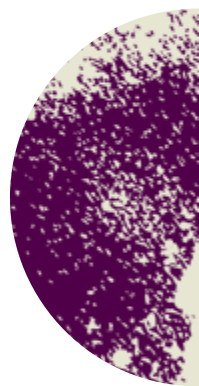




8

**Access to quality
services for
comprehensive
rural development**



Key messages

Rural areas are characterized by low population density and high geographic dispersion, which limits economies of scale and raises service provision costs.

Access to water and sanitation in rural Latin America and the Caribbean (LAC) has increased over recent decades, but service remains far from safe and adequate—as required by SDG goal No.6—particularly in sanitation.

In most countries, nearly the entire rural population now has access to electricity. The main challenge is ensuring service quality by reducing the frequency and duration of power outages.

Sixty-six percent of the rural population in LAC lives within 2 km of a road, but this share drops to 40% when considering only paved roads.

Only half of rural households have internet access, and their connection speeds lag far behind those in urban households. Even where networks or new technologies are available, affordability—both of the service and the devices— remains the main barrier.

Rural areas have fewer health and education facilities, especially those offering higher-complexity services. As a result, residents must travel long distances to access them. Existing facilities also tend to have fewer resources, leading to significant gaps in both physical infrastructure and qualified personnel.



Thirty-three percent of the rural population still lacks access to formal financial services. The main barriers are distance to service points and the costs of becoming banked. Some semiformal instruments—such as savings and credit associations—have high female participation and reduce vulnerabilities, while mobile money helps overcome distance and cost barriers.



Closing rural service gaps requires action on two fronts. On the supply side, it is necessary to promote demand aggregation to ensure financial viability and encourage private participation, alongside decentralized and community-based solutions and the use of digital technologies to expand coverage. On the demand side, affordability must be ensured through subsidies and sustainable tariffs, and digital skills strengthened to enable effective service use.

Access to quality services for comprehensive rural development¹

Introduction

Access to quality infrastructure and basic services in rural localities of Latin America and the Caribbean (LAC) is a fundamental pillar for both household well-being and the productive development of these territories. Unlike urban areas, rural regions have low population density and high geographic dispersion, which limit economies of scale and raise service provision costs. This challenge is further compounded by structural transformation and demographic transition.

It is also essential to understand that service provision operates as an interconnected system in which deficits in one area constrain access to—and the effectiveness of—others. Many services require complementary infrastructure (for example, internet access is not possible without electricity), and limitations affect not only coverage but also service quality. When infrastructure and services lack sufficient quality, effective use becomes restricted and the social benefits diminish.

These conditions reduce profitability and limit the attractiveness of private investment, even when the social benefits of access to these services are substantial. The gap between private returns and social benefits makes the state a critical actor in guaranteeing the provision of and access to basic services and infrastructure. Its role extends beyond construction or direct provision to include generating incentives to expand coverage, regulate quality, and coordinate the multiple actors (different levels of government, the private sector, and civil society) involved in planning, financing, and operating services. The state also plays a central role in policies that increase service demand, such as pricing regulations or subsidies, information initiatives, and training in financial literacy.

¹ This chapter was written by Florencia Buccari and Tatiana Rosá with research assistance from Leandro Martínez Villa.

This chapter analyzes access to and the quality of rural infrastructure and services that directly affect household well-being and the productivity of economic activities. The discussion is organized into three interrelated blocks. The first examines household access to drinking water, sanitation, and electricity. The second block examines physical and digital connectivity. Finally, the chapter focuses on education, health, and financial services. Although coverage gaps have narrowed significantly in many areas—with the exception of sanitation—quality gaps persist and remain a major challenge for rural development in the region.

This chapter must be interpreted with the understanding that accurately measuring these gaps in rural areas is difficult. Many statistics do

not distinguish sufficiently between urban and rural settings, and when municipalities grow and add services, they are often reclassified as urban (see Chapter 6), which may underestimate progress in rural localities. In addition, available data show who has access and at what quality, but rarely identify whether gaps stem primarily from supply constraints (for example, difficulties and costs of deploying and operating networks) or demand-side constraints (for example, cultural or linguistic barriers or unaffordable prices). To mitigate these limitations, the chapter integrates diverse sources with household surveys and, where evidence allows, distinguishes between supply- and demand-side issues, as each assessment entails different policy instruments.

Water, sanitation, and electricity

Household access to drinking water and adequate sanitation services is essential for health, productivity, and equity.² These services reduce the spread of disease, improve quality of life, and have positive effects on gender equity and social inclusion (Devoto et al., 2012; Galiani et al., 2005; Hammer & Spears, 2016; Spears, 2020). Recognizing their importance, the United Nations declared them human rights in 2010, and they are at the core of SDG 6.

Electricity is also a fundamental enabling input for the functioning of other services—such as health, education, and telecommunications—and is part of SDG 7. A meta-analysis of 50 studies by Jiménez Mori (2017) estimates that access to electricity in

rural households has increased school enrollment, employment, and income. Moreover, the expansion of electricity access since the 1970s has been associated with a decline in the use of polluting household fuels (such as firewood, coal, and kerosene) across LAC over the last half century, although in 2021 these fuels continued to be used more in rural households (31% of residential energy consumption) than in urban ones (10%) (Allub et al., 2024). Reduced reliance on these fuels for cooking or heating has positive health implications, especially for women and children.

2 Access to irrigation water is discussed in Chapter 3 of this report.

Access to water and service quality

Over the past two decades, the region has made significant progress in expanding rural households' access to drinking water. Graph 8.1, based on harmonized household survey indicators processed by CEDLAS (2025), shows the evolution of access in rural and urban areas across 10 countries in the region.³ It highlights that, while overall access has increased, the urban–rural gap narrowed from 34 percentage points in 2003 to about 16 percentage points in 2023—an improvement, though territorial inequalities remain. Although many countries have achieved notable progress (such as Ecuador, Paraguay, and Peru), gaps persist in countries such as Brazil.

Beyond coverage, service quality exhibits worrying gaps. Under SDG definitions, the WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP) uses a “service ladder” grouped into three levels. Safely managed water—the SDG 6.1 target—refers to water from an improved source that is available on the premises, free of priority contamination, and accessible when needed. Basic access refers to water from an improved source that requires up to 30 minutes round-trip to collect. Limited access (or unimproved) refers to water requiring more than 30 minutes round-trip, water from an unimproved source, or water obtained directly from surface bodies such as rivers or lakes.⁴

According to 2024 JMP data for nine LAC countries (Brazil, Colombia, Ecuador, Guatemala, Guyana, Peru, the Dominican Republic, Suriname, and Trinidad and Tobago), only 55% of the rural population has safely managed water. Although this represents an increase of nearly 10 percentage points since 2003, it remains far below the urban rate (83%). Another 39% of rural households have basic access, and 6% continue to rely on limited or unimproved sources. In light of these indicators, reaching the SDG target by 2030 remains a significant challenge.



LAC has made substantial progress in expanding rural households' access to drinking water, but only 55% of the rural population has safely managed water

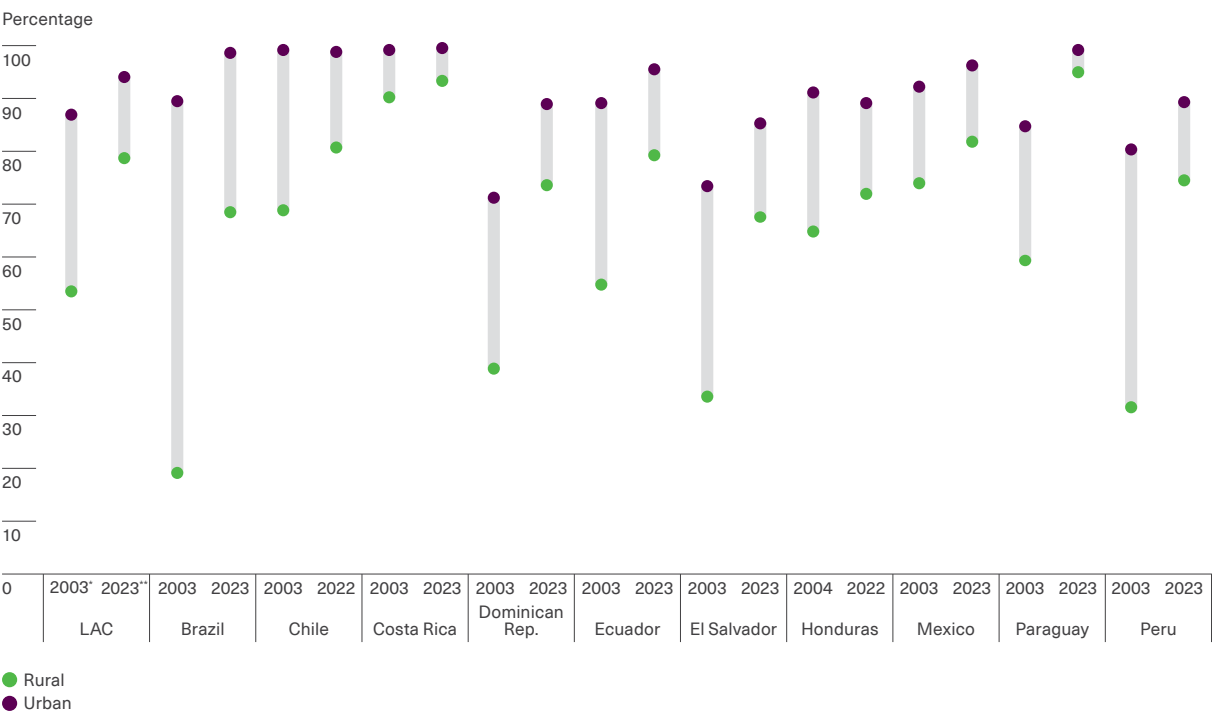


CAF Action.
Scan the QR code to see CAF's water and sanitation projects.

³ Unlike in Chapter 7, this section uses 10 countries, since Bolivia, Colombia, Panama, and Uruguay do not have data on access to water, sanitation, and electricity for the periods considered.

⁴ The unsafely managed-access category includes the levels of limited, unimproved access and direct access to surface water sources as defined by the JMP classification.

Graph 8.1
 Share of rural and urban households with access to water on the premises
 in Latin American and Caribbean countries, 2003–2023



Note: Figures refer to households with access to water within the household premises or property. Asterisks in LAC average years indicate that, for some countries, no information was available for the selected year; in those cases, the closest available year was used.
Source: Authors based on CEDLAS (2025).

Access to unsafely managed water sources—and even basic access, though to a lesser extent—continues to pose health risks and deepen inequalities, particularly due to the time required to collect water. Women and girls are usually

responsible for this task, which negatively affects their labor outcomes and economic autonomy (Marchionni et al., 2025), their well-being (Devoto et al., 2012), and their school attendance (Koolwal & Walle, 2013).

Sanitation service access and quality

Access to sanitation services remains a structural challenge in LAC. These services encompass the management of excreta—from collection in household facilities to emptying, transport, treatment, and disposal. For measurement purposes, household surveys consider a home to

have sanitation when it has a hygienic bathroom with water-based flushing connected to a public sewer or wastewater system.



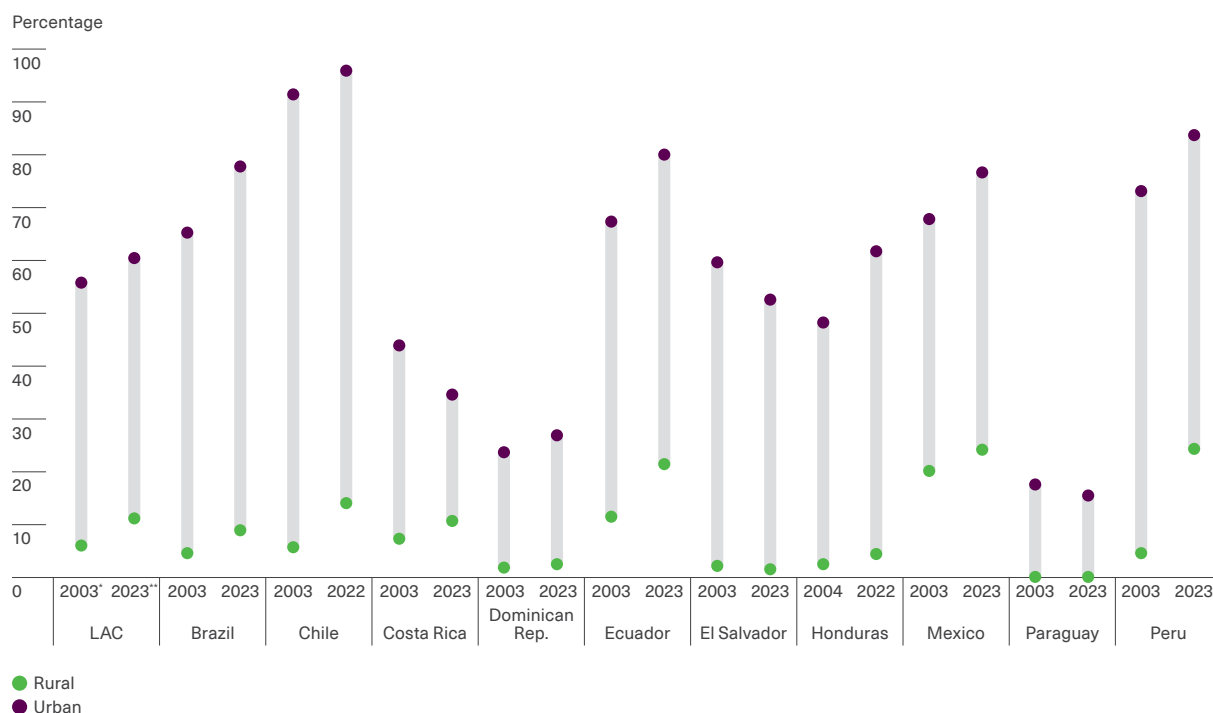
Eleven percent of rural households have sewerage connections, while half have safely managed sanitation

Graph 8.2 shows that urban–rural gaps in sanitation are much larger than those observed in access to water. In 2023, 61% of urban households in LAC had adequate sanitation, compared with just 11% of rural households. These inequalities are not only substantial but have shown little reduction: at the

regional level, the average gap remained virtually unchanged between 2003 and 2023. Even in countries where urban areas have made progress, expansion into rural zones has been limited and, in many cases, uneven. The low figures also reflect the classification threshold: in household surveys, “adequate sanitation” typically requires a sewer connection—a condition less viable in rural areas—and therefore underrepresents local, on-site solutions that can also be safe (Rozenberg & Fay, 2019).

Graph 8.2

Share of rural and urban households with access to sanitation in Latin America and the Caribbean, 2003–2023



Note: Figures refer to households with adequate, non-shared sanitation facilities. Asterisks in LAC average years indicate that, for some countries, data for the selected year were unavailable and the closest available year was used.

Source: Authors based on CEDLAS (2025).

JMP's "service ladder" measures progress in safely managed sanitation beyond sewer connections, addressing the limitations of household surveys. The three levels of the ladder are: (1) safely managed sanitation, the SDG target (an improved, non-shared facility in which excreta are contained and safely emptied, transported, and treated, or treated in situ); (2) basic sanitation (an improved, non-shared facility without verification of safe excreta treatment); and (3) limited or unimproved sanitation (shared or unimproved facilities, or open defecation). Although data on safely managed sanitation are not available for all countries, in seven LAC countries (Cuba, Ecuador, Guyana, Jamaica, the Dominican Republic, Suriname, and Trinidad and Tobago), the average stands at around 50%, highlighting how far these countries remain

from achieving universal access to this standard (JMP, 2025). Regarding comparable metrics for at least basic sanitation in rural areas, JMP records show an increase from 50% to 74% between 2003 and 2024, indicating significant progress.

Another particularly relevant indicator in rural contexts is open defecation, a practice with severe public health and child development consequences. On average, the region has achieved notable progress: in 2024, fewer than 3% of rural residents practiced open defecation. However, serious challenges persist in countries such as Bolivia and Haiti, where close to 30% of the rural population continues to rely on this form of excreta disposal.

Policies to improve water and sanitation access and quality

Designing public policies to expand access to water and sanitation requires addressing supply- and demand-side challenges simultaneously. On the supply side, gaps persist in distribution networks and nearby infrastructure, as well as in sanitation facilities that ensure safe disposal. On the demand side, barriers arise from connection costs, service tariffs, and affordability, and the investments required within households, along with the need to shift social norms and practices. In this context, many countries design water and sanitation policies jointly at the government level, but implementation—often distributed across multiple agencies—requires interinstitutional coordination to align investments, tariff structures, and subsidy schemes.

Regarding the infrastructure needed to achieve the SDG standard for safely managed water, Rozenberg and Fay (2019) note that the technologically viable option with the lowest unit cost is networked service with household connections. However, reaching this level of coverage demands substantial spending on initial investment as well as operation and maintenance, amounting to between 1% and 1.5% of GDP in low- and middle-income countries, with wide heterogeneity across contexts (Rozenberg & Fay, 2019). Some successful

cases in the region—such as Bolivia's MiAgua public investment program, financed with support from CAF—have enabled 400,000 rural families to gain access to safe water (Maris, 2023).

● ●
Expanding safe water access depends on extending networks and household connections, whereas safely managed sanitation can be delivered through decentralized solutions

For safely managed sanitation, Rozenberg and Fay (2019) identify decentralized systems as the most cost-effective option in rural settings, particularly dry pit latrines with proper waste management. Although sewerage networks can also meet the standard, costs are typically higher in low-density, geographically dispersed communities.

When implementing these policies, governments face a trade-off between direct public provision (with high fiscal costs) and concessions to private

actors (with lower pressure on public budgets but a risk of limited coverage in low-income or remote areas). Evidence from Brazil shows that companies expand where operations are profitable: network extensions tend to be continuous from existing pipelines and oriented toward higher-income localities (Santos & Guidetti, 2025). This dynamic hampers expansion into rural areas, which typically face limited service availability and lower incomes. Thus, if concessions are used, governments must establish coverage obligations or incentives, accompanied by appropriate subsidies or urban–rural cross-subsidization schemes.

Beyond expanding supply, effective household uptake depends on affordability (connection fees, tariffs, and operating or maintenance costs), liquidity constraints, access to information, and usage norms. Evidence from Brazil shows that even where infrastructure exists, households do not always connect, and connection costs are a central barrier, with uptake increasing alongside household income (Santos & Guidetti, 2025).

On the demand side, the most effective instruments combine targeted connection subsidies (or installment payment schemes or microcredit) with progressive tariff designs that limit fixed charges and protect a basic level of consumption. In the case of Brazil, connection subsidies increase adoption where networks exist; when coupled with tariff adjustments that restore financial viability, they also incentivize network expansion and improve overall well-being (Santos & Guidetti, 2025). In certain rural contexts, community-based arrangements can improve well-being compared with purely private management by avoiding prices above marginal cost, although they require mechanisms to sustain investment (Kremer et al., 2011)

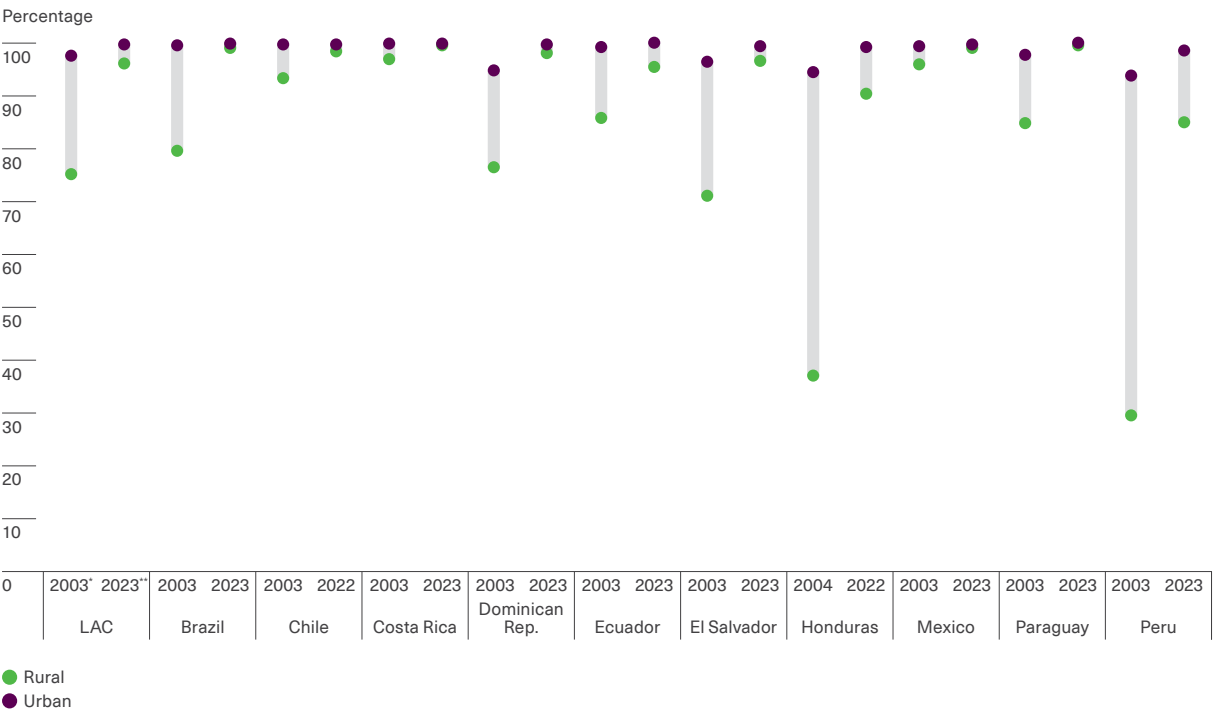
For safely managed sanitation in rural areas where network expansion is not viable, international evidence supports prioritizing decentralized solutions backed by demand-side incentives. A review of 27 evaluations in 14 Asian and African countries finds that subsidies for latrine construction outperform soft loans and stand-alone information campaigns; results are stronger and more persistent when paired with behavior-change strategies and active facilitator follow-up (J-PAL, 2025).

Electricity access and quality

Rural households' access to electricity increased in most LAC countries with available data between 2003 and 2023, a period during which urban–rural gaps narrowed, as shown in Graph 8.3. In several cases—such as Chile and Mexico—the gap has nearly closed. Even so, in others, such as Honduras and Peru, significant lags persist.

●●
Rural households' electricity access increased between 2003 and 2023 in most LAC countries, and urban–rural gaps narrowed

Graph 8.3
 Share of rural and urban households with access to electricity in Latin America and the Caribbean, 2003–2023



Note: Asterisks in LAC average years indicate that, for some countries, no information was available for the selected year; in those cases, the closest available year was used.
Source: Authors' elaboration based on CEDLAS (2025).

The main gap in electricity provision between urban and rural areas in LAC relates to service quality rather than access. Although limited residence-disaggregated data hinder precise assessments, the few countries that report such information—such as Panama and Uruguay—show stark differences. In the second half of 2024, the frequency of power outages in rural areas was double that of urban areas in Panama and four times higher in Uruguay (ASEP, 2024; URSEA, 2025). Outages in rural zones lasted an average of 10 hours in Uruguay (four times longer than in the country's urban areas) and between two and three hours in Panama (double the average duration in urban areas of the country). In both countries, regulatory limits for these indicators are less stringent for rural areas, reflecting lower

quality expectations; in Panama's case, these differentiated limits are exceeded more frequently in rural connections.

● ●
The quality of electricity service in rural areas—measured by the frequency and duration of power outages—differs significantly from that in urban areas

Policies to improve electricity access and quality

Many of the region's advances in rural electricity access were made possible by government programs specifically targeting this population segment. Table 8.1 summarizes the main initiatives that contributed to the most significant reductions in access gaps over the past two decades. These

programs were first implemented in the late twentieth and early twenty-first centuries, involving multiple levels of government and, in many cases, incorporating renewable energy generation solutions whose expansion has accelerated in recent years.

Table 8.1

Policies for rural electrification in Latin American and Caribbean countries

Country	Name	Start year	Investment in distribution networks	Includes renewable energies
Argentina	Proyecto de Energías Renovables en Mercados Rurales	1999	No	Yes
Brazil	Luz para Todos	2003	Yes	Yes, for remote areas
Bolivia	Programa de Electrificación Rural y Proyecto Mejora del Acceso Sostenible a la Electricidad en Bolivia	2010	Yes	Yes
Chile	Programa de Electrificación Rural y Programa de Energización Rural y Social (PERyS)	1994	Yes	Yes
Colombia	Fondo de Apoyo Financiero para la Energización de las Zonas Rurales Interconectadas y Fondo de Apoyo Financiero para la Energización de las Zonas No Interconectadas	2000/2002	Yes	Yes
Ecuador	Fondo de Electrificación Rural y Urbano-Marginal	1996	Yes	Yes
Honduras	Programa de Electrificación Rural en Lugares Aislados	2018	No	Yes, for remote areas
Mexico	Fondo de Servicio Universal Eléctrico	2017	Yes	Yes
Panama	Programa de Electrificación Rural y Proyecto de Electrificación Rural en Sistemas Aislados	2006	Yes	Yes
Peru	Programa Masivo Fotovoltaico y Proyecto de Mejoramiento de la Electrificación Rural	2007	Yes	Yes

Source: Authors based on Laguzzi and Mercure (2025), Willcox and Cooper (2025), MHE (2025), Subdere (2025), MME (2025), MAE (2025), Olade (2024), Secretaría de Energía (2017), Gómez et al. (2014), and DGER (2014).

Small-scale generation networks, in particular, have proven effective in low-density and geographically complex areas, as they can aggregate demand where populations are dispersed. Studies such as Eras-Almeida et al. (2019) highlight that decentralized systems make it possible to scale rural electrification cost-effectively in areas where traditional grid extension is not viable. In some cases, these programs have been complemented

by subsidies for the purchase of solar panels and batteries to improve affordability. Another strategy that can enhance the sustainability of these projects—and their effective adoption by rural communities—is to integrate local actors into the initiatives and provide the technical assistance needed for installation and maintenance.

Regarding improvements in service quality, regulation imposed on distribution companies plays a central role. As noted earlier, and in line with Delavechia et al. (2023), some countries in the region have established differentiated quality standards for urban and rural areas, with indicators tied to penalties or compensations. According to Corton et al. (2016), financial penalties have

the potential to improve service quality without increasing firms' costs. Another recommended regulatory measure is the publication of service quality reports by distributor with regional disaggregation. In Brazil, this also includes publishing a ranking of distributors based on service quality, increasing peer pressure among providers.

Rural connectivity

Physical connectivity

The construction of rural roads has positive effects on rural development (González-Navarro et al., 2023; Ludwig et al., 2016; Redding & Turner, 2015). Several studies find positive impacts of building and upgrading transport infrastructure on firms' exports (Volpe Martincus et al., 2017), agricultural production (Sotelo, 2020),⁵ and the adoption of technological innovations in agriculture (Aggarwal, 2018), consistent with the discussion in Chapter 3 of this report. Transport infrastructure can also support structural transformation processes—that is, the shift away from agricultural activities toward services and manufacturing (Asher & Novosad, 2020; Berg et al., 2017; Fiorini & Sanfilippo, 2022; Khandker & Koolwal, 2011; Quintero & Sinisterra, 2022).

Road infrastructure also has positive effects on rural household well-being. Aggarwal (2018) finds that road paving in India reduces the prices of household consumption goods as a result of greater market integration. Meanwhile, Alder et al. (2023) and Sotelo (2020) find positive—but heterogeneous—effects on economic activity, concentrated in localities that were more developed to begin with.

Measuring physical connectivity for the rural population

One of the first indicators used to assess the availability of transport infrastructure is the length of roads relative to a country's land area. LAC has a low density of roads in relation to its territory (Cont et al., 2025; González-Navarro et al., 2023; Sanguinetti et al., 2021). According to the International Road Federation (IRF), LAC countries had an average of 17 km of roads per 100 square kilometers (km²) of land area—similar to Africa's indicator of 13 km per 100 km². The region remains far from the levels observed in the United States and Canada (67 km per 100 km²) or in Europe (32 km per 100 km²). Finally, only 22% of the region's road network is paved, a figure again close to African countries (24%) and far below Europe (82%) and Asia (72%) (IRF, 2025).⁶

At the same time, the rural population in LAC is geographically dispersed (see Box 8.1). Therefore, to approximate how effectively transport infrastructure provides accessibility, it is essential to consider how roads are distributed across the territory in relation to their proximity to inhabitants.

5 Donaldson (2018) shows that the arrival of the railroad in India increased trade and income per unit of land. In LAC, however, freight transport relies primarily on roads, so this chapter concentrates on that mode.

6 These calculations use the most recent year with available data for the countries in each region.

Box 8.1

The geographic dispersion of the rural population: A challenge for ensuring services and infrastructure

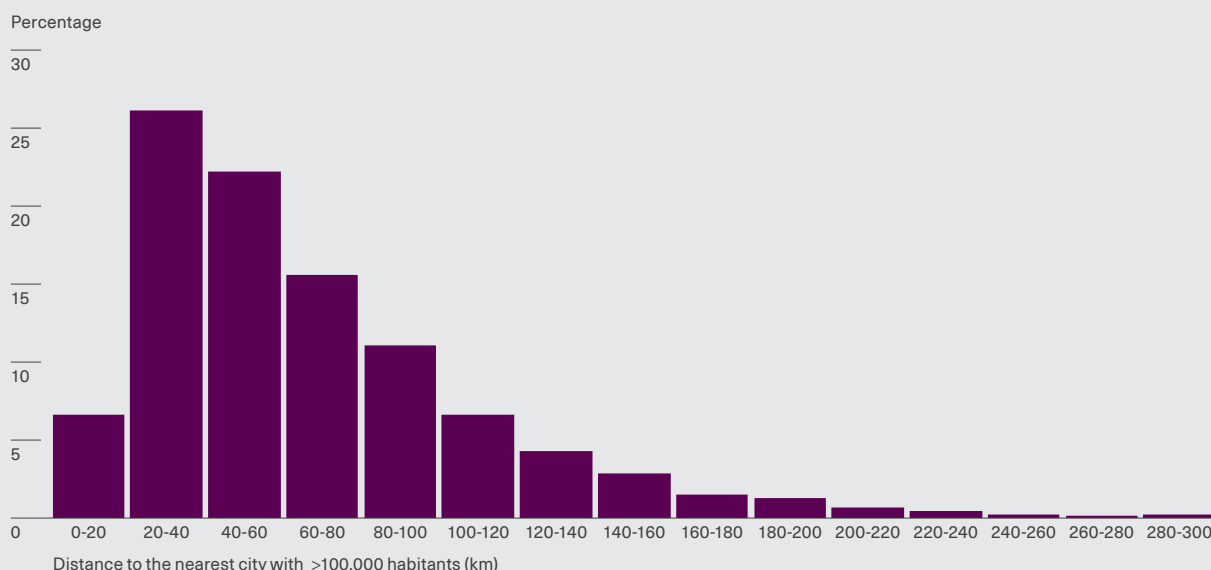
The rural population of LAC has a high spatial dispersion and, on average, is more isolated than in developed countries. One way to quantify this dispersion is to calculate, for each locality, the average distance to all other localities in the country, weighted by population. This indicator was defined by Xia et al. (2020). Calculations for LAC carried out for this report show that the rural population lives, on average, 25% farther away from other localities than the urban population—a gap larger than that observed in OECD countries, where the difference is 18%.^a

Another way to assess dispersion is to examine the distance from rural populations to intermediate or large cities (with at least 100,000 inhabitants). The results show that about half of the population in these municipalities lives less than 60 km from a city of this size, while around 10% live more than 160 km away (Graph 1).

This territorial configuration poses a central challenge for public policy: it raises service provision costs and limits the possibility of extending networks, deepening existing territorial inequalities.

Graph 1

Distribution of the rural population by distance to a city of at least 100,000 inhabitants



Note: The graph shows the percentage of the rural population by distance categories/bands/ranges from their place of residence to a city with at least 100,000 inhabitants within the same country. The countries included are Antigua and Barbuda, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru, El Salvador, Trinidad and Tobago, and Venezuela. Distance to a city of at least 100,000 inhabitants is considered up to a maximum of 300 km.

Source: Authors based on CAF (2025a) and Schiavina et al. (2023).

a. The dispersion indicator corresponds to the population-weighted average of the squared distances between all localities in a country. For the rural population, only localities located in rural municipalities—as defined by Schiavina et al. (2023)—are considered, with distances measured relative to all localities in the country.



Sixty-six percent of the rural population in LAC lives within 2 km of a road, and 40% lives within 2 km of a paved road

A useful measure for evaluating physical accessibility is the Rural Access Index, which measures the percentage of the rural population living less than 2 km from an all-season road (Roberts et al., 2006). This indicator is currently included under the SDG on resilient infrastructure. According to our own calculations—following the methodology presented in Box 8.2—66% of the rural population in LAC lives less than 2 km from a road (Graph 8.4). This figure is below the average for lower-middle-income countries

and significantly lower than in OECD countries (94%) and North America (87%). However, the measure falls even more when only paved roads are considered: the share of the region's rural population living within 2 km drops to 40%, with substantial heterogeneity across countries and subregions (see Table A.8.1 in the appendix to this chapter, available in the online edition of RED).

A complementary exercise with several OECD countries whose land area is comparable to that of South American countries (Spain, Australia, and Canada) shows differences in accessibility when considering all roads regardless of condition (86% of the rural population lives within 2 km of any road) versus paved roads only (73%). Yet the gap is considerably wider in LAC.

Box 8.2

Methodology for measuring rural accessibility in this chapter

This box presents the authors' calculations of the percentage of the rural population living less than 2 km from a road in LAC countries (equation 1)

$$\% \text{ rural population living within 2 km of a road} = \frac{\text{Rural population living within 2 km of a road}}{\text{Total rural population}} \quad (1)$$

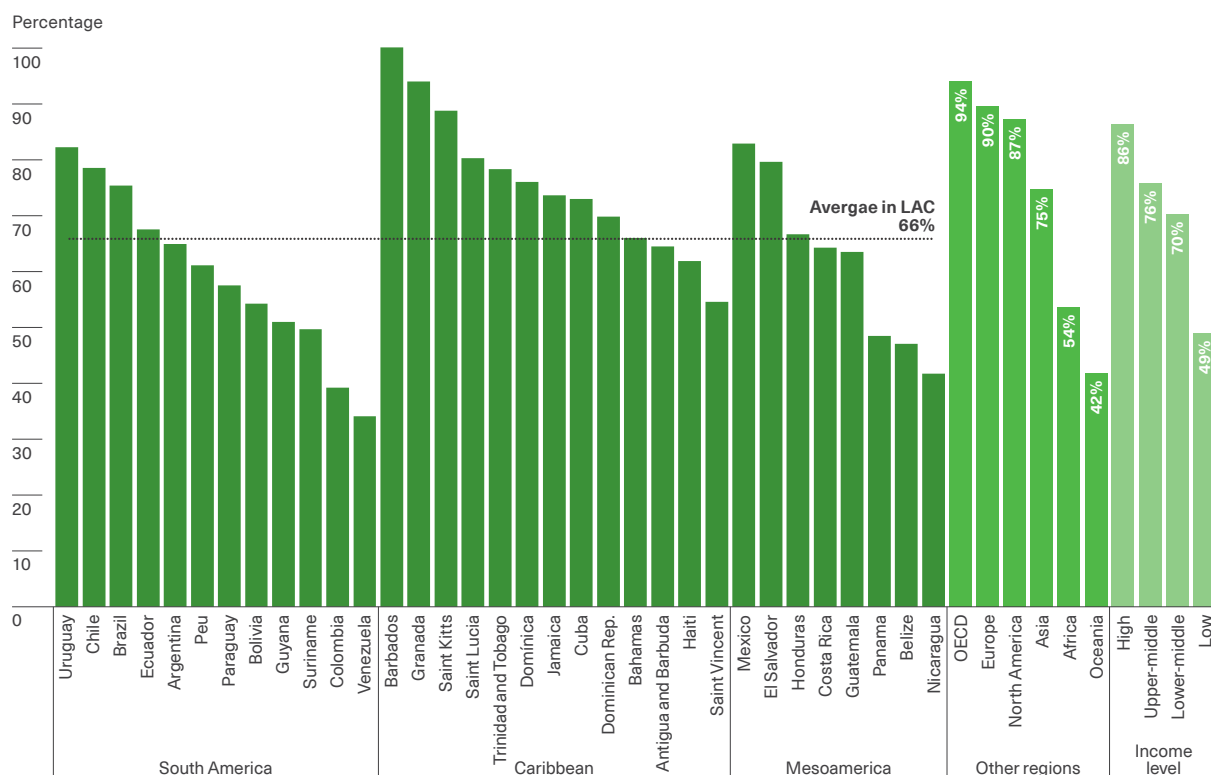
The methodology follows the approach used by the World Bank (2016). Total rural population is calculated by counting population grid cells from WorldPop (2020) that fall outside the urban-locality mapping from the Global Rural-Urban Mapping Project (GRUMP) (CIESIN-Columbia University et al., 2011). For the numerator, georeferenced rural population data are overlaid with road datasets from the Heidelberg Institute for Geoinformation Technology (HeiGIT, 2024). The only exception among LAC countries is Mexico, for which OpenStreetMap data are used (HOT, 2025). Both datasets enable cross-country comparisons and alignment with existing global measurements, although they may differ from national data sources.

To approximate accessibility based on road quality, the indicator is calculated using both all roads and paved roads only. Accordingly, it includes roads in the primary (main), secondary, and tertiary networks, the latter two of which are generally under the responsibility of subnational governments—state and local, respectively (Fernández Ordoñez, 2023).

Where possible, measurements are disaggregated at the local government level, using the geographic boundaries in CAF's dataset (2025a). Table A.8.1, included in the appendix to this chapter (available in the online edition of RED), provides the geographic disaggregation levels used in each country. For more details on the methodology and results, see Buccari et al. (2025).

Graph 8.4

Percentage of the rural population living less than 2 km from a road in Latin American and Caribbean countries and other regions



Note: The percentages shown in the graph include both paved and unpaved roads. The methodology used for LAC countries is described in Box 8.2. Data for the remaining countries were obtained from Azavea et al. (2019) and aggregated according to the World Bank's income-level classification (2025f). The OECD average excludes LAC countries.

Source: Buccari et al. (2025).

Heterogeneity is also evident within countries. Measurements conducted at the level of local territorial entities (municipalities or localities)⁷ allow for an analysis of within-country variation and its relationship to geographic, demographic, and fiscal characteristics. Buccari et al. (2025) present the correlations between the accessibility indicator and various attributes of each local entity, considering both all roads and paved roads only. The results

show that larger territorial size and greater variation in altitude are associated with a smaller share of the rural population living within 2 km of a road. In contrast, there is a positive relationship between accessibility and the share of rural population (relative to the total population of the local entity), which may reflect a prioritization of road construction in places where rural residents make up a larger proportion of the population.

⁷ Throughout the chapter, these subnational units are referred to interchangeably as "municipalities" or "localities." Strictly speaking, under the Degree of Urbanisation (DEGURBA) classification, this level corresponds to the country's second administrative tier (e.g., municipalities, districts, cantons, or communes, depending on each country's political-administrative structure).

Incorporating public finance data also shows that the road-access indicator is positively associated with local governments' per capita tax revenues. This association becomes even stronger when considering accessibility to paved roads only. However, it is important to note that this relationship may reflect bidirectional causality: on the one hand, local governments with greater fiscal resources may be better positioned to invest in secondary or tertiary road infrastructure; on the other hand, greater accessibility may stimulate local economic activity and thereby increase tax collection.

Policies for improving physical connectivity in rural areas

Investment in road infrastructure

Public financing of roads is one of the main components of infrastructure investment in the region (Infralatam, 2025), although it starts from lower levels than those observed in OECD countries (Sanguinetti et al., 2021). To improve the physical accessibility of rural populations, in addition to building new roads, spending on upgrading and maintaining existing infrastructure is essential.

The contrast between rural populations' proximity to roads in general and to paved roads (see Table A.8.1 in the appendix to this chapter, available in the online edition of RED) shows that accessibility gains can be achieved through investments in road upgrading. Sanguinetti et al. (2021) simulate the impact that improving road quality would have on access to domestic markets in 17 LAC countries. The results show that simply upgrading existing roads could generate significant improvements in market access. In countries such as Bolivia and Colombia, potential access to people could double, suggesting high potential returns from

investments in road rehabilitation. Effects are clearly heterogeneous: in Uruguay and Panama, for example, the increase is below 10%.

Maintenance investments represent a substantial share of total lifecycle spending on infrastructure, shape the quality of services it can provide over time (Sanguinetti et al., 2021), and can yield substantial savings compared with later rehabilitation. Serebrisky et al. (2017) highlight the example of Peru, where between 1992 and 2005 the country spent seven times more repairing roads than it would have cost to maintain them regularly. Constraints on this type of spending include political-economy challenges, fiscal limitations, institutional issues, and state-capacity shortcomings. The latter also involves having adequate diagnostics of the condition of existing infrastructure. Encouragingly, the cost of assessing road conditions has fallen in recent years through the use of satellite-imagery analysis (PPIAF, 2023).



Road maintenance represents a substantial share of total spending, determines service quality over time, and can generate significant savings compared with later rehabilitation

Improving subnational state capacity and coordination across levels of government

The involvement of different subnational government levels varies widely across countries and governance systems: federal countries such as Argentina and Brazil tend to decentralize public investment more than unitary systems (Alves et al., 2025).



CAF Action.
Scan the QR code to see
CAF's rural road projects.



Rural road in a sugarcane plantation in Panama.

However, projects executed by subnational governments tend to be of lower quality than those carried out by national counterparts (Alves et al., 2025). The main causes behind this deficiency relate to state capacity—particularly in planning and preparing feasibility studies. To address these barriers, which can affect project costs (both construction and subsequent operation and maintenance), continuous staff training, technical assistance, and advisory services are recommended, together with efforts to professionalize investment management.

To remedy these institutional-capacity limitations at the local-government level, some countries have adopted hybrid approaches. In Mexico, for example, under the Road Paving Program for Municipal Seats, the central government finances, prioritizes, and selects the projects, while municipalities are responsible for their execution (SCT, 2025).

Digital connectivity

Internet access has positive impacts on development in emerging economies (Hjort & Tian, 2025), particularly in rural areas. On the one hand, it expands the markets available to firms, workers, and consumers and reduces information frictions. For example, Goyal (2010) finds that, in India, a policy that installed internet kiosks in rural areas to disseminate soybean price information increased the prices received by producers and expanded the land area allocated to the crop.

On the other hand, digital connectivity raises worker productivity. Several studies document increases in both skilled and unskilled employment rates (Bahia et al., 2024; Hjort & Poulsen, 2019). Some of the mechanisms behind productivity gains from internet access include human capital accumulation and improved matching between firms and workers. Internet connectivity also facilitates the adoption of technological innovations (Hjort & Tian, 2025).

Coordination with the private sector

Public–private partnerships (PPPs) make it possible to leverage private-sector resources and capabilities to close access gaps in historically underserved territories. Their use, however, has been limited for secondary or tertiary roads—those connecting dispersed rural areas—due to lower traffic volumes and low direct profitability.

To encourage these arrangements, some countries have implemented demand aggregation mechanisms, bundling road segments with different traffic levels. In Uruguay, for example, projects have been tendered that combine rehabilitation and maintenance of both national and secondary roads (Corporación Nacional para el Desarrollo, 2017). In the same case, availability payment mechanisms have been used, whereby the State compensates the private sector only if it guarantees a minimum road quality standard.



Internet access expands markets and reduces information frictions, boosts productivity, supports structural transformation, increases consumption, and reduces poverty

An important effect relates to changes in employment type and sector. First, Hounghonon et al. (2022) find that high-speed internet in Africa is associated with a higher likelihood that rural households start non-agricultural businesses, mainly in services. Bahia et al. (2023), using data from Tanzania, show that access to third-generation (3G) networks encourages women with at least primary education to move from agricultural self-employment into non-agricultural jobs. However, they find no overall effect on women's total labor force participation, highlighting ongoing challenges in capturing the benefits of digital technologies.

These employment effects translate into improvements in other dimensions of household well-being. Bahia et al. (2024) find that broadband connectivity increases consumption levels and reduces poverty rates, with effects concentrated in rural areas. This is consistent with earlier results from Beuermann et al. (2012), who documented reductions in both poverty and extreme poverty in rural Peruvian localities following the introduction of 2G mobile coverage.

Taken together, this literature consistently shows that internet access not only improves productivity and employment but also helps reduce poverty and strengthen household well-being, particularly in rural areas. As discussed in the following subsections, connectivity also enables access to other services, such as financial services, telemedicine, and virtual education.

Internet access and quality in rural areas

Despite extensive evidence on the positive effects of digital connectivity in rural settings, 47% of rural households in LAC still lacked internet access in 2023 (Graph 8.5). Although coverage has increased over the past decade, a substantial challenge remains: the gap with urban areas reaches 24 percentage points and widens among household heads aged 55 or older (see Graph A.8.1 in the appendix to this chapter, available in the online edition of RED). Moreover, these metrics refer to household access and do not always capture individual connectivity outside the home—for example, through personal mobile data or community Wi-Fi access points. Looking instead at effective internet use—whether via mobile data or fixed connections—74% of adults in 10 LAC countries reported using the internet in the previous three months (UIT, 2025).⁸



In 2023, 47% of rural households in LAC still lacked internet access at home. Barriers to access stem from both demand-side factors (affordability or digital skills) and supply constraints

Household surveys in some countries, such as Colombia, indicate that price is the main reason why households do not subscribe to internet service (DANE, 2024). Access is also conditioned by the availability of complementary services, such as electricity, and by device ownership. However, figures and gaps remain largely unchanged when requiring joint access to both electricity and internet (CEDLAS, 2025), suggesting that the main bottleneck comes from internet connectivity itself (availability and price) rather than from a lack of electricity. These patterns, combined with limited digital skills among the population, point to demand-side obstacles that compound supply-side limitations.

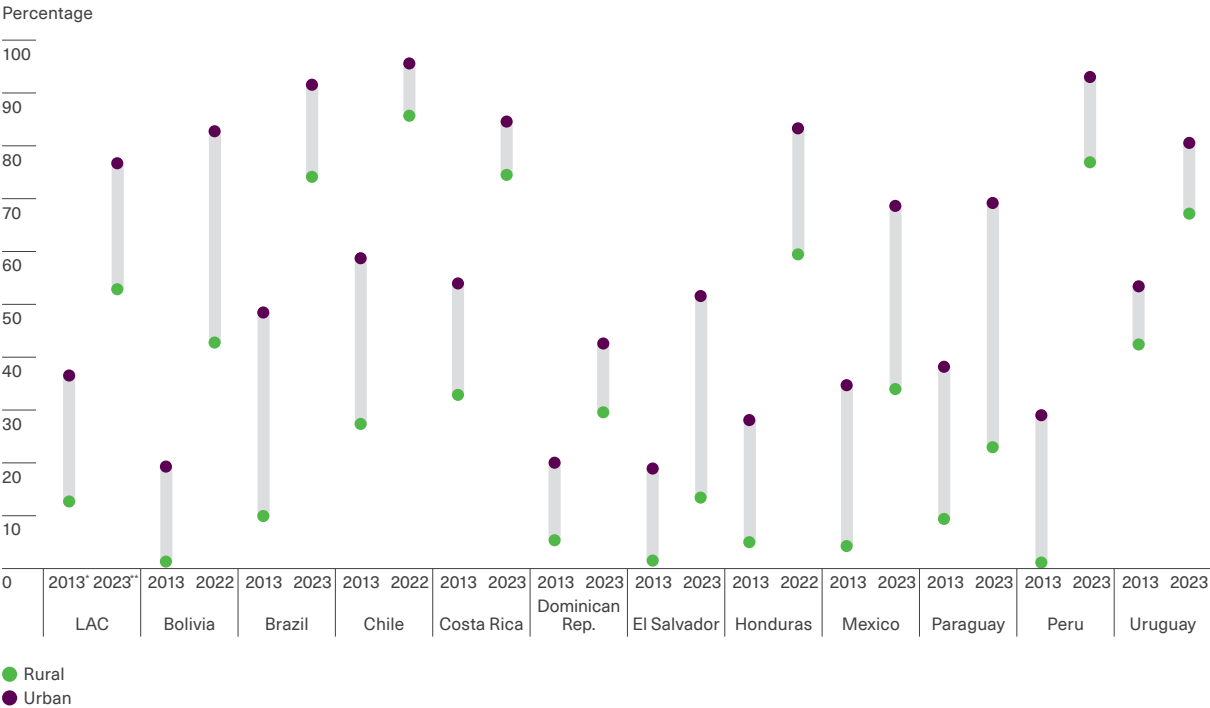
Regarding service quality, fixed broadband download speeds increased between 2019 and 2024 across countries in the region. These improvements were observed in both urban and rural municipalities and helped narrow some service-quality gaps, though substantial rural–urban differences persisted in 2024: on average, speeds in urban localities were 64% higher than in rural ones (Panel A of Graph 8.6). This gap exceeds that observed in OECD countries, where metropolitan municipalities had fixed-internet speeds 44% higher than those in more remote areas (OECD, 2025). Panel A of Graph 8.6 also shows that mobile internet speeds improved over the same period due to the rollout of 5G technology. However, the uneven deployment of this network across urban and rural areas contributed to widening mobile-internet speed gaps—a trend that may ease as governments complete full network coverage.

⁸ Data for Chile, Colombia, Costa Rica, Jamaica, and Mexico are from 2023, and data for Brazil, Ecuador, Paraguay, Peru, and the Dominican Republic are from 2024.

Network response time (latency) is also a key quality indicator, particularly for services such as telemedicine or virtual education (OECD, 2025). Panel B of Graph 8.6 shows that, overall, latency decreased in LAC between 2019 and 2024. The progress was more significant in urban municipalities than in rural ones, widening rural–urban gaps: in 2024, fixed-internet latency was 57% higher in rural localities than in urban ones, and 90%

higher for mobile internet. According to the OECD (2025), differences in fixed-internet latency between metropolitan and remote areas in member countries reach 22%. This means rural–urban latency gaps for fixed internet are larger in LAC than in the OECD. Moreover, the trend over this period diverged sharply: while these gaps narrowed in the OECD, they widened in LAC (OECD, 2025).

Graph 8.5
Share of rural and urban households with internet access in Latin America and the Caribbean, 2013–2023

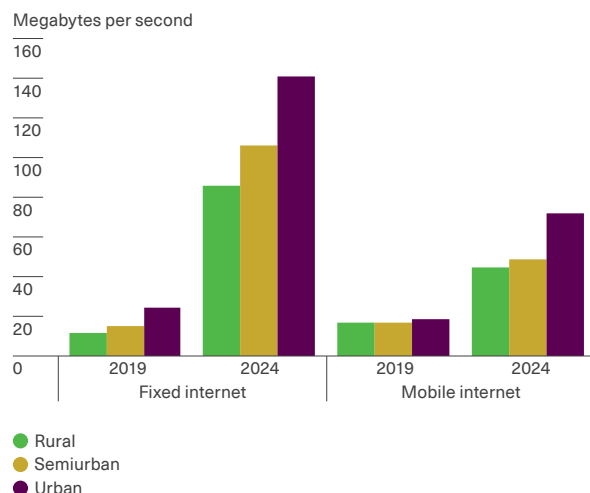


Note: Asterisks in LAC average years indicate that, for some countries, no information was available for the selected year; in those cases, the closest available year was used.
Source: Authors based on CEDLAS (2025).

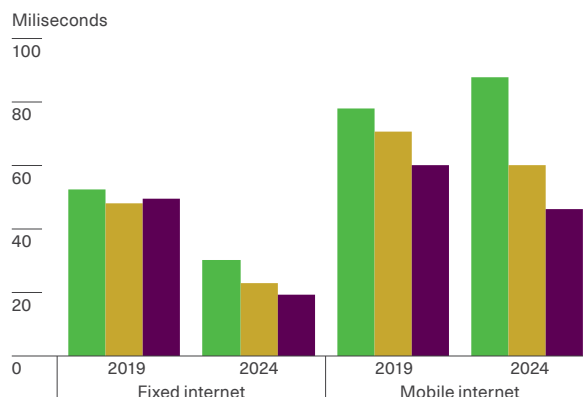
Graph 8.6

Quality Indicators for fixed and mobile internet in Latin America and the Caribbean by municipal degree of urbanization

Panel A.
Evolution of fixed and mobile internet download speeds



Panel B.
Evolution of fixed and mobile internet latency



Note: The speed and latency values shown in panels A and B represent averages across municipalities classified according to the DEGURBA framework.

Source: Authors based on OOKLA (n.d.), CAF (2025a), and Schiavina et al. (2023).

Policies to expand internet access and improve service quality

Several LAC governments have made closing digital connectivity gaps in rural areas a policy priority. Colombia aims to achieve 85% territorial coverage with the option to subscribe to fixed or mobile broadband; Costa Rica targets an average mobile download speed of 32 megabytes per second (Mb/s) on fourth-generation networks; and Mexico seeks to cover 92.2% of the population with fourth-generation technology through its Red Compartida initiative (OECD, 2025).

However, moving toward these goals is highly costly. In Peru, for instance, the infrastructure investment required to eliminate digital connectivity gaps in rural localities was estimated at around 5% of GDP in 2021—even after accounting for economies of scale from community-managed solutions (World Bank, 2025a; Pronatel, 2021).⁹

● ●
Affordability is the main challenge for expanding satellite internet access—one of the most promising alternatives for increasing connectivity in rural areas

⁹ These estimates from Peru's National Telecommunications Program are based on expanding service through the provision of wireless internet to public institutions (schools, health centers, municipal offices). This approach increases economies of scale and reduces costs; therefore, the estimates should be interpreted as a lower bound of the cost.

Box 8.3

Satellite internet

In rural localities where fiber-optic or mobile networks are unavailable—or only available intermittently—satellite internet has become the fastest-to-deploy alternative. Two technology families coexist, each with distinct performance characteristics: low-earth-orbit (LEO) constellations, which offer lower latency and self-installation kits, and geostationary (GEO) satellites, which have higher latency and typically apply traffic management policies. In addition to global operators (Starlink, HughesNet, Viasat), local integrators and providers also participate in delivering the service: they acquire wholesale LEO or GEO capacity and handle the “last mile” through fixed wireless links or short fiber extensions. Their proximity to consumers—in sales, installation, and support—facilitates adoption; however, their smaller scale and the quality of the intermediate link to the internet may translate into data caps or traffic prioritization.

Effective adoption depends on two mutually reinforcing enabling conditions. First, as with all internet-access technologies, they require a reliable power source: the antenna or terminal, router, and devices all need continuous electricity. Second, equipment availability and affordability for end users are essential: connectivity delivers benefits only if households and institutions have access to computers or phones and can sustain the monthly service cost.

Regarding the latter, residential LEO plans typically range from USD 30 to USD 70 per month, with typical upfront investments between USD 300 and USD 500 (depending on equipment and country). Compared with fixed alternatives (fiber or cable), monthly satellite prices can be double or more (as shown by our estimates for Chile, Mexico, Colombia, and Brazil), limiting individual adoption. These amounts represent a high share of average monthly income—exceeding 10% in countries like Colombia and Mexico and between 5% and 8% in Chile and Brazil. In some markets, installation fees may vary with local demand, which is often higher in rural areas, raising the cost of entry.^a

Given these high costs, community models—Wi-Fi access points managed in schools, health posts, or community centers—offer a cost-effective way to expand reach. These arrangements allow a satellite connection to be shared among numerous users, reducing per-household expenses.

From a public-policy perspective, satellite internet is a viable option for closing gaps in remote areas, prioritizing community access points with verifiable service standards and cofinancing equipment investments to lower implementation costs. In sum, while the technology is available, these advances must be accompanied by policies that ensure affordability to guarantee effective digital connectivity in rural areas.

a. Satellite internet prices were obtained from Starlink’s official website (n.d.). Fiber-optic prices were obtained from TELMEX (n.d.) for Mexico, ETB (n.d.) for Colombia, Movistar (n.d.) for Chile, and Melhorplano (n.d.) para Brazil.

Three main technology families currently coexist for providing internet access in rural areas. The first includes wired solutions such as fiber optic and coaxial cable. The second consists of terrestrial wireless solutions, including mobile networks and

fixed wireless access. The third comprises satellite solutions, which have expanded rapidly. Each poses distinct policy challenges: wired solutions require planning and maintaining physical infrastructure (ducts, poles, and backbone networks); wireless

solutions require radio coverage and spectrum management;¹⁰ and satellite services, which do not depend on local networks, shift the focus to service and equipment costs. While affordability is a cross-cutting challenge across all technologies, it tends to be the main barrier for rural households and productive establishments in the case of satellite access (see Box 8.3).

Incorporating requirements into licensing and bidding processes

One of the main barriers preventing private actors from deploying connectivity infrastructure in rural areas is low profitability. To address this, governments can design contracts that link service provision in high-profit areas to obligations in less profitable ones, ensuring coverage where the market alone would not deliver.

In mobile broadband (3G, 4G, 5G), service is delivered over radio and requires access to radio spectrum—ranges of frequencies that constitute a scarce public resource allocated by the state through licenses, often via auctions. These auctions can include coverage obligations and other requirements aimed at promoting deployment in rural and remote areas; when combined with competitive markets, such mechanisms have proven effective in OECD countries, provided that obligations do not discourage bidder participation (OECD, 2022).

In addition, several countries complement these auctions with spectrum licenses specifically tailored to rural areas. These licenses may be low-cost or socially oriented and are granted to small or local operators to serve smaller communities (OECD, 2025). This approach—used in Australia, the United States, Finland, Japan, Mexico, New Zealand, the United Kingdom, and Sweden—enables services such as mobile broadband and fixed wireless links in areas where large operators do not invest. In Mexico, for instance, the regulatory framework

includes social-purpose spectrum licenses for nonprofit service provision and licenses for small operators targeting rural areas (article 83 of the 2024 Federal Telecommunications and Broadcasting Law).

Public–private partnerships

This mechanism allows the public sector's coverage goals to be combined with the operational capacity of the private sector. In internet access, a common model involves the government—directly or through public enterprises—cofinancing network deployment with a private company, while the latter manages and maintains the infrastructure under a time-bound concession. At the end of the concession period, the network may revert to the state or remain open to multiple operators, fostering retail competition and preventing infrastructure monopolies (OECD, 2025).

These models have been applied in Peru's National Fiber-Optic Backbone Network (Red Dorsal Nacional de Fibra Óptica) and Mexico's Red Compartida (Pronatel, 2021), among other examples. In Chile, the Telecommunications Development Fund (FDT) allocates competitive subsidies through public tenders to expand coverage—primarily in rural or low-income areas—while imposing execution and operational obligations on awardees.

Among the key lessons learned is the importance of demand studies and careful assessment of potential new entrants; without these, projects can become financially unviable (Berrone et al., 2018). Additionally, contractual flexibility (for example, in tariff structures) is essential for managing traffic and optimizing the use of underutilized networks, thereby supporting the long-term sustainability of the project.

¹⁰ This refers to the use of radio frequencies—a public resource administered by the state—which are allocated to service providers, often through auctions.

Shared infrastructure

Sharing infrastructure—such as poles, ducts, and towers—reduces costs and accelerates internet deployment. The logic is simple: if power poles already exist along a road, different companies can use them to support their cables, paying a regulated fee. Similarly, if municipal underground ducts are available, fiber can be run through them instead of reopening the roadway. In Peru, for instance, part of the National Fiber-Optic Backbone Network was deployed over medium-voltage electricity towers, avoiding construction in difficult terrain and lowering costs (Pronatel, 2021).

For public policy, the challenge lies in establishing frameworks that require or incentivize third-party access to this infrastructure and enable the use of public assets to avoid duplicative works and reduce deployment costs (OECD, 2024, 2025). Several countries have moved in this direction, including Canada, Colombia, Spain, the United States, and Portugal (OECD, 2025). Clear rules, pricing, and responsibilities are crucial: in Peru, shared-infrastructure use became one of the most contentious elements of the contract, underscoring the need for well-defined frameworks and effective dispute-resolution mechanisms (Berrone et al., 2018).

Education and health

As discussed in earlier chapters, significant gaps persist between urban and rural areas in educational and health outcomes. These disparities stem from multiple factors, including family conditions and the broader socioeconomic context (De la Mata et al., 2022), but also from the effective access to—and quality of—the education and

health services available (Álvarez et al., 2025). There are also strong complementarities between the provision of quality education and health services. For example, access to health services—and their positive effects on vaccination and disease prevention—can support higher school enrollment (Rocha & Soares, 2010).

Gaps in education access and quality for rural populations

Although some gaps in access to primary schooling between rural populations and their urban counterparts have narrowed in recent decades, marked differences in educational outcomes persist (as shown in Chapter 6 of this report). Divergences also remain in access to postsecondary education.

The limited economies of scale typical of rural areas are associated with smaller, less competitive school systems with fewer resources, resulting in significant gaps in inputs—both in terms of physical infrastructure and the hiring of qualified personnel (Bonilla-Mejía et al., 2024; Echazarra & Radinger, 2019). The scale of these systems also implies

higher per-student costs (Echazarra & Radinger, 2019; OECD, 2021).

The availability of schools in rural municipalities declines progressively from early childhood to primary and secondary levels, based on calculations using georeferenced data from Peru's Ministry of Education (Minedu, n.d.) and a municipality's degree of urbanization (Schiavina et al., 2023). This is compounded by the lower variety and availability of schools from which families may choose. According to the latest round of the OECD's Programme for International Student Assessment (PISA), on average, 50% of secondary schools in rural areas report being the only school accessible to their

students, compared with just 10% in urban areas (OECD, 2023). This limited availability is reflected in the longer distances rural students must travel to reach a school. Rodríguez-Segura and Kim (2021) find that 5% of Guatemala's population lives more than 3 km from a public primary school, while in Peru this figure reached 11.5% in 2020, and 3% in Costa Rica. Albina et al. (2025) show that in Argentina the distance to schools increases with the level of rurality

One factor shaping educational quality is the condition of school infrastructure, which is significantly worse in rural settings than in urban ones. Table 8.2 shows large gaps in several LAC countries in the percentage of primary-school students attending institutions with access to basic

services (particularly water) or learning spaces (libraries and science labs). Allub et al. (2025) estimate that, on average, the student-to-computer ratio in secondary schools in 2022 did not differ substantially between rural and urban areas, but the share of those computers connected to the internet did differ, with rural areas lagging behind.



The availability of schools in rural areas decreases progressively from early childhood through primary and secondary levels, resulting in greater distances for students to reach them

Table 8.2

Percentage of primary-school students attending schools with access to basic services and learning spaces

Country	Access to water		Access to electricity		Access to a library		Access to a science laboratory	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Argentina	92	95	100	100	41	79	29	41
Brazil	88	99	97	100	30	73	0	15
Colombia	29	94	92	100	50	57	17	37
Costa Rica	89	100	98	100	20	79	1	8
Dominican Rep.	79	87	95	100	39	75	1	21
Ecuador	80	93	98	100	29	33	16	26
El Salvador	78	99	99	100	32	60	8	37
Guatemala	74	95	85	100	27	30	5	10
Honduras	96	86	100	88	59	24	24	7
Mexico	75	98	100	100	56	57	0	2
Nicaragua	62	96	67	98	19	58	1	4
Panama	46	98	66	98	26	51	15	59
Peru	50	94	91	100	30	56	1	28
Paraguay	94	99	99	100	37	80	2	9
Uruguay	81	100	100	100	60	59	0	16

Note: Data refer to the percentage of third-grade primary students in urban and rural areas with access to basic services and learning spaces. Processed by CIMA based on UNESCO data (2019).

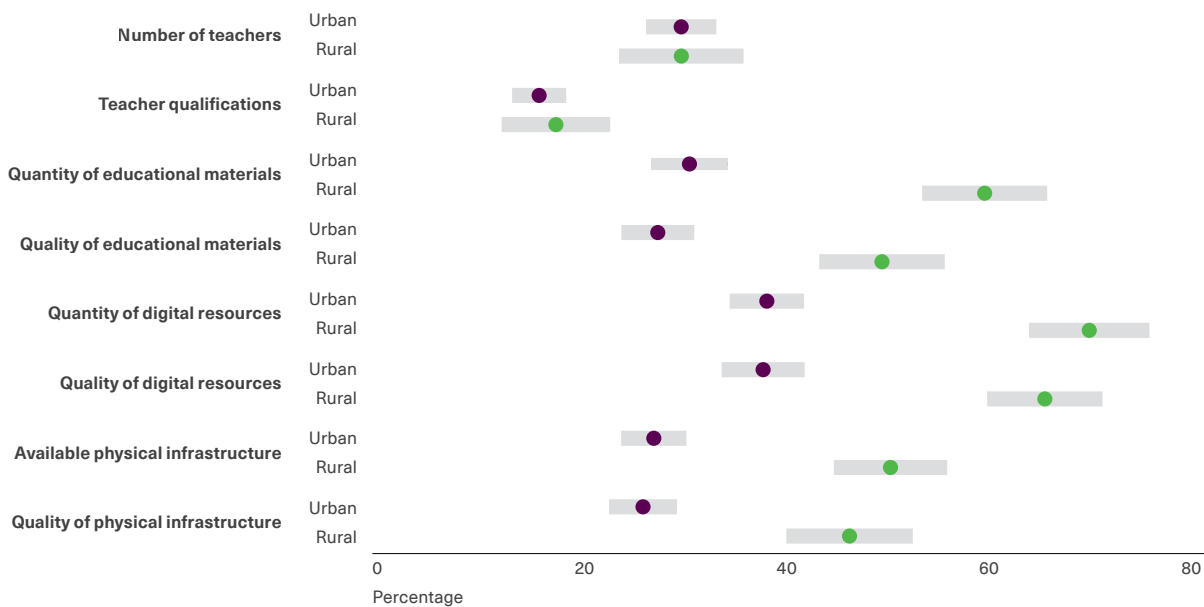
Source: Authors based on CIMA (2025).

The remoteness of schools, infrastructure deficits, and the prevalence of multigrade instruction compound another challenge: attracting qualified teachers (Evans & Méndez Acosta, 2023). Ajzenman et al. (2024) examine Peru, where teachers with high entrance-exam scores can list the schools where they would prefer to work. Their findings show a clear preference for/bias toward more urban schools, closer to the capital, and with better access to public services. Some schools—mostly rural—are never selected. In parallel, Bobba et al. (2021) and Elacqua et al. (2022) find that rural teachers in Peru

and Chile, respectively, tend to be less qualified than their urban counterparts. Recruitment challenges are further compounded by the specific features of rural instruction, including the need for multilingual education and the predominance of multigrade classrooms.

Finally, shortages of both human and material resources increase substantially with the degree of rurality. The availability of these resources affects instructional quality across the region, particularly in rural schools (Graph 8.7).

Graph 8.7
Proportion of school principals who report that different factors affect instruction quality in rural and urban areas



Note: The graph shows the percentage of secondary-school principals who consider each listed factor to be an impediment to quality instruction, combining the categories “to some extent” and “a lot.” The rural-urban classification is based on the population of the school’s area: areas with fewer than 3,000 inhabitants are classified as rural, while areas with more than 100,000 inhabitants are classified as urban. Dots represent averages for LAC countries; bars represent standard deviations.

Source: Authors based on OECD (2023).

Policies to bring education closer to rural areas and improve its quality

As noted in the previous subsection, rural education faces challenges both on the demand and the supply side. To encourage school attendance, governments have used income-transfer programs¹¹ and bilingual education initiatives that incorporate ancestral languages spoken in rural communities (Hynsjö & Damon, 2016; Patrinos & Vélez, 2009).

On the supply side, many rural localities in LAC still lack nearby primary or secondary schools. The literature examining the effects of building new schools finds positive impacts on enrollment, attendance, and learning outcomes (Angrist et al., 2025; Evans & Méndez Acosta, 2021), although most evidence comes from Africa and Asia. Duflo (2001), for example, shows that school construction in Indonesia increased years of schooling more sharply in provinces with lower population density. Burde and Linden (2013) identify gender-differentiated effects in enrollment and learning outcomes following the construction of rural schools in Afghanistan.¹²

However, as rural populations decline, other policies can help expand the educational services available to these communities. Improving road access—although not an education-specific intervention—has considerable potential to enhance access to schools. Adukia et al. (2020) examine the effects of building secondary and tertiary roads in India and find a 7% increase in lower-secondary enrollment during the three years following the paving of a road. While no effect on primary enrollment is found, learning outcomes at that level do improve. Aggarwal (2018), Khandker et al. (2009), Khandker and Koolwal (2011), and Mukherjee (2012) report similar results for rural road construction on school enrollment. In addition, several countries have created school clusters to pool demand, offering different

education levels in nearby communities (Echazarra & Radinger, 2019).



Options for attracting qualified personnel to rural areas are varied: financial and professional incentives, information campaigns, and behavior-change interventions

As discussed earlier, one of the main factors affecting the quality of education in rural areas is the difficulty of attracting qualified teachers. Policy options are diverse: financial incentives, professional incentives (additional training, accelerated career paths), information campaigns, behavior-change initiatives, and even mandatory rotations, among others (Evans & Méndez Acosta, 2021). Based on a review of the literature, Evans and Méndez Acosta (2021) highlight that most financial-incentive interventions have had positive effects on attracting and retaining teachers in hard-to-staff rural areas in Africa. Key policy lessons include the need to consider spillover effects on non-beneficiary schools and the fact that teachers often face information barriers about these programs—barriers that could be reduced through targeted outreach campaigns.

Finally, other policies have used information and communication technologies (ICTs) to bring educational services to remote areas and, in some cases, help ease constraints related to teacher shortages and skill levels. A regional example is Mexico's *telesecundarias*, designed to serve early secondary students in rural or marginalized communities through televised lessons delivered in classrooms, supported by an on-site teacher

11 More details can be found in Chapter 7 of this report.

12 Although early childhood centers are not addressed separately in this subsection, the region has made significant progress in adding more (Berniell et al., 2016), with positive effects on primary-school performance and on the probability of attending secondary school at age 15 (Berlinski et al., 2008, 2009). Similar effects are found in expansions to rural areas: Berkes et al. (2024) report positive impacts from a preschool-construction program in Cambodia that targeted children who previously had no access to any center.

with generalist training (Unesco, 2024). Fabregas and Navarro-Sola (2025) show that this intervention increased graduation rates from lower secondary school compared with similar areas lacking access to the program. While Borghesan and Vasey (2024) also find positive learning results for students attending these schools, the largest improvements occur among average-performing students rather than those at the lower end of the performance distribution.

Implementing ICT-based strategies to expand educational services must take into account shortages of digital equipment and the limited digital skills of teachers and students. According to the most recent PISA survey, where students are asked whether they can perform 14 ICT-related tasks, the average 15-year-old in urban schools reports being able to complete eight tasks, compared with only six among students in rural schools (OECD, 2023). In OECD countries, by contrast, no significant rural–urban differences are observed.

Gaps in access to health services and their quality

In recent decades, some gaps in access to health services and health outcomes between urban and rural populations in LAC have narrowed (as shown in Chapter 6 of this report), although in some countries they remain a significant barrier to human-capital accumulation. Bancalari et al. (2025), using standardized indicators of health care, find gaps of up to 56% in the quality of prenatal care across nine countries in the region.¹³

Demand for health services in low-income settings faces both monetary and non-monetary barriers, including social norms, limited information on the returns to health investments, and concerns about service quality (Dupas & Miguel, 2017; León-Ciliotta et al., 2025). These barriers disproportionately affect women and can have long-term consequences.

On the supply side, as in the education sector, limited economies of scale and the dispersion of the rural population can affect the availability of health centers and hinder access to more complex facilities. Although comparative evidence for the region is limited due to the lack of harmonized georeferenced data, the case of Chile illustrates these differences clearly. According to the Ministry of Health (DEIS, 2025), all rural municipalities have at least one low-complexity health facility, but only 8% have a medium-complexity center (compared

with 95% in urban municipalities), and fewer than 1% have a high-complexity facility (versus 65% in urban areas).



Limited economies of scale and the geographic dispersion of rural populations reduce the availability of health centers and hinder access to higher-complexity services

As a result, rural residents must travel to obtain care, and distances can be substantial. Weiss et al. (2020) calculate travel times based on georeferenced information on population distribution, health facilities, and roads. Globally, 8.9% of the population must travel more than 60 minutes by private transport to reach a health facility, compared with 13.7%, on average, in LAC. When taking an average for the entire population, this figure represents only a lower bound for residents of rural municipalities, who—as shown in Box 8.1—are widely dispersed across the territory. These distances already pose a challenge for the use of health services and, consequently, for health outcomes. According to the review by

¹³ Only in Suriname does the quality in rural areas surpass that of urban areas.

Mseke et al. (2024), distances as short as 16 km between residents and health centers can reduce access.

Another challenge in rural health provision is the shortage of specialized personnel. Table 8.3 shows that as municipal urbanization increases

in Brazil, the number of health professionals and physicians per 100,000 inhabitants rises accordingly. The gradient is most pronounced for physicians: urban municipalities have nearly two more doctors per 100,000 residents than rural ones, even after accounting for differences in income levels.

Table 8.3
Relationship between the number of health professionals and physicians per 100,000 inhabitants and the degree of urbanization

	Variation in the number of professionals	Variation in the number of physicians
Differences		
Semiurban vs. rural	0.32***	0.37***
Urban vs. rural	0.76***	1.76***

Note: The table reports coefficients from ordinary least squares regressions in which the dependent variable is the number of health professionals (column 1) and physicians (column 2) per 100,000 inhabitants. The omitted category is rural municipalities. Variables are measured at the municipal level. Both regressions include state fixed effects and controls for municipal income levels. Asterisks indicate statistical significance: *** 1%, ** 5%, * 10%.
Source: Authors based on Datasus (2025), Schiavina et al. (2023), and Alves et al. (2025).

Policies to improve health services in rural areas

Some policies that help ease demand-side barriers to health-service use include monetary interventions (such as subsidies and pricing strategies), along with efforts to disseminate information, cover transportation and logistical costs, and reduce the minor administrative procedures required to access care (Dupas & Miguel, 2017).

On the supply side, a first step toward increasing access to health services is the construction of new facilities. Croke et al. (2020) find that the number of institutional births and prenatal visits in Ethiopia increased following the construction of health centers, while Ramos Pastrana et al. (2024) show that building the first hospital in Mexican municipalities reduced maternal and neonatal mortality.

Strengthening the presence of health professionals—particularly those responsible for primary care—is also essential. In Brazil, the Programa Saúde da Família sought to expand primary-care coverage through teams composed of at least three professionals (a doctor, a nurse, and an assistant), together with community health workers. Rocha and Soares (2010) estimate that expanding these services led to reductions in mortality, especially in the poorest municipalities with the least health-care infrastructure.



Community rural health project supported by CAF in Ecuador.



Improvements in physical and digital accessibility, the presence of itinerant services and new facilities, and professional-incentive schemes can increase the availability of health services and qualified personnel in rural areas

Several countries have also used non-financial incentives to encourage medical professionals to work in remote or rural areas. One example is Peru's Servicio Rural y Urbano Marginal de Salud, a program under which licensed health professionals serve in rural localities; participation is mandatory for holding public-sector positions, entering professional specializations, and receiving government scholarships or financial support for further studies (MINSA, 2025).

Another approach to increasing the number of health-care workers in rural areas is to expand the types of profiles eligible for these posts. In some cases, individuals with lower levels of formal specialization—community health workers (WHO, 2018)—provide primary care. Evidence from several interventions with community health workers in rural Central America and the Caribbean suggests they have been effective in detecting and managing noncommunicable diseases (Duan et al., 2018).

In many cases, expanding access can also be achieved through mobile or itinerant health-care teams. Cristia et al. (2015) evaluate Guatemala's Programa de Extensión de Cobertura, in which teams composed of health professionals (a doctor or nurse and an assistant) conducted monthly visits to rural, Indigenous, or otherwise underserved communities. Services focused on maternal and child health. Results show significant increases in child vaccination coverage and prenatal visits by qualified personnel (substituting informal providers).



CAF Action.
Scan the QR code to see CAF's projects in telemedicine.

Improvements in physical and digital accessibility can also increase the timely use of health services by rural communities. Aggarwal (2021) shows that rural road construction in India was associated with increases in prenatal checkups and in the number of births occurring in health facilities. The study also reports improvements in medical care, including greater access to prenatal supplements and higher child vaccination rates, with larger gains for girls.

Finally, telemedicine and the use of ICTs in health care can help overcome some barriers to access, especially for primary care. Although countries in the region have made efforts to incorporate these tools, implementation still faces challenges related to the preparedness of health professionals and to infrastructure in health centers (Allub et al., 2025). While most countries have plans to improve the necessary physical infrastructure, progress and implementation remain limited. These constraints are compounded by the digital-connectivity gaps between urban and rural areas discussed in the “Digital connectivity” subsection, which affect individuals' ability to access these services. This underscores the importance of maintaining in-person and multi-channel care, ensuring that residents who face connectivity barriers or limited digital skills can still visit nearby health centers and receive the support they need.



Telemedicine and the use of ICTs in health care can help overcome barriers to access, but their effective adoption requires improving professional preparedness and strengthening infrastructure in health centers

Access to financial services

Access to financial services in rural areas of LAC remains limited. Expanding this access is a key tool for strengthening both household productivity and well-being. From a productive perspective, access to credit is positively associated with technology adoption, productive diversification, and higher agricultural yields, as demonstrated by studies in Mexico, Brazil, and Peru (Carrer et al., 2020; Frisancho & Valdivia, 2024; Santana et al., 2023). Financial services also support the development of rural enterprises, which are essential for diversifying household income sources.

From a well-being perspective, financial inclusion helps reduce economic vulnerability. Savings make it possible to smooth consumption in the face of unstable income, while access to insurance—particularly health and climate-related coverage—improves households' ability to cope with adverse

events. Access to credit and insurance markets can even prevent both seasonal and permanent migration from rural areas to cities (Meghir et al., 2022; Morten, 2019). In addition, households with greater access to financial services tend to invest more in education and health, reinforcing their paths toward upward mobility (Briano-Turrent, 2025; Rubio & León, 2025).

However, formal financial institutions are often absent from rural and remote areas due to high transaction costs, low population density, the seasonality and informality of income sources, and limited physical and digital infrastructure (Burgess & Pande, 2005; Hernandez, K. et al., 2024; Lopez & Winkler, 2018). Additional barriers include limited credit histories, low levels of financial literacy, and distrust of the banking system (FIDA, 2021).

Access and barriers to financial inclusion

According to the Global Findex 2024, 30% of adults in LAC do not have an account at a financial institution nor use mobile money, compared with just 5% in high-income countries.¹⁴ The share is even higher in rural areas: 33% lack access to formal services (a bank account or mobile money). Use of digital wallets in the region has increased in recent years—the same survey shows that 33% of rural adults report having such an account, up from less than 25% in 2021. However, their role appears more complementary than substitutive: the share of adults without access to banking services only rises slightly (to 36%) when mobile money users are excluded.

Heterogeneity exists across countries and in rural–urban gaps in account ownership. As shown in Graph 8.8, while in Chile and Brazil almost nine

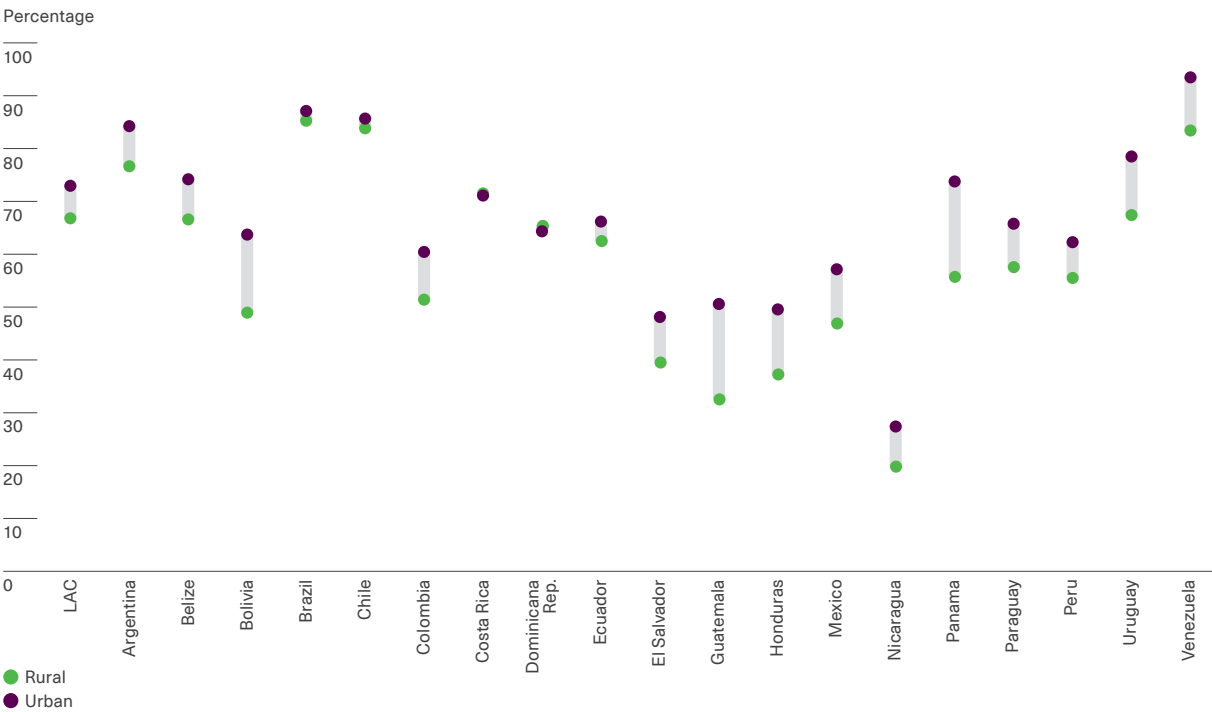
out of 10 adults—whether urban or rural—have a bank account, in Bolivia, Colombia, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Paraguay, and Peru, more than half of the rural population does not. Adding mobile money accounts does little to alter this picture: inclusion increases only marginally, without changing the overall outlook.



In rural areas of LAC, 33% of adults lack access to formal financial services. The main barriers are physical distance and service costs

¹⁴ Regional groupings exclude high-income countries under the World Bank classification; in LAC, these are Chile, Panama, and Trinidad and Tobago.

Graph 8.8
 Share of adults in Latin American and Caribbean countries with an account, by place of residence, 2024



Note: LAC figures are weighted averages using each country's total population.
Source: Authors based on the World Bank (2025j).

When examining the reasons why adults in LAC do not have a bank account, physical distance remains an important barrier. Table 8.4 shows that almost 20% of the rural population cites distance to a financial institution as their main reason for not having an account, compared with only 11% in urban areas. Nevertheless, the cost of financial services is the primary reason for the lack of access in both rural and urban settings. Finally, distrust in the financial system is notably higher among rural adults than among their urban counterparts.

● ●
In rural and remote areas, the limited presence of formal financial institutions reflects high transaction costs, low population density, seasonal and informal incomes, and limited physical and digital infrastructure

Table 8.4

Main reasons why individuals in urban and rural areas do not have an account at a bank or similar institution

Reason for not having an account	Rural	Urban	Gap
... financial institutions are too far away	19.4%	11.5%	-7.9%
... financial service fees are too expensive	21.9%	17.6%	-4.3%
... does not have enough money to open one	12.2%	10.1%	-2.1%
... someone else in the family already has one	13.1%	15.3%	2.2%
... does not trust financial institutions	12.5%	9.5%	-3.0%
No response	20.9%	36.1%	

Note: The table reports the percentage of individuals by the main reason for not having an account, out of the total number of people who indicated not having one.

Source: Authors based on the World Bank (2025j).

These gaps are compounded by significant differences between rural and urban populations in financial knowledge and resilience to income loss (see Graph A.8.2 in the appendix to this chapter, available in the online edition of RED). However, attitudes toward financial technology (digital attitude) are similar across both settings, suggesting that rural populations are willing to adopt digital financial products.

Finally, among those who do have an account, an important indicator is the actual use of financial services. According to the Global Findex 2024, roughly 50% of adults in LAC reported having borrowed money, with similar levels in rural and urban areas—a pattern also observed in high-income countries.

Financial instruments and policies to support adoption in rural areas

Evidence suggests that expanding financial services to rural populations in LAC requires a diverse and complementary set of tools.

To start, several instruments tailored to rural contexts have improved the provision of services in remote areas. These include (semi)formal community-based solutions such as Rotating Savings and Credit Associations (ROSCAs), which pool members' regular contributions to finance individual needs on a rotating basis—relying on local trust and group discipline (Besley et al., 1994). Another model is the Village Savings and Loan Association (VSLA), where self-managed groups accumulate joint savings and extend small loans to

members; repayments and interest are distributed at the end of each cycle. Unlike ROSCAs, where funds are rotated and do not generate collective returns, VSLAs combine savings, flexible credit, and shared earnings. In rural Peru, VSLAs show high female participation, reduced vulnerability, and mixed effects on financial inclusion, and they serve as a platform for additional services such as microinsurance or digital payments (Frisancho & Valdivia, 2024).

A second set of tools involves proximity-based delivery models, such as branchless banking. Through banking agents and simplified accounts, these models have expanded social payments and basic services in areas without bank branches. Brazil was a pioneer in using the banking channel to deliver conditional cash transfers, bringing low-income households closer to the formal system (Jayo et al., 2012; Lindert et al., 2007).



In rural Peru, savings and loan groups show high female participation and reduced vulnerability, and serve as a platform for additional services such as microinsurance and digital payments

A third approach involves microcredit, which, although not designed specifically for rural environments, has achieved substantial penetration. Evidence shows that even with broad coverage, its effects on economic well-being in rural and semirural settings are limited. In Sonora (Mexico), the expansion of group lending by Compartamos increased women's access to finance and the scale of their microenterprises, but did not raise average household income or spur the creation of new businesses; positive impacts were concentrated in well-being outcomes (lower depression, higher confidence) and in reductions in harmful coping strategies (Angelucci et al., 2015). Consistent results across countries—including Mexico—show modest increases in investment and self-employment, without robust effects on income, consumption, or human development, and with weaker signals of women's empowerment compared with community-based instruments such as VSLAs (Banerjee et al., 2015).

Overall, adapting financial products is crucial for success in agricultural and dispersed settings. Less rigid repayment schedules aligned with production cycles, grace periods, and appropriate collateral enable higher-return investments and improve credit effectiveness (Field et al., 2013). Products can also incorporate programmed savings for seasonal expenses (inputs, education, health) and working-capital lines that account for climate shocks. Mobile banking offers a practical channel to operationalize this flexibility: it enables instant and person-to-person payments, encourages small and frequent savings, facilitates collections at fairs and local shops, and extends the reach of correspondents and agents in remote areas.

On the demand side, public transfers have proven effective as an accessway for these services. For example, shifting Progresa's cash payments in Mexico to account deposits reduced transaction costs and reshaped households' savings portfolios. Likewise, in Brazil's Bolsa Família program, the use of banking agents and Caixa bank accounts broadened financial engagement among rural households—particularly women, who were often the account holders (Lindert et al., 2007; Masino & Niño-Zarazúa, 2020).

Another constraint on demand is the lack of credit history. In recent years, alternative scoring systems have expanded the frontier of access. In addition, financial data interoperability—such as Brazil's Open Finance framework—allows customers to share their data across regulated institutions, supporting alternative credit scoring and personalized products (Banco Central do Brasil, 2025).



CAF Action.
Scan the QR code to see CAF's financial inclusion projects.

At the same time, distrust and limited financial knowledge mean that the adoption of digital money accounts must be accompanied by digital and financial literacy policies and anti-fraud measures. In LAC and Sub-Saharan Africa, about 30% of users report receiving fraudulent messages requesting money, with higher exposure among adults with less schooling (Klapper et al., 2025). Evidence also shows that simple interventions—such as interactive phone-based training—reduce fraud incidence among mobile-money users (Klapper et al., 2025). Reducing vulnerability requires simple content (budgeting, responsible credit use, understanding total costs), digital-security habits (PINs, biometrics, identity verification), effective complaint channels, transaction limits and alerts, and transparency rules that prevent hidden fees.

Another emerging risk as financial services expand in low-literacy rural areas is exposure to high prices and over-indebtedness. Some studies report that rural microentrepreneurs in Haiti allocate around 40% of their net profits to debt service—almost twice the share observed in urban areas—and that interest rates in rural localities are typically higher: around 30% annually in microfinance, roughly double the rate charged by traditional banks (Bonomo et al., 2025; Roa, 2013). Although these findings vary across countries and institutions, they highlight the downside of financial

inclusion: without proper credit assessment, cost transparency, and financial education, expanding microcredit can deepen vulnerabilities.



Expanding financial services must include adapting products to rural contexts—with flexible repayment aligned to income cycles, grace periods, and appropriate collateral

Taken together, the evidence suggests that an effective package for rural areas includes flexible repayment schedules aligned with production cycles, grace periods, and appropriate collateral; low-cost physical access points (agents); interoperable payments and digital accounts; community organizations with strong female participation (e.g., VSLAs); and better data for risk assessment—all supported by robust consumer-protection frameworks and an explicit pro-women focus in account ownership, usability, and security (Banco Central do Brasil, 2025; Frisncho & Valdivia, 2024; R. Goyal, 2023; Jayo et al., 2012; Masino & Niño-Zarazúa, 2020).

Roadmap to improve access to and quality of rural services

The comprehensive assessment of gaps in essential rural services in LAC presented in this chapter confirms that, although coverage has expanded significantly in most areas, marked inequalities in quality persist. Limitations linked to dispersed populations, higher service-provision costs, and low private profitability explain much of these gaps, underscoring the need for tailored policies and close coordination across sectors and levels of government.

Table 8.5 summarizes the main policies to strengthen both the supply of—and demand for—quality services in rural LAC.

Table 8.5

Tools and policies to improve access to and quality of services in rural areas

Service	Assessment of access and service quality in rural areas	Policies and tools	
		Supply	Demand
Water	79% of households in LAC have access to water on their premises. - Only 55% of the rural population has access to safely managed water.	- Network extensions for household connections. - Regulation and coverage obligations (private provision). - Community-based solutions.	Targeted connection subsidies or installment-payment models with progressive tariff designs.
Sanitation	11% of households have sewerage access. 50% of rural residents have access to safely managed sanitation.	Decentralized safe-sanitation solutions (e.g., pit latrines with waste management).	- Subsidies. - Information and social-norm interventions.
Electricity	- Coverage exceeds 95% of rural households in most LAC countries. - Significant quality gaps (frequency and duration of outages), with limited reporting by countries.	- Decentralized renewable-energy solutions for isolated areas. - Integration of local actors and community solutions. - Quality-enhancing regulation, with financial penalties and distributor-level reporting, disaggregated regionally.	Subsidies for purchasing solar panels and batteries.
Physical connectivity	66% of the rural population in LAC lives within 2 km of a road. 40% lives within 2 km of a paved road.	- Investment in construction, upgrading, and maintenance. - Strengthening subnational state capacity and coordination across government levels. - Demand-aggregation mechanisms (bundling road segments with different traffic levels) to encourage private participation.	
Digital connectivity	47% of rural households in LAC lack home internet access. - Internet speeds in urban localities are 64% higher than in rural areas.	- Coverage obligations and other requirements in private-sector tenders; demand aggregation. - Public-private partnerships. - Satellite internet expansion offers new connectivity options.	- Subsidies or progressive tariff designs to promote affordability. - Improved digital skills.
Education	- Greater availability of early-childhood and primary education, but sharp declines at the secondary level. - Much poorer infrastructure conditions in rural settings. - Teacher-recruitment challenges.	- Construction of education centers. - Improved physical connectivity. - Human-capital attraction: financial and professional incentives, mandatory rotations, information and behavior-change campaigns. - School clusters. - Use of ICTs (telesecundarias, virtual classes).	- Income transfers. - Education programs that include native languages. - Improved digital skills.
Health	- Expansion of primary care in rural areas, but persistent gaps in access to higher-complexity services. - Prenatal-care quality gaps of up to 56%. - Shortages of specialized personnel.	- Construction of health centers. - Improved physical connectivity. - Human-capital attraction: financial and professional incentives, mandatory rotations, expanded job-profile criteria. - Itinerant services. - Use of ICTs (multichannel telemedicine).	- Subsidies and pricing strategies for health services. - Transportation-cost subsidies to help patients reach faraway health facilities. - Information dissemination.
Financial services	33% of the rural population still lacks access to financial services. - Main barriers: physical distance and transaction costs.	- Flexible repayment schedules suited to seasonal income. - Semi-formal community solutions such as ROSCAs and VSLAs. - Branchless banking and mobile money.	- Bank-deposited public transfers as an entry ramp. - Digitized public transfers as an entry point. - Financial education to build trust and prevent fraud (especially for online services). - Cost and interest-rate regulation. - Improved digital skills.