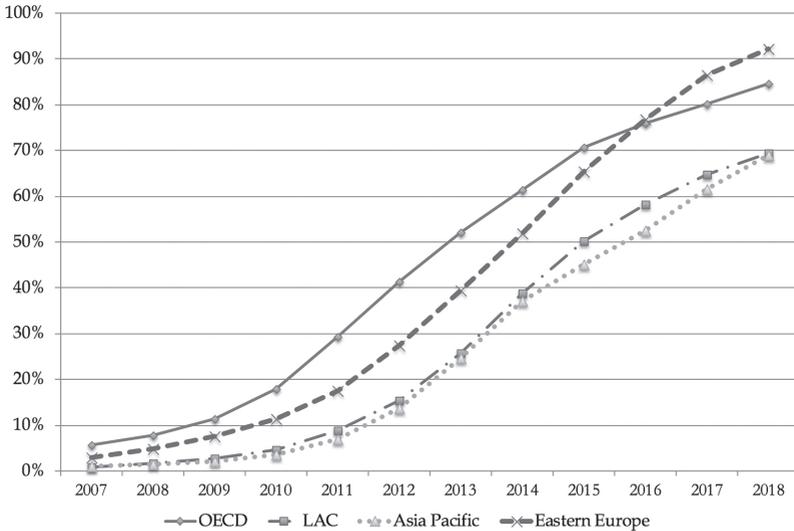
Figure 5. Comparative adoption of internet-access devices (percentage of population) (2004–2018)

Personal Computers



² Source: International Telecommunication Union

Smartphones



Source: International Telecommunication Union; Telecoms Advisory Services, analysis

The Latin American telecommunications industry has also entered a stage of slowing service adoption. Between 2013 and 2018, unique users of mobile broadband as a percent of population have increased by 7.8% annually, while future growth for the next five years is projected to increase by 2%.³ Similarly, fixed-broadband penetration has increased by 5.3% between 2013 and 2018, and it is projected to grow by 3.1% through 2022.⁴

As is the case at the global level, traffic per user and device continues growing. In 2018, a Latin American smartphone user generated 4.21GB per month, while a tablet originated 8.46GB. In 2022, each smartphone in the region will generate 14.40GB (according to an annual growth rate of 36%) and each tablet 19.10GB (based on an annual growth rate of

³ Source: <https://www.gsma.com/r/mobileeconomy/latam/>

⁴ Source: <https://www.statista.com/statistics/752112/fixed-broadband-penetration-latin-america-countries/>

23%). This tendency towards traffic growth will result in 18.8 billion GB per month, growing again at 21% through 2022.⁵

In this context, the telecommunications operators in the region are undergoing the same capital spending pressure existing in other regions. Governments and, more importantly, the private sector need to continue investing in the deployment of networks and additional capacity:

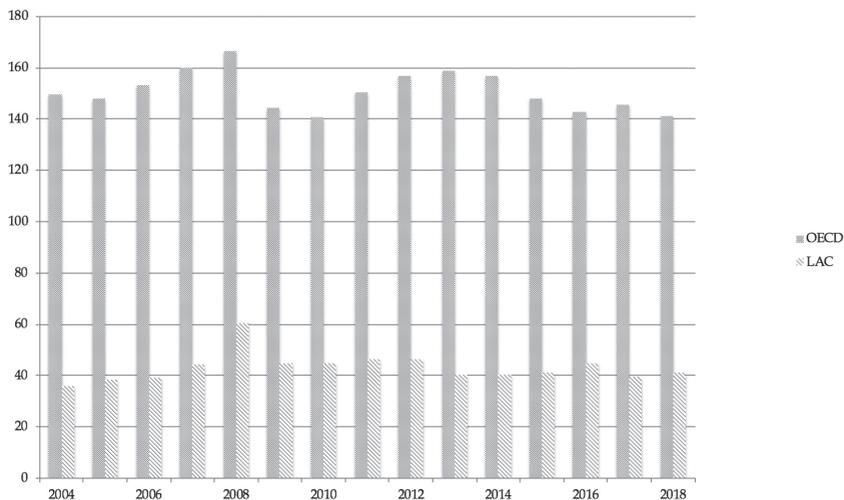
- Additional deployment of submarine cables with an added emphasis on integrating the region with the rest of the developing world (South-South traffic with Asia and Africa);
- Deployment of national backbone networks aiming to reach rural and isolated areas;
- Construction of regional networks and signing national network interconnection agreements, which allow landlocked nations, such as Bolivia and Paraguay, access to submarine cables;
- Installation of ultrabroadband fixed networks, primarily in the main metropolitan areas;
- Acceleration of 4.5G network deployment, triggering a transition towards cell densification that pre-announces the move to 5G;
- Use of satellite technology to provide internet access in rural areas;
- Installation of additional internet exchange points to allow in-region peering of local traffic and consequent reduction of international transit costs and latency; and
- Deployment of machine to machine (M2M) sensors and delivery of vertical internet of things (IoT) solutions.

While the industry continues investing significant capital in network deployment and new technology, the gap between Latin America and the average of OECD countries is growing. The average annual private

⁵ Source: https://www.cisco.com/c/m/en_us/solutions/service-provider/vni-forecast-highlights.html#

and public investment in telecommunications per capita in the region reaches US\$41, while OECD countries are investing US\$141 (see Figure 6).

Figure 6. Annual telecommunications investment per capita (US\$) (2004–2018)

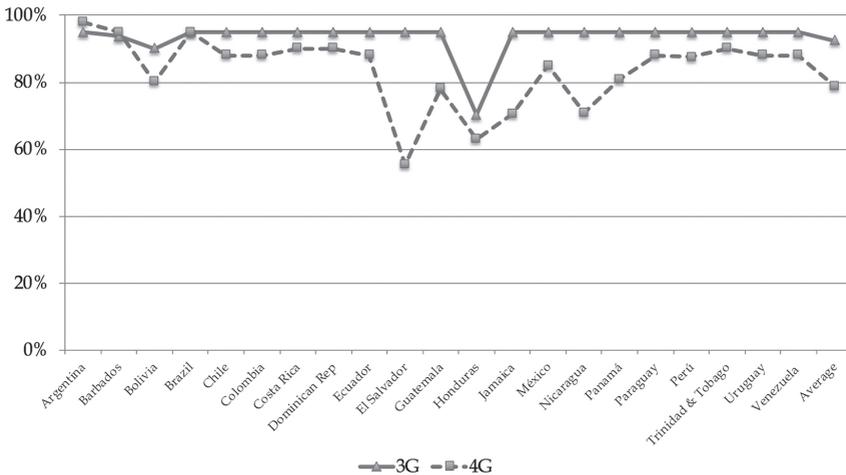


Source: Telecoms Advisory Services, analysis

This gap has implications in terms of Latin American’s parity with advanced economies, in terms of technology deployment and service quality. While, in general terms, 4G coverage is relatively advanced, some countries such as Bolivia, El Salvador, Guatemala, Honduras, Nicaragua, Panama and Peru still exhibit partial coverage (see Figure 7).

Figure 7. Latin America – mobile broadband coverage (% of population) (2018)

Sources: International Telecommunication Union; GSMA Intelligence



Fixed broadband coverage is sometimes fulfilled through basic xDSL or DOCSIS 2.0 cable modem technology, which deliver low broadband download speeds. Fibre-optic deployment in distribution is deployed for only 6.93% of accesses (compared to 20.78% for OECD countries).⁶ On the other hand, with the exception of Mexico, 5G deployment in the region is expected to begin only in 2023.

The lag in ultrabroadband fixed and mobile broadband coverage results in low download speeds for some countries and technologies (see Table 2).

⁶ Sources: IDATE for FTTH Council (Europe) and International Telecommunication Union

Table 2. Latin America and the Caribbean – broadband download speeds (average Mbps) (2017)

Country	Fixed Broadband	Wireless Broadband
Argentina	21.870	17.770
Barbados	67.935	N/D
Bolivia	8.310	18.240
Brazil	26.665	20.180
Chile	52.255	17.630
Colombia	14.835	16.625
Costa Rica	12.540	17.350
Ecuador	14.060	22.125
El Salvador	8.900	9.105
Guatemala	8.525	15.525
Honduras	7.740	20.995
Jamaica	21.425	16.365
México	23.820	21.185
Nicaragua	6.830	19.860
Panamá	40.300	11.770
Paraguay	32.455	14.235
Perú	24.170	22.105
Dominican Republic	16.145	16.070
Trinidad & Tobago	42.325	17.840
Uruguay	35.315	25.665
Venezuela	3.845	7.375



Source: Ookla Speedtest

This technology lag is occurring despite the industry’s investment effort. Latin American carriers are investing approximately 19% of sales, a ratio well in excess of the conventional financial ratio of 13% to 15%. It is in this context that the region is engaging in a consolidation trend. The mergers and acquisitions pace denotes a gradual consolidation process, coupled with a gradual divestment by some players of non-strategic telecommunications assets (such as the case of the Brazilian electric company CEMIG and the Mexican Grupo Alfa). Finally, it is important to mention the exit of regional players in some countries (such as Telefonica’s sale of Central American operations to America Movil and Millicom, Altice’s sale of the Dominican Republic subsidiary, and Maxcom in Mexico).

As of 2018, the Herfindahl–Hirschman Index (HHI) indicates a moderate-to-high concentration in the mobile segment, a low-to-moderate in Pay TV (with some exceptions) and a moderate-to-high in fixed broadband (with some exceptions) (see Table 3).

Table 3. Latin America and the Caribbean – Herfindahl–Hirschman Index (2018)

Country	Fixed Broadband	Mobile Broadband	Mobile Telephony	Pay TV
Argentina	1964	3625	3356	2299
Bolivia	1895	3901	3825	1106
Brazil	2118	2468	2501	3624
Chile	3028	2751	2844	2183
Colombia	2097	3991	3567	2619
Costa Rica	3231	3386	3899	1649
Ecuador	3616	5865	4116	2158
El Salvador	4867	3060	2699	4479
Guatemala	6488	3702	3705	1628
Honduras	2663	5168	5105	533
Jamaica	8109	5842	5823	5428
México	3793	4735	4729	2166

Nicaragua	3079	4442	4665	6417
Panamá	4885	3066	3075	3929
Paraguay	2762	3475	3661	3192
Perú	5899	2634	2758	4765
Dominican Rep	4933	4605	4546	3118
Trinidad & Tobago	1754	5519	5012	3854
Uruguay	9690	3678	4111	842
Venezuela	4954	4049	3795	2333



Sources: *International telecommunication Union; GSMA Intelligence; Informa; Telecoms Advisory Services, analysis*

Beyond structural consolidation, the public sector will continue participating in the sector, either through targeted interventions aimed at reducing the digital divide, as well as creating conditions and incentives to stimulate new technology deployment.

A Roadmap for Latin American Telecommunications Development

Looking ahead, the Latin American telecommunications sector should continue tackling six strategic guidelines:

1. Reduction of the digital divide: despite the advancement in connectivity, the region still presents an important portion of the population that does not have access to the benefits of digitisation. The main barrier in this regard is that, despite the ongoing falling prices, the affordability barrier is driven by structural income distribution factors. The only option to address this digital-demand gap is to continue offering subsidies to reduce service acquisition costs for the most disadvantaged population.

2. Increase telecommunications investment: despite the fact that the private carriers carry the main responsibility in telecommunications investment, governments need to continue intervening through universal funds. Along those lines, blended finance programmes⁷ that foster the coordination of public and private funds in rural areas and geographies concentrating disadvantaged population, will mitigate shortfalls in business case return on investment. This could be complemented with reduction of taxation, special levies, spectrum charges and network deployment permits.
3. Prioritise ultra-broadband and 5G investment: despite progress in terms of infrastructure development in the last ten years, the region needs to develop a strategy aimed at converging with advanced economies in terms of ultrabroadband, 5G, and IoT.
4. Maximise the investment of digitisation in fostering productivity and competitiveness: beyond the contribution of traditional technologies, the digitisation of production in the context of Industry 4.0 includes the adoption of new digital technologies in the value chain of traditional Latin American industries such as agriculture, food processing, textiles, and automotive manufacturing. The objective in this domain is to adopt collaborative methods in product design, increase efficiency in the supply chain, augment production flexibility and foster the transformation of distribution channels.
5. Development of IoT: The IoT is a critical infrastructure given its contribution to digitisation of production (such as in precision agriculture, smart cities, and smart grid). It is critical that governments define technical standards to ensure interoperability of IoT devices and networks. Additionally, they have to create the legal and operational frameworks to guarantee cybersecurity, given that failures in this domain could have catastrophic consequences. The regulatory framework for IoT needs to be defined in such a

⁷ Blended finance is a structuring approach that allows different types of capital (whether impact or commercial oriented), to invest alongside each other while each achieving their own objectives (whether financial, social, or a blend). Blended finance structures are observed across a broad range of transaction types – including funds, facilities, bonds, notes, projects, and companies. Blended finance aims to increase the amount of capital directed to sustainable development in developing countries

way that it stimulates innovation regarding the development of equipment and applications. Finally, it is important that public funds are assigned to stimulate research in those IoT applications with social impact (such as health, transportation and urban management).

6. 5G network deployment: the policy and regulatory framework represents a critical enabler in the development of 5G networks. Four areas need to be tackled in this domain. First, 5G needs a significant amount of new harmonised mobile spectrum, particularly 80–100MHz of contiguous spectrum in prime 5G mid-bands (eg. 3.5MHz) and around 1GHz per operator in millimetre wave bands (above 24GHz). Latin American regulators are proceeding at a gradual pace towards making spectrum available (see Table 4).

Table 4. Latin America – 5G Spectrum availability

Low Band	Mid Band	High Band
Bands identified and cleared in Colombia and Mexico	2.3GHz mostly available, planned by Brazil and Peru 3.5GHz assigned for fixed wireless but needs refarming or allocation change in Chile and Peru	28GHz considered for mobile by Colombia, Chile, Mexico, but neglected by Brazil; Uruguay launched pilot in this band

In light of this need, Latin American regulators need to maximise the use of spectrum with a view to 5G deployment. This includes the development of a spectrum roadmap that includes the identification of frequencies, the prioritisation of bands, a migration plan, and a licensing schedule. Licensed spectrum will be fundamental but there will be a need of greater flexibility on the assignment methods and licence conditions (eg. differentiated coverage, quality of service [QoS] obligations with technology neutrality), while allowing for secondary spectrum usage/subleasing and unlicensed spectrum. There

is significant concern on the part of private carriers of the potential negative impact of high spectrum prices on 5G deployment, which would mean slower network rollout or higher end user prices, therefore undermining its productivity impact. Beauty contests and/or direct allocations could come back as relevant mechanisms, particularly for millimetre wave bands. Second, as mentioned above, given the amount of capital required for deploying 5G, blended finance models based on public–private partnerships could help ignite private capital investments in innovative sectors and facilitate deployment. Third, 5G strategies have to be complemented with a digital national plan focused on a coordination of industrial internet adoption and transformation of production processes.

To sum up, the region has made important progress in terms of deployment of telecommunications infrastructure and adoption. However, the future requires addressing the persistent inequities on the consumer side and tackling the digitisation of the production sector of the economy.



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