



Procuring **CONNECTIVITY** for **PUBLIC SCHOOLS**

pathways and lessons learned in Latin America
and the Caribbean

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1. Introduction

This document is based on a central assumption: connecting schools is synonymous with guaranteeing rights. Connectivity helps broaden educational horizons, while reducing territorial inequalities and ensuring that all students – regardless of their social background or geographical location – have access to relevant, customized, and digitally integrated educational experiences.

To drive this process, governments need to develop a sustainable policy of meaningful connectivity, which is one of the five enabling conditions to guarantee that investments in technology effectively contribute to improving educational processes, expanding access to and retention in schools, and increasing efficiency in educational management to bolster digital transformation at schools. The other four enabling conditions are access to digital devices; educational resources and platforms; digital and pedagogical competency-building for educators; and robust governance (Arias Ortiz et al., 2025).

The first stage of this process is described in detail in the publication “Connectivity planning: seven steps to ensure adequate Wi-Fi connection for public schools,”¹ which summarizes its essential steps such as the educational network’s initial diagnosis, the decision about which technology to adopt, the establishment of quality parameters, and the procedures for mapping resources and estimating costs. The present report complements it with a focus on the second stage of this process: procuring connectivity based on the planned parameters.

Part 1 of this document analyzes different ways of procuring connectivity, considering who will be responsible for it (national or subnational governments) and which provider arrangement will be adopted. Further, the document reflects on how to coordinate different funding sources, and what the key elements are for developing a robust contract.

In turn, Part 2 analyzes the practical cases of seven Latin American and Caribbean countries. The connectivity procurement experiences of Brazil, Chile, Colombia, Costa Rica, Peru, Suriname, and Uruguay are presented with their respective institutional and regulatory particularities. Although each of these countries followed a specific trajectory, it is possible to identify common patterns that determine aspects related to quality, predictability, and costs. The basic finding, in this regard, is that there is no one-size-fits-all solution but, instead, a set of key lessons that can be learned.

Connectivity does not behave as a traditional input. It requires continuous investments, periodic technological adjustments and stable relations among educational authorities, telecommunication operators, and regulatory agencies. Therefore, understanding different procurement modalities is not a mere administrative exercise but a crucial requirement for guaranteeing sustainable and meaningful connectivity. Local decisions must consider the characteristics of each educational network, as well as the existing governance structure and the level of support that will be provided to local managers.

Based on the content presented in this report and in the complementary publication “Connectivity planning,” we hope that public managers across Latin America and the Caribbean will have the inputs they need to treat connectivity not merely as an accessory feature of education, but as an essential component of equity and inclusion in the digital age.

¹ Pérez Alfaro et al. (forthcoming).

Part 1

PROCURING CONNECTIVITY FOR SCHOOLS

Step 1

Defining who will be responsible for the procurement process

The first step for effectively bringing Internet connectivity to schools is to define who (that is, which administrative entity) will be responsible for the procurement process.

Two main options stand out in this regard:

- 1.1 Decentralized procurement:** each school or school district procures and manages its own connectivity solution with the selected provider;
- 1.2 Centralized procurement:** the department of education or central governmental body procures Internet connectivity for all schools under its purview.

The following section provides additional details on these two processes and describes positive aspects and points to consider in connection with each of them.

1.1 Decentralized procurement

- > **How it works:** Each school or school district procures and manages its own connectivity solution.
- > **In practice:** Decentralized frameworks have been implemented by countries such as Colombia, as well as by individual states and municipalities in Brazil, following the logic of “bringing decision-making closer to the territory.” However, the observed results feature comparatively more expensive services and contracts, and schools with quite distinct connectivity quality levels, despite belonging to the same educational system. This is due to the highly heterogeneous technical capacities among subnational governments for structuring bidding notices, estimating the necessary requirements, comparing technologies, or supervising contract deployment and implementation.

When selecting this procurement modality, it is critical to strengthen the knowledge of local managers so that they know how to identify their needs based on their pedagogical uses, and so that they may interpret the available market options. Yet, evidence suggests that even in the presence of technical guidance issued by the central-level authority, schools have rarely been able to compensate for human capital gaps and information asymmetries in local territories.



POSITIVE ASPECTS:

- > Greater implementation agility;
- > Greater school-level autonomy and adoption of solutions that match the school's pedagogical plan;
- > Enhanced opportunities for local providers.



POINTS TO CONSIDER:

- > Higher costs and reduced leverage in negotiations with connectivity providers;
- > Greater management complexity, as local managers themselves need to procure and manage the adopted solution – oftentimes, without having the necessary technical knowledge;
- > Lack of standardization among schools, and monitoring difficulties, since education departments cannot set up a real-time dashboard to monitor all schools under their purview, due to the dispersed nature of their provider-contracting processes.

1.2 Centralized procurement

- > **How it works:** The department of education or central governmental body procures connectivity services for all schools under its purview.
- > **In practice:** Centralized procurement processes like those carried out in Chile, Peru, and Costa Rica tend to favor economies of scale. In Chile, aggregating school demand made it possible to structure competitive bidding processes for thousands of schools using the same technical framework. However, this modality also faces challenges: the technical complexity of bidding notices, the need to balance high- and low-cost zones, and the definition of adequate budgets are critical conditions which are not always satisfactorily addressed. Unsuccessful tenders due to the lack of bidders in rural zones in Chile, as well as suspended tenders in Peru because of budgetary issues in 2023, show that, without a carefully developed design, centralized frameworks may produce difficulties in attracting bidders, as well as successive contract extensions with efficiency losses in the use of public resources.

A fundamental requirement for this modality is the ability to guarantee connectivity coverage for all schools, including in remote or commercially unattractive areas. Therefore, the policy must provide institutional mechanisms to ensure an integrated territorial vision for the educational network, which enables prioritizing certain areas, adopting phased planning and combining different technologies. These elements are addressed by the strategy described in the report “Connectivity planning: seven steps to ensure adequate Wi-Fi connection for public schools.” Otherwise, centralized procurement may reproduce inequalities and even lead to situations in which certain schools are left permanently disconnected.



POSITIVE ASPECTS:

- > Greater expertise in negotiations;
- > Economies of scale and cost savings;
- > Standardized decision-making with an integrated vision of the educational network and greater control over the quality and efficiency of contracted services;
- > Reduced administrative and IT burden on school teams.



POINTS TO CONSIDER:

- > Longer overall process;
- > Difficulty addressing specific demands.

Step 2

Defining the procurement framework

The second connectivity procurement step is to define how the service will be provided, regarding the number of providers involved and who will be responsible for the necessary equipment.

Some possibilities are presented below:

2.1 Selecting single or multiple providers

I. Integrated procurement

> **How it works:** The same provider delivers the entire procured solution (connections, equipment, and support), including all connectivity needs under a single contract.



POSITIVE ASPECTS:

- > Simplified management;
- > A single monthly payment;
- > Continuous technological updating.



POINTS TO CONSIDER:

- > Dependency on a single provider;
- > Longer-term contracts.

NOTE: In countries such as Uruguay and Suriname, the single provider is a state company. This state company can deploy infrastructure, use public goods to reduce costs, and establish flexible agreements that can be updated in response to technological change. But this modality also has key challenges related to traceability of costs and replicability. Additional details will be presented in the analysis of selected cases in Part 2 of this report.

II. Fragmented procurement

> **How it works:** Different providers are contracted to provide parts of a complete connectivity solution, often with separate bidding procedures for each part. For instance: a bidding procedure for the purchase of firewalls; another one for switches and access points (APs); and yet another one for the layers of service deployment, maintenance, and management.



POSITIVE ASPECTS:

- > Greater flexibility;
- > Possibility of selecting specialists.



POINTS TO CONSIDER:

- > More contracts need to be managed;
- > Increased risk of integration failures.

2.2 Equipment options: purchase or leasing

I. Procurement including equipment purchase

> **How it works:** Equipment items are purchased and become public property. In this modality, the provider is responsible for delivering the physical infrastructure and providing connectivity services – deployment, management, and maintenance – throughout the contract term. Since a purchase occurs, equipment replacements are the contracting party's responsibility.



POSITIVE ASPECTS:

- > There is no risk of losing the equipment at the end of the contract, since it is integrated into public property;
- > An advantageous option for contracting parties with capital resources for investing in Year 1.



POINTS TO CONSIDER:

- > High initial investment and capital resource requirements;
- > Complexities related to property management, inventory, and depreciation of public-sector assets.

II. Procurement including equipment leasing

> **How it works:** Equipment is leased under a hardware-as-a-service (HaaS) model and remains the provider's responsibility throughout the contract term. As with the previous modality, providers are responsible for delivering physical infrastructure and providing services throughout the contract term, including the eventual need to replace equipment items.



POSITIVE ASPECTS:

- > Lower initial investment without high capital resource requirements. This modality may be advantageous for contracting parties that cannot invest large sums in Year 1;
- > Lower management, logistical, and inventory costs for educational networks;
- > Guaranteed equipment functionality throughout the contract term.



POINTS TO CONSIDER:

- > Risk of losing the equipment at the end of the contract, since items are the service provider's property, instead of public property;
- > Approval of HaaS procurement by oversight bodies may be more complex;
- > In the long term, recurrent costs may exceed acquisition costs.

Table 1. Recommended procurement modalities: which is the most advantageous procurement procedure?

Countries may have distinct contexts, regulations, and governance, leading to different procurement modalities according to their particularities, as described in Part 2 of this report. However, whenever possible, centralized and integrated procurement is recommended, under either the purchase or the lease modality.

Who is contracting	Suppliers' procurement	Equipment contracting	Recommendation
DECENTRALIZED			✗ Not recommended
CENTRALIZED	FRAGMENTED		✗ Not recommended
	INTEGRATED	PURCHASE	✓ Recommended
	INTEGRATED	LEASING	✓ Recommended

Source: Prepared by the authors.

Despite being necessary for educational networks in certain contexts, decentralized procurement and centralized fragmented procurement **are not recommended**, due to the higher risks involved in these two modalities.

Both solutions present integration difficulties in optimizing the connectivity solution's management, leading to impacts on the availability of contracted services. In the decentralized modality, the central governmental body loses its overall view; in turn, in the centralized fragmented modality, the governmental body could manage each asset separately, but its data would be dispersed, leading to weaker management and decision-making capacities for solving problems.

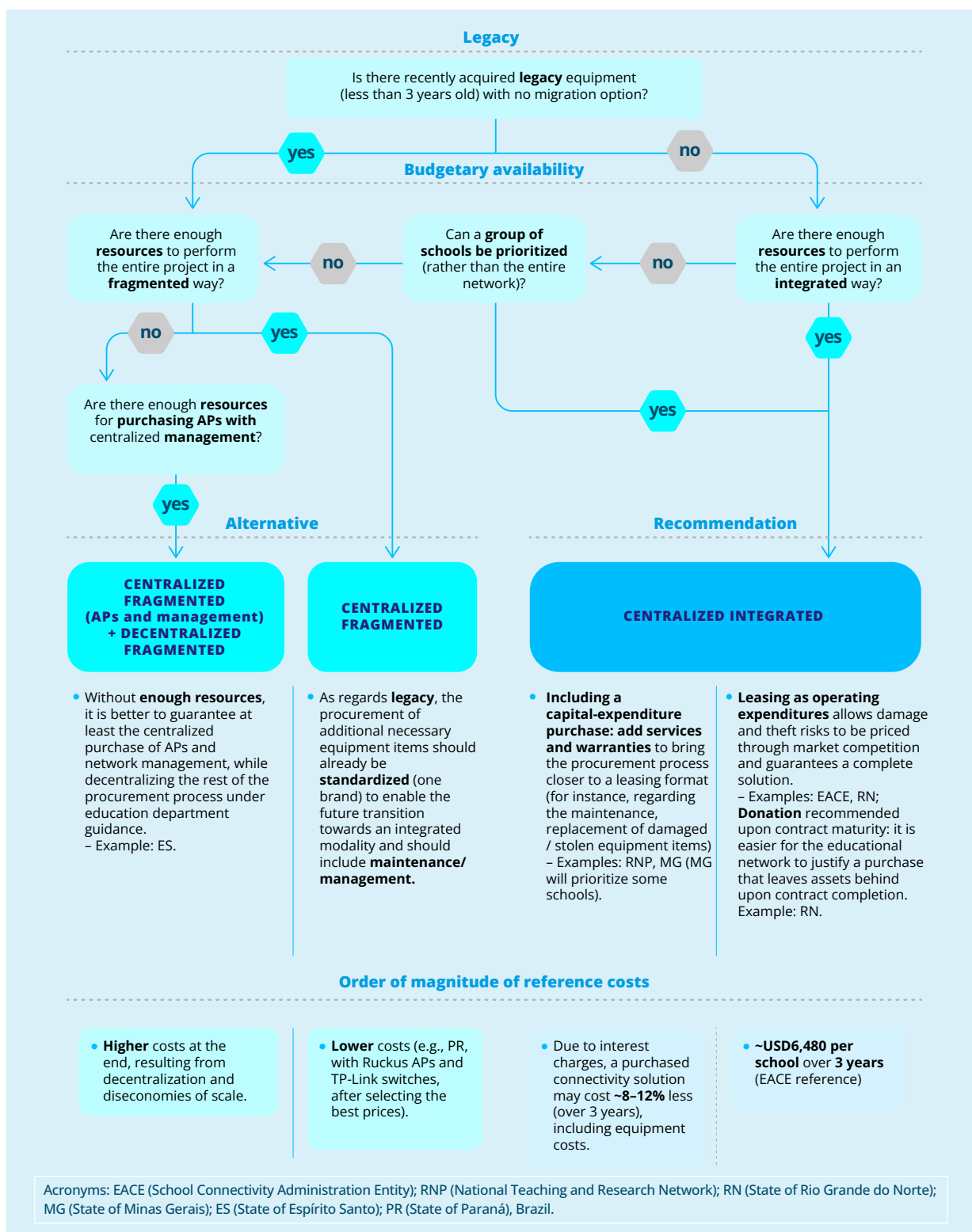
Because of their increased complexity, decentralized and centralized fragmented solutions require well-trained teams with the capacity to develop monitoring dashboards, maintain constant dialogue with schools, and solve issues together with school managers and service providers.

It is known, nonetheless, that depending on the educational network's constraints – particularly budgetary constraints – integrated centralized procurement may be unfeasible.

The table below presents a **decision-making flowchart** describing two central variables that must be considered in this process: budget and legacy.²

² In cases of recently purchased or deployed services and equipment, or in cases of previous contracts that are still valid, a new integrated contracting process may be unjustifiable, since part of the assets or services have already been purchased separately.

Table 2. Detailed decision-making flowchart



Source: Prepared by the authors based on GICE (2022).

The bidding-and-implementation process for connectivity is complex and involves specific technical and business knowledge for defining the necessary parameters, for instance, related to the technical specifications of equipment items to be purchased. For this reason, technical and business requirements should ideally be established at the national level. Doing so facilitates the procurement processes of other governmental entities, which often do not have the necessary knowledge and can draw on national definitions.

Step 3

Coordinating funding sources

Identifying and coordinating funding sources is another fundamental step in procuring connectivity for schools. Latin America and the Caribbean have a variety of funding sources, which include public education funds, sectoral telecommunication funds, regulatory incentives, obligations associated with spectrum auctions, multilateral mechanisms and, in specific cases, public-private partnerships.

Comparative experience shows that the mere existence of these mechanisms does not ensure their effectiveness. In addition to the identification of available sources, the challenge lies in designing an institutional model capable of integrating them, while aligning agendas and attaining predictability regarding the expansion and sustainability of school connectivity. The absence of adequate linkages between sectoral instruments and educational policies gives rise to program overlaps, misaligned school calendars, and administrative delays, as occurred in Costa Rica.

International experiences also show the importance of adequate tools to guarantee transparency and competitiveness in procurement processes. In the United States, the web portal Connect K-12³ brings together data on the prices of Internet services procured by school districts nationwide. The platform facilitates comparing costs, identifying providers, and supporting procurement decisions to avoid information asymmetries between public managers and providers. Similar initiatives may inspire local solutions to increase the efficiency of procurement processes in Brazil and other countries of the region.

The study “Meaningful school connectivity: An assessment of sustainable business models”⁴ systematizes key strategic actions to increase school connectivity, especially in countries with limited resources. Some of its recommendations to guide public managers in the process of developing more effective and enduring policies are presented in the table below.

³ EducationSuperHighway (n.d.).

⁴ Giga and BCG (2021).

Table 3. Recommendations for public managers on developing more effective and enduring policies

Recommendation	Strategic action	Description
1. Optimize locally	Divide the country into homogeneous areas	Adapt funding models to regional contexts, especially in countries with large income differences.
2. Combine funding models	Unite different funding sources	Apply multiple funding models to minimize funding gaps, especially in developing countries.
3. Merge electrification and connectivity	Provide electrification and Internet together	Provide electricity as well as connectivity for off-grid communities.
4. Prioritize financial sustainability	Guarantee sustainable connectivity	Ensure that schools and communities can sustainably maintain long-term connectivity.

Source: Giga and BCG (2021).

According to the study, the establishment of partnerships between local providers and large operators based on the sharing of revenues and responsibilities is an efficient alternative. Under this approach, the large player provides the main infrastructure, whereas diverse local players guarantee connectivity to schools and communities, thereby strengthening regional development and sustainable Internet use.

Step 4

Drafting a robust contract

The final step in procuring connectivity is to translate all previous decisions into a concrete agreement, through bidding processes that determine who will be connected, under which conditions, for how long, and based on which quality, monitoring, and pedagogical parameters.

It is at this final step that all previous decisions become binding: when the decisions about who is procuring, with which resources, and under which conditions are translated into clauses, service obligations, penalties, and management mechanisms.

The seven cases analyzed in Part 2 of this report illustrate different ways of structuring such a process: centralized procurement by zones, framework agreements, agreements with state companies, decentralized frameworks, and hybrid models that combine sectoral telecommunication instruments and educational resources.

Despite differences among institutional models, comparative evidence shows that robust contracts usually share three main features:

- > **Predictability:** Clear procurement cycles, stable rules, and progressive coverage mechanisms that facilitate planning expansion processes and avoid emergency renewals or indefinite extensions;
- > **Flexibility:** The capacity to adapt requirements and technologies to diverse territorial realities by adjusting batches, combining solutions (fiber-optic, radio, satellite), and correcting parameters⁵ in the absence of market response;
- > **Sustainability:** Stable funding sources, coordination among different funds for education and telecommunications, as well as incentives that align technical performance, service continuity, and the educational use of connectivity.

⁵ To learn more about different Wi-Fi solutions, selecting the most adequate options, and understanding quality indicators and connectivity parameters, see “Connectivity planning: seven steps to ensure adequate Wi-Fi connection for public schools” (Pérez Alfaro et al., forthcoming).

Part 2

International
experiences: what can be
learned from them?



The following pages present connectivity procurement cases from seven Latin American and Caribbean countries. Their descriptions should not be seen as models of success but, instead, as comparative public policy experiences that enable identifying strong points, constraints, and relevant lessons learned for the region. Understanding the processes adopted in each country may reduce the likelihood of repeating mistakes in future initiatives:

- 1 Brazil** stands out for its progressive integration of instruments and regulations;
- 2 Chile** demonstrates the potential and limitations of centralized and zoned bidding processes;
- 3 Colombia** brings to light the risks of fragmented systems;
- 4 Costa Rica** evinces tensions among regulatory bodies, ministries, and sectoral funds;
- 5 Peru** demonstrates the risks of failed or canceled bidding processes, as well as of relying on bridge contracts;
- 6 Suriname** reveals the extent to which contractual design can become captive to an administrative logic and fail to effectively serve classrooms;
- 7 Uruguay** exemplifies a specialized agency that integrates connectivity and educational uses, while facing replicability challenges.



1. Brazil

a decentralized system with coordinated federal initiatives

Brazil has approximately 179,000 schools, including almost 138,000 public schools (109,000 municipal, 28,000 state, and 700 federal); the remainder are private⁶. Even though 72.9% of the country's public schools meet adequate connectivity standards,⁷ relevant challenges remain in terms of quality, service stability, and availability of internal Wi-Fi networks.

The country's educational system is highly decentralized: states and municipalities are responsible for providing basic education, including infrastructure and related services. Connectivity procurement is conducted in a decentralized way by each state or municipal government, which selects the services to be provided to the educational network under its purview.

⁶ INEP (2025).

⁷ Ministério da Educação do Brasil (MEC). (2025).

As regards funding sources, subnational governments rely on their own budgets and federal transfers – in particular, through the Fund for Maintenance and Development of Basic Education (FUNDEB).

Thus, in operational terms, the expansion of school connectivity in Brazil is based on a diversity of coexisting and overlapping procurement and funding frameworks. **In recent years, the federal government has developed initiatives aimed at expanding and providing funds for school connectivity, such as:**

- > **Telecommunication Services Universalization Fund (FUST):** Redesigned in 2020⁸ during the COVID-19 pandemic, the FUST started assigning funds to school connectivity projects. Among different types of resources, it draws on reimbursable and non-reimbursable funding lines of the Brazilian Development Bank (BNDES);
- > **Connected Education Innovation Policy (PIEC):** The PIEC was converted into a state policy in 2021⁹ with the objectives of supporting the universalization of high-speed Internet access and fostering the pedagogical use of digital technologies in basic education. Every year, a set of criteria is established for the transfer of resources to state and municipal departments of education;
- > **Aprender Conectado:** An initiative established to bring high-speed Internet to public schools using funds from the 2021 5G spectrum auction led by the National Telecommunications Agency (ANATEL), which incorporated connectivity commitments for educational institutions. The School Connectivity Project Monitoring Group (GAPE), composed of federal agencies and operator representatives, monitors compliance with these commitments.¹⁰

A notable feature of these initiatives is the provision of connectivity to schools located in rural and hard-to-reach zones, as well as the provision of support to internal network infrastructure.

To structure and coordinate federal, state, and municipal initiatives through a common framework, in 2023, the federal government launched the National Strategy for Connected Schools (ENEC).¹¹ The ENEC currently coordinates and monitors the initiatives above (FUST, PIEC, and *Aprender Conectado*). It defines minimum connectivity standards for educational institutions, which cover not only access speed but also stability, the availability of internal wireless networks, equipment, and information security. In 2025, the Connected Schools Indicator (INEC) was launched as a monitoring mechanism that classifies all Brazilian public schools according to their connectivity levels, with categories ranging from “adequate access for educational purposes” to “insufficient connectivity.”¹²

Despite these advances, the implementation of connectivity faces significant challenges. The existing diversity of contractual frameworks has enabled the large-scale mobilization of funds, but also increased the complexity of coordinating, monitoring, and ensuring the sustainability of implemented solutions.

The execution of federal initiatives depends on the adherence of states and municipalities, as well as on their capacity to contribute funds and sustain actions, and on effective coordination among multiple actors. Furthermore, the coexistence of heterogeneous instruments, subsidies, funding mechanisms, regulatory obligations, and decentralized procurement forms adds complexity to the planning and long-term sustainability of adopted interventions.

⁸ Brasil (2020).

⁹ Brasil (2021).

¹⁰ Anatel (n.d.)

¹¹ Brasil (2023).

¹² Ministério da Educação do Brasil (MEC). (2025).

KEY LESSON: Brazil's case shows that in federal systems with decentralized provision, expanding school connectivity requires not only funds and multiple policy instruments, but also robust intergovernmental coordination mechanisms. The creation of a common national strategy (the ENEC) enabled structuring initiatives that were previously dispersed, as well as the establishment of shared standards. However, the model's effectiveness crucially depends on the subnational governments' capacity to implement and maintain the adopted solutions over time. Experience suggests that without clear coordination across levels of government and without adequate incentives for local sustainability, connectivity runs the risk of progressing unevenly and perpetuating territorial gaps in terms of access and pedagogical use of connectivity services.

2. Chile

Centralized procurement with support for schools to deploy internal networks

Chile has a centralized model that provides connectivity to public and subsidized private educational institutions.¹³ Its main instrument is a national public procurement process named "Connectivity for Education."

Bidding procedures are designed by the Undersecretariat of Telecommunications (Subtel) using the country's Telecommunications Development Fund (FDT)¹⁴ and implemented in coordination with the Ministry of Education (MINEDUC) through an institutional cooperation agreement. **Each of these bodies has the following responsibilities:**

- > **Subtel acts as the initiative's executing body.** It is responsible for the contractual relationships with service providers and, as the sector regulator, it has authority to supervise the provision of services and apply sanctions in case of non-compliance. Unlike other programs for the provision of public services, bidding procedures are not governed by the Chilean State's public procurement system (ChileCompra), but by the FDT. In practice, instead of traditional service procurement processes, this model corresponds to an allocation of subsidies for the provision of telecommunication services. For this reason, it is subject to Chile's General Law on Telecommunications (LGT) and its complementary regulations.

¹³ Privately managed schools participating in the educational system, funded with public resources through the provision of subsidies per student. They may be eligible for public education connectivity initiatives based on subsidy frameworks for the provision of services.

¹⁴ The FDT is a pro-development financial instrument aimed at increasing the coverage of telecommunication services, especially in rural and remote areas.

> *The MINEDUC defines the educational policy and transfers the service's funds to Subtel.*¹⁵ The MINEDUC also supports schools in their registration process, which occurs concurrently with the bidding procedures, by contacting them and guiding them through the inclusion process. The registration process is important not only as a selection mechanism, but also because it encourages the participation of school administrators, who are responsible for guaranteeing the necessary infrastructural conditions for the service's operations.

The first bidding procedure of the program “Connectivity for Education” was launched in 2011 with an estimated annual budget of USD 13 million.¹⁶ Subtel selected eight companies to provide the services, which were to cover 9,395 schools (nearly 83% of the total number of schools and 98% of all enrolled students). The initially scheduled service period was 24 months, but this period was extended without the need to renegotiate prices.

In 2020, the initiative “Connectivity for Education 2030” was launched, with an implementation period running until 2029. In this edition, all 10,086 public and subsidized private schools nationwide¹⁷ were grouped into zones where bids could be submitted independently. The technical specifications established a minimum download bandwidth of 100 kbps per student, to be gradually updated until reaching 500 kbps per student in 2025 and 1 Mbps¹⁸ by the end of the mandatory period in 2029. Contracts included a set of monitoring obligations, such as the production of periodic reports to be submitted by providers to Subtel on the performance of services. In case of non-compliance with the applicable quality standards – to be measured according to indicators such as actual bandwidth – a discount would be applied by Subtel to the monthly payment based on these reports. The following five bidding procedures were conducted:

- i) 2020: Concessions were granted to nine companies covering 54 zones and a total of 8,355 schools (approximately 80% of all schools and 90% of all enrolled students);
- ii) 2021: Bidding notice covering 15 areas (1,480 schools), resulting in three awarded areas;
- iii) 2022: Bidding notice covering 12 areas (1,014 schools), resulting in eight awarded areas;
- iv) 2024: Bidding notice covering four areas declared vacant in the previous processes, as well as one area whose awarded bidder had withdrawn its proposal, resulting in three awarded areas;
- v) 2025: Bidding notice covering the Magallanes Region, which remained vacant – this process was ongoing at the time of drafting this report.

An essential feature of these procedures is that they enable the inclusion of additional schools in the areas covered by contracts. For this reason, the MINEDUC continued to conduct selection processes in later years. Consequently, almost 91% of all Chilean schools are currently covered by one of these initiatives. Some schools continued to be covered by the 2011 procedures, whose contracts were extended until 2025.

¹⁵ Subtel (2020).

¹⁶ In 2011, Subtel and the MINEDUC provided equal funding to the project, whereas MINEDUC transferred to Subtel 100% of the resources to fund services under the program “Connectivity for Education 2030” (2020) (Mineduc, n.d.).

¹⁷ All primary and secondary schools with more than five students nationwide were included, except correctional schools. In the case of schools with five or fewer students, the initiative “Last Mile Plan” was developed with other public and private organizations.

¹⁸ See the report “Connectivity planning: seven steps to ensure adequate Wi-Fi connection for public schools” for additional information on how to define connectivity parameters to ensure Internet availability in support of pedagogical activities at schools.

As to the internal distribution of connectivity at schools, responsibility lies with the school managers.¹⁹ To support this process, the MINEDUC developed guidance materials and training programs as means to strengthen capacities in terms of digital infrastructure planning and management. In 2024, the “Digital Infrastructure Standard and IT Coordination”²⁰ was established to guide schools in the work of managing digital infrastructure and coordinating IT activities, including internal network maintenance. In the following year, the project “Connected Classrooms”²¹ was launched to guide managers and schools in relation to planning and implementing their internal networks, to enable the pedagogical use of connectivity in classrooms and other educational spaces. This initiative was expected to benefit 700 schools (approximately 7% of all institutions envisaged by the plan “Connectivity for Education 2030”).

KEY LESSON: The Chilean case indicates that a centralized model for the provision of school connectivity, based on subsidies and robust technical regulations, enables high coverage levels and the establishment of clear and gradually increasing service quality standards. However, the system’s sophistication and multiple bidding and re-bidding processes significantly increase its operational complexity and may hinder the timely adaptation of the model to technological, cost, or demand changes. Moreover, the institutional separation between the provision of access and activation of internal networks at schools limits the capacity to guarantee the educational use of connectivity.

¹⁹ Municipalities or Local Public Services in Education (SLEP), according to the administrative dependency level of each school.

²⁰ Mineduc (2024).

²¹ Mineduc (2025).

3.

Colombia

A decentralized system with fragmentation and duplication risks

Colombia's case features a highly decentralized distribution of responsibilities between the national level and territorial entities. Different initiatives are in place to provide Internet access to the approximately 44,000 schools of the country.

At the national level, the Ministry of National Education (MEN) is responsible for the country's School Connectivity Strategy²² and makes annual transfers to 97 education departments categorized as certified territorial entities (ETCs), so that they may procure Internet access services, subject to the ministry's prior technical approval. The ministry provides general technical advice, issues technical guidelines on decentralized procurement processes, and establishes eligibility criteria for schools, to avoid duplications in the provision of services. It also promotes the country's framework agreement²³ on public procurement²⁴ for the procurement of these services. However, in practice, ETCs may justify connectivity contracting procedures outside the framework agreement.

At the regional level, ETCs, using their own resources or funds from other sources (such as tax mechanisms to cover infrastructure costs), may directly procure Internet access services for schools under their purview. Such procurement processes must comply with the technical guidelines issued by the MEN and be reported to the central body. But in practice, some contracts are not reported, generating duplication risks in the provision of services. Moreover, procurement processes are often affected by administrative changes in territorial authorities, leading to service interruptions and the eventual need to renew such processes. It is important to highlight that ETCs with diverse funding sources may use funds not only to procure services, but also to invest in infrastructure. Corporate social responsibility initiatives aimed at school connectivity are also in place. In these cases, the MEN contacts local authorities to avoid overlapping efforts.

A third initiative is being executed by the Ministry of Information Technologies and Communications (MINTIC), which develops projects to expand connectivity in rural and remote areas. Even though these projects were not conceived as educational policies in a strict sense, they benefit the schools located in these areas. Such initiatives include radiofrequency spectrum auction coverage obligations. In 2023, four 3,500 MHz spectrum blocks were awarded for 5G,

²² MEN (n.d.).

²³ Colombia Compra Eficiente (n.d.).

²⁴ MEN (n.d.).

incorporating 20-year fiber-optic connectivity obligations for 1,191 schools.²⁵ The MINTIC is also implementing the project “Digital Centers” to bring connectivity through free Wi-Fi zones to rural and remote population centers, establishing access points for educational institutions and the general public.²⁶

Although these diverse initiatives have expanded Internet access coverage, the internal connectivity distribution at educational institutions and its effective pedagogical use fall to the ETCs and schools themselves, and a specific national initiative for the provision of technical support is not yet available.

KEY LESSON: The Colombian case shows that in highly decentralized educational systems, the expansion of school connectivity tends to rely on a set of concurrent instruments that include national transfers, territorial contracts, and non-educational sectoral projects. This architecture enables flexibility and adaptability to heterogeneous local contexts, but also generates fragmentation, duplication, and discontinuity risks for the provision of services in the face of administrative changes at the territorial level. Further, the absence of a specific national instrument to enable internal networks and the pedagogical use of connectivity limits the educational system’s capacity to convert Internet access into homogeneous educational results, a reality that reinforces existing gaps among territories with different administrative capacities.

²⁵ MINTIC (n.d.-a).

²⁶ MINTIC (n.d.-b).

4.

Costa Rica

Governance challenges regarding responsible public bodies

Costa Rica's educational connectivity procurement mechanism consists of centralized processes at the national level. These processes are led by two agencies with concurrent duties: the Superintendence of Telecommunications (SUTEL) and the Ministry of Public Education (MEP).

Under the country's National Telecommunications Development Plan (PNDT) 2015-2021, the Ministry of Science, Innovation, Technology, and Telecommunications (MICITT) incorporated the Bicentennial Educational Network (REB) to provide connectivity to public schools via broadband Internet access. Initially, the plan set out to benefit approximately 1,500 schools, but it was updated in 2021, and its scope was expanded to cover 4,514 schools. Under this plan, SUTEL was responsible for providing connectivity to 2,375 schools (53% of the plan's schools) with National Telecommunications Fund (FONATEL) resources.²⁷ The MEP, in turn, was responsible for 2,139 schools (47% of the total). Nonetheless, the implementation of PNDT 2015-2021 faced diverse challenges, including the COVID-19 pandemic and bidding-procedure issues.

Subsequently, the National Telecommunications Development Plan (PNDT) 2022-2027 was presented and reaffirmed the REB's implementation as a strategic action to provide connectivity to all schools nationwide by 2027. Yet, the available monitoring reports to date describe limited progress, which can be ascribed, among other factors, to protracted inter-institutional negotiations and delays in the establishment of an operational action plan. Only in 2024 was a joint action plan between the MICITT, the MEP, and SUTEL signed with the objectives of benefiting 1,456 schools and prioritizing schools located in remote areas.

According to the monitoring data published by SUTEL, 682 educational institutions had connectivity (mostly via fiber-optics) and an implemented internal network, benefiting 162,210 students.²⁸ However, such progress only represents a fraction of the total number of educational institutions around the country.

Meanwhile, the MEP launched the initiative Educational Connectivity Route 2022-2026 and extended the scope of its agreement signed with the Costa Rican Electricity Institute (ICE), a state electricity and telecommunications company.²⁹ This arrangement facilitated advancing connectivity for schools: in October 2024, 92% of all schools were connected, including 1,158 schools with satellite link, according to the MEP. But having a connection does not necessarily include

²⁷ Funded by resources from authorizations and licenses, fines, returns on its funds, and operator contributions, as annually defined by SUTEL.

²⁸ SUTEL (2024).

²⁹ MEP (2022).

the implementation of an internal network – a fact that limits the pedagogical use of connectivity. Moreover, the list of priority schools and selection criteria were not always disclosed.

In general, despite the declared efforts of Costa Rican authorities in providing school connectivity, the available data depicts uneven progress and limited pedagogical use of implemented services.

KEY LESSON: The Costa Rican case evinces that, even in a centralized-procurement context, the lack of clarity on respective responsibilities and the absence of inter-agency governance may hinder the effective implementation of school connectivity. The country's experience suggests that educational connectivity depends not only on having funds or centralized procurement processes, but also on a clear governance architecture capable of effectively interconnecting the dimensions of planning, execution, and pedagogical use of procured services.



5. Peru

Centralized procurement with planning challenges

The provision of educational connectivity in Peru has been structured in recent years mostly through centralized bidding procedures.

A bidding notice was launched in 2018 with the title “Connectivity Services for Schools Nationwide,” covering 1,837 schools structured into four territory-based groups, and including 1,701 schools which had until then been served by Telefónica Perú. Viettel Perú won all four groups for USD 27 million. The initial contract was signed for a period of 36 months and later extended for 12 months through a supplementary contract worth USD 6.2 million (this complementary sum was based on the original contract's sum and did not correspond to price improvements following the market's evolution).

Another national-level process was implemented in 2021 through a simplified bidding notice entitled “Procurement of Internet Connectivity Services for Schools Nationwide,”³⁰ to provide connectivity to 1,303 secondary schools that had until then been served by CenturyLink Peru (formerly Level 3 Peru). The contract was awarded to Sencinet Latam Peru (formerly BT Latam Peru), for USD 19.5 million with a 36-month term ending in 2025.

Given the progressive expiry of active national contracts, the Ministry of Education (MINEDU) launched another bidding notice to ensure the continuity of services and extend coverage to additional educational institutions. But this bidding process was suspended for budgetary reasons. In view of the risk of disruption to Internet connectivity services, a transfer of funds was authorized³¹ to the executing units of regional governments and to the government of the Metropolitan Municipality of Lima, to enable the direct procurement of local Internet services. Local Educational Management Units (UGELs) subsequently received a technical guide to assist them in procuring these services locally.

Since these measures did not eliminate the possibility of service disruption nationwide, in April 2025 the MINEDU signed a direct contract with Viettel Perú for the provision of connectivity services to 5,221 schools around the country, citing supply shortages.³² The contract, with a 15-month duration, provides for a range of technologies including fiber-optic, radio, or satellite connectivity, depending on the local availability, and defines different speeds (30, 60, or 100 Mbps, according to the MINEDU’s classification of each educational institution).³³ The contract does not cover the implementation of internal Wi-Fi networks at schools.

Simultaneously, the Ministry of Transport and Communications (MTC) is developing diverse initiatives to deploy telecommunications infrastructure in rural areas. These projects incorporate the provision of free Internet services to schools, for instance, through obligations associated with spectrum auctions, as well as under the National Telecommunications Program (PRONATEL),³⁴ with the commitment to extend coverage to 6,257 locations. There is an effort to coordinate between the MINEDU and the MTC to avoid serving the same schools.

KEY LESSON: The Peruvian case demonstrates the limitations of a highly centralized educational connectivity model when it is unable to sustain medium-term financial and contractual planning. The succession of bridge contracts, extensions, and exceptional contracting mechanisms evinces a high reliance on temporary solutions which, despite avoiding service disruption, reduce the system’s capacity to capture market efficiencies and consolidate a stable service framework.

³⁰ MINEDU (2021).

³¹ MINEDU (2023).

³² Peru’s regulations on public bidding authorize conducting direct procurement processes when the absence of an essential good or service – in this case, Internet connectivity – affects the continuity of a public service.

³³ To learn more about connectivity parameters, see the report “Connectivity planning: seven steps to ensure adequate Wi-Fi connection for public schools” (Pérez Alfaro et al., forthcoming).

³⁴ Linked to the Ministry of Transport and Communications. It is responsible for operating the National Fiber-Optic Network and executing the expansion of connectivity to rural and hard-to-reach zones.

6.

Suriname

Connectivity only for administrative tasks

Suriname's educational system operates in a highly centralized way. The provision of connectivity to schools is directly contracted by the State through an agreement with the state company Telesur, which is the only fixed-line telecommunications operator and main provider of Internet services nationwide. The Ministry of Education, Science and Culture (MINOWC), the Ministry of Transport, Communications and Tourism (TCT), and the Ministry of Finance and Planning³⁵ participate in this process and perform different roles in the service's definition, funding, and management.³⁶

A regulatory agreement was signed in 2021 between Telesur, the Ministry of Finance and Planning, and the TCT for procuring and managing connectivity services. This agreement has a broad scope: it is not limited to educational institutions and covers other public services. Under its framework, the Ministry of Finance is responsible for negotiating prices with Telesur, whereas the MINOWC defines service features for schools, including a standard download speed of 10 Mbps. Service requests are recorded through manual rather than digital procedures, leading to administrative delays that may extend for over one month before the service becomes operative.

The connectivity services provided by Telesur consist of one Internet connection located at a single point inside each educational institution – as a rule, the principal's office or administrative office. The company neither provides nor deploys an internal network or equipment for classroom use. Consequently, connectivity is designed mostly for administrative functions, instead of as an educational input.³⁷

Furthermore, the agreement signed with Telesur is based on the gradual expansion of the existing terrestrial infrastructure. In practice, this means that connectivity is primarily implemented in areas where infrastructure is already available, while Community Education Centers located in rural or remote areas face greater difficulties in obtaining access. Although Telesur provides wireless services, the current agreement only covers the provision of fixed-line services to schools, which limits its reach in contexts of greater geographical dispersion.

According to official MINOWC data, in 2024, approximately 68% of all public schools had Internet access, which reflects significant gaps both in terms of coverage and basic access conditions.³⁸

³⁵ Ministry of Finance and Planning – in Dutch, “Ministerie van Financiën en Planning.”

³⁶ Telesur, Ministerie van Financiën en Planning, and Ministerie van Transport, Communicatie en Toerisme (TCT) (2021).

³⁷ To understand the elements that compose a complete Wi-Fi network solution with a wired connection, see Step 4 of the report “Connectivity planning: seven steps to ensure adequate Wi-Fi connection for public schools” (Pérez Alfaro et al., forthcoming).

³⁸ MINOWC (2024).

Until 2021, educational institutions were not allowed to procure connectivity services independently. Later, the government allowed Community Education Centers to submit direct requests but neither altered its centralized system nor authorized direct contracting with Telesur. In practice, this meant that operational service responsibilities fell on school principals, including price control and the management of eventual interruptions, but without the technical tools or information systems to facilitate this task.

A critical aspect of Suriname's model is the lack of systematic public information about the status of connectivity at schools. There is no consolidated data with details on the condition of facilities, service quality, or the effective use of connectivity. Regular monitoring data on services provided by Telesur is not available either. Because Telesur is a state company, the actual costs of its services and any cross-subsidies are not clear, and its financial difficulties generate uncertainties regarding the system's sustainability.

In 2024, a Wi-Fi pilot project was implemented in six secondary schools to enable the educational use of connectivity by students. In 2025, the government expressed its intention to adopt a model that would progressively provide stable connectivity to schools for educational purposes, starting with secondary education. However, at the time of this analysis, this transition was at an early stage and did not yet have a clearly defined national strategy.

KEY LESSON: The case of Suriname illustrates a centralized school connectivity model focused on school administration. Despite having enabled basic Internet access to a significant number of schools, the use of connectivity for pedagogical aims is constrained by the lack of internal networks, quality standards on educational uses, and systematic monitoring mechanisms.

7.

Uruguay

A specialized agency to support digital transformation in education

Uruguay's case is emblematic in Latin America, due to its comprehensive and centralized approach to the incorporation of digital technologies into education. Unlike other countries, connectivity is provided to Uruguayan schools by a specialized public entity, Plan Ceibal, in agreement with the National Telecommunications Administration (Antel), and within a broader strategy to promote digital transformation in the educational system.

Plan Ceibal was created in 2007,³⁹ in the context of the presidential project Program for Equity in Digital Information Access (PEAID).⁴⁰ Inspired by the One Laptop per Child initiative, it was conceived as an inclusion and equity policy to support educational policies through the universalization of access to digital technologies. Since its implementation, all students entering the public education system have access to a device for personal use and free Internet provided by the school.

Over time, Plan Ceibal evolved towards a comprehensive institutional model that combines the provision of connectivity with educational platforms, digital resources, teacher training programs, and content production. Currently, Plan Ceibal positions itself as an educational innovation center for digital technologies, which promotes the integration of technology into educational processes, as well as initiatives focused on inclusiveness and the development of 21st-century skills.

As regards governance, Plan Ceibal is defined as a non-state public legal entity subordinated to the Presidency of the Republic, whose management is coordinated with the educational system through the Ministry of Education and Culture (MEC) and the National Administration of Public Education (ANEP). Ceibal's Board of Directors comprises representatives of the MEC, ANEP, and Ministry of Economy and Finance (MEF).⁴¹ The institution has approximately 500 employees and an annual budget of nearly USD 80 million.⁴²

Connectivity is provided to schools through cooperation agreements signed between Ceibal and Antel – the state company that provides telecommunication services nationwide and performs a leading role in the fixed broadband market. Antel has a dedicated educational connectivity team, which continually interacts with Ceibal and Uruguayan schools.

³⁹ Originally named "Basic IT Educative Connectivity for Online Learning."

⁴⁰ Uruguay (2007).

⁴¹ Uruguay (2010).

⁴² Plan Ceibal (2024).

Financially, the Antel agreement does not stipulate market prices per educational institution. Instead, it establishes symbolic prices that do not necessarily reflect the actual service costs. This approach involved a significant investment in infrastructure by Antel, which goes beyond the educational sector and contributes to the implementation of connectivity networks for households, companies, and other public services. The fact that it is a state company facilitates inter-institutional coordination, as well as a more agile use of funds for the implementation of infrastructure.

The connectivity standards defined by the Ceibal Observatory distinguish between different access types including fixed broadband (fiber-optic and copper pair), mobile broadband (LTE), and radio links with speeds between 10/2 Mbps and 160/40 Mbps, depending on the connection type and geographical location. The framework agreement signed with Antel includes flexible clauses to enable technological improvements and updated service features through amendments. Migration processes from mobile broadband or radio link solutions to fiber-optic technology are underway, whenever the enabling infrastructure conditions are in place.

Educational connectivity is defined by Ceibal as an ecosystem of solutions that is not restricted to Internet access, but also comprises digital platforms, devices, content, and technical support. Ceibal teams manage the schools' internal networks. The internal network project is centrally conducted by Ceibal, whereas deployment can be carried out by Ceibal technicians or specialized companies procured through public bidding notices. Ceibal supervises, approves, and maintains these networks through its continuous monitoring of services and capacity for rapid fault response. In dealing with outsourced tasks, Ceibal manages bidding notices and maintains a registry of accredited providers.⁴³

In 2023, Plan Ceibal achieved its goal of connecting 100% of Uruguayan public schools through broadband and internal Wi-Fi networks, to cover an estimated 3,008 schools and 778,400 users. In addition, 66% of all schools had fiber-optic Internet access, benefiting 98% of all students. Progress has also been noted in the provision of mobile connectivity to rural educational centers, with the objective of reducing territorial disparities.⁴⁴

KEY LESSON: The Uruguayan case shows that the provision of school connectivity can be successfully integrated into a broader strategy of digital transformation of education through a specialized entity with a clear mandate, technical capacity, and institutional stability. The centralization of functions by Ceibal enabled the coherent coordination of the provision of connectivity, together with devices, platforms, and pedagogical support, thereby reducing the fragmentation noted in other contexts. At the same time, this model hinges on enabling conditions such as the existence of a dominant state operator and high levels of inter-institutional coordination. These conditions may limit its direct replicability, but the case still offers relevant lessons regarding the importance of functional integration and the institutional continuity of educational connectivity policies.

⁴³ Plan Ceibal (2024).

⁴⁴ Observatorio Ceibal (n.d.).

Conclusion



This report examined the structure of different ways of procuring educational connectivity for schools. It considered the context of Latin American and Caribbean countries, as well as the final objectives of effective procurement: expanding school connectivity, including schools located in remote areas, and enabling student access to digital educational activities based on minimum access and quality parameters.

Part 1 analyzed different procurement models. Its general recommendation is that connectivity procurement be conducted, whenever possible, in a centralized and integrated way. In other words, a central governmental body should coordinate procurement processes for all schools, and a single provider should deliver the complete solution. Part 1 also underscored the importance of identifying and integrating funding sources, while developing robust contracts to enable predictability, flexibility, and sustainability.

When well structured, centralized and integrated models offer increased control, standardization, and economies of scale. For these reasons, they are the most recommended option for large educational networks. As to Internet connectivity services, national or subnational public tenders or procurement processes seem to be more efficient than any other procurement mechanism conducted by individual schools. Demand aggregation, the possibility of combining high- and low-cost schools, lower administrative costs, and enhanced management capacity demonstrate the advantages of nationwide procurement mechanisms.

Part 2, in turn, analyzed seven practical cases of Latin American and Caribbean countries (Brazil, Chile, Colombia, Costa Rica, Peru, Suriname, and Uruguay), showing that they can have different contexts, regulations, and governance, leading to specific procurement modalities.

These cases underscored the following common challenges, which may serve as lessons learned for guiding future experiences:

- > ***Governance and institutional coordination:*** the lack of clarity in assigning responsibilities among agencies and governmental levels is one of the main obstacles to the effective implementation of connectivity, in both centralized and decentralized procurement formats. Institutional fragmentation can generate duplications, discontinuities, and difficulties related to the accountability of specific actors;
- > ***Territorial inequalities:*** in decentralized systems, connectivity expansions tend to reproduce and even deepen disparities among territories with different local management capacities;
- > ***The gap between access and pedagogical use:*** different cases show that the ability to ensure Internet connectivity for schools is not automatically converted into educational use. The lack of internal networks (intra-school infrastructure), pedagogical standards, and teaching support can maintain educational gaps even where Internet coverage has advanced;
- > ***Robust technical standards are necessary, but not sufficient:*** well-defined quality requirements enable enhanced coverage, but the procurement framework's sophistication may generate excessive operational complexity and hinder swift adaptations;
- > ***Monitoring:*** monitoring of contractual compliance is largely reactive, relying on complaints and providers' self-reporting obligations rather than systematic remote monitoring. A notable exception is Uruguay, where the provision of connectivity to schools across the country is systematically monitored;

- > ***Institutional continuity:*** administrative changes, especially at the subnational level, appear as a risk factor for the continuity of policies, which reinforces the relevance of stable institutional arrangements in the medium and long term.



Based on the lessons and recommendations presented in this report, we hope that governments and institutions across Latin America and the Caribbean may be better prepared to overcome technical and financial challenges while procuring solutions that bolster meaningful connectivity, educational equity, and a lasting impact on the quality of education. Internet connectivity at schools is more than a tool: it is a fundamental right that prepares students for the future.

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