

Sustainable Financing of Economic and Social Infrastructure in Latin America and the Caribbean

Trends, key agents, and instruments.

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Sustainable financing of economic and social infrastructure in Latin America and the Caribbean: trends, key agents, and instruments / Claudia Alvarez, Juan Martínez Álvarez, Pablo Pereira Dos Santos, Tomás Serebrisky, Ancor Suárez-Alemán.

p. cm. — (IDB Working Paper Series; 1036)

Includes bibliographic references.

1. Infrastructure (Economics)-Latin America-Finance. 2. Infrastructure (Economics)-Caribbean Area-Finance. 3. Sustainable development-Latin America. 4. Sustainable development-Caribbean Area. I. Alvarez, Claudia. II. Martínez Álvarez, Juan. III. Pereira dos Santos, Pablo. IV. Serebrisky, Tomás. V. Suárez-Alemán. Ancor. VI. Inter-American Development Bank. Vice Presidency for Countries. VII. Inter-American Development Bank. Infrastructure and Energy Sector. VIII. Inter-American Development Bank. Connectivity, Markets and Finance Division. IX. Title. X. Series.

IDB-MG-1036

Keywords: Infrastructure, Financing, Sustainable Development, Latin America and the Caribbean, Economic Infrastructure, Social Infrastructure

JEL classifications: H54, L90, O18, O54, Q01, G32, R51, D92

Design and layout: Valeria Bernal Carvajalal

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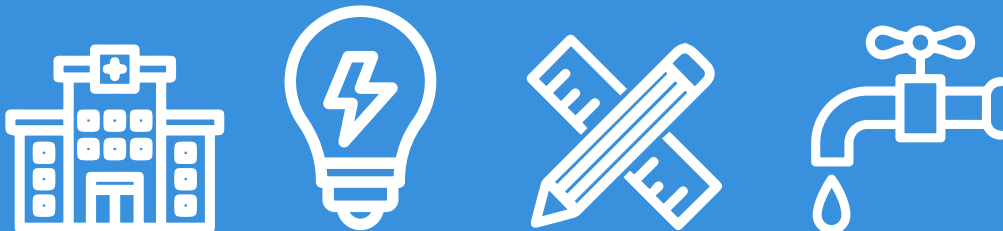
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Acknowledgements

The authors would like to thank the colleagues of the Inter-American Development Bank Group who provided valuable comments, observations, and inputs for the preparation of this publication. Special thanks to Paula Castillo and Cristina Simón (IDB Invest), as well as Pilar Castrosin and Ben Solís (IDB) for their helpful and valuable comments.

Any errors are our full responsibility. The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Inter-American Development Bank, its Executive Board of Directors, nor of the countries it represents.



Foreword

A region's economic and social infrastructure is one of the key foundations on which its development is built. The prosperity and sustainable and inclusive growth of countries cannot be conceived without considering the fundamental role played by hospitals and schools that care for and educate us, the roads, ports and airports that connect and bring us together, or the electricity, water and adequate sanitation that are indispensable for all of the above. Talking about infrastructure is not only about huge investments and enormous structures, but also about considering a service perspective that is essential to understand the role that both the public sector - through adequate governance, institutions and regulations necessary for its proper development and operation throughout the life of the assets - and the private sector - through responsible participation that ensures the highest standards of quality, efficiency and innovation in the sector - must play. In short, it is a matter of viewing investment in the asset as a means to an end, which is the provision of sustainable, quality services that improve the daily lives of the inhabitants of Latin America and the Caribbean.

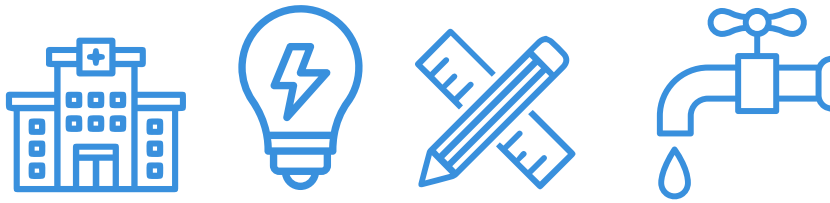
The challenges faced by the countries of Latin America and the Caribbean in terms of economic and social infrastructure are enormous, as presented in this document. However, equal or greater than the challenges are the opportunities that lie ahead, and Multilateral Development Banks have the responsibility to collaborate decisively in their materialization. The complex macroeconomic and fiscal scenarios faced by the countries, together with the enormous potential of the private sector in terms of providing sustainable and quality services, lead us to bet on an active search for Public-Private Partnerships that allow us, together, to respond to the existing needs and thus contribute to the sustainable and inclusive development of Latin America and the Caribbean.

To this end, it is essential to deepen our understanding of the financing that enables infrastructure development in the region. Only through a proper understanding of the infrastructure financing market (key agents, mechanisms, instruments) can we identify the main bottlenecks that limit greater or more effective participation, as well as take advantage of existing opportunities - and how the public sector can enhance it through its responsible institutions. Financing infrastructure, and mobilizing the private sector to do so, is at the core of the IDB's mission - as reflected in the IDB Group's Vision 2025.

For all of the above, we welcome this work as another example of coordination between the different areas of the IDB that, from and with the public sector, work to strengthen the conditions for greater, more efficient and sustainable private sector participation in public infrastructure development in Latin America and the Caribbean.

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Figures	6
Tables.....	7
Charts	7
Key messages	8
STATE OF THE (INVESTMENT IN) INFRASTRUCTURE: RECENT EVOLUTION AND CURRENT CONTEXT	11
UNDERSTANDING INFRASTRUCTURE FINANCING	17
Funding vs. Financing.....	17
Private infrastructure financing: Corporate and Project Finance.....	19
Public mechanisms to facilitate private infrastructure financing.....	23
PRIVATE INFRASTRUCTURE FINANCING IN LATIN AMERICA AND THE CARIBBEAN: HOW, HOW MUCH, AND WHO - (2004-2021)	24
Recent evolution of infrastructure financing in Latin America and the Caribbean.....	24
Regional assessment of private infrastructure financing in Latin America and the Caribbean	27
INSTRUMENTS USED TO CHANNEL PRIVATE INVESTMENTS TOWARDS INFRASTRUCTURE	28
MAIN INFRASTRUCTURE FINANCING PROVIDERS IN LATIN AMERICA AND THE CARIBBEAN.....	29
Role of National Development Banks in infrastructure financing	31
The role of multilateral institutions as mobilizers of private investment	35
Institutional investors - The solution to boost infrastructure financing?	39
IS THE DEBT MARKET CHANGING IN LATIN AMERICA AND THE CARIBBEAN?	43
INCREASING FINANCING IN LOCAL CURRENCIES	49
SUSTAINABLE INFRASTRUCTURE FINANCE: THE ROLE OF GREEN BONDS.....	52
CONCLUSIONS: A DEVELOPMENT AGENDA UNDER DEVELOPMENT	57
References.....	59
Annex	64



Figures

Figure 1: Average public and private investment in infrastructure as a percentage of GDP in Latin America and the Caribbean (2008-2017)

Figure 2: Share of public and private investment in infrastructure as a percentage of GDP in Latin America and the Caribbean (2010-2018)

Figure 3: Investment needs until 2030 to achieve the infrastructure component of SDGs in Latin America and the Caribbean, by IDB region classification (US\$ millions)

Figure 4: Infrastructure quality, competitiveness, and efficiency gap in Latin America and the Caribbean

Figure 5: Basic financial structure of PPP projects

Figure 6: Relative weight of project's financial schemes in the infrastructure sector in Latin America and the Caribbean

Figure 7: Types of public support for projects with private participation in the region

Figure 8: Evolution of private infrastructure financing – equity and debt – by year, Latin America and the Caribbean. 2004-2021. (US\$ millions)

Figure 9: Evolution of total infrastructure financing – by year, Asia-Pacific, Europe, MENA, North America, and Sub-Saharan Africa.

Figure 10: Evolution of infrastructure financing – equity and debt – by year, Asia-Pacific, Europe, MENA, North America, and Sub-Saharan Africa.

Figure 11: Distribution by country of total infrastructure financing in Latin America and the Caribbean (2004-2021)

Figure 12: Distribution of infrastructure financing in Latin America and the Caribbean, by country, year, and sector.

Figure 13: Types of private infrastructure financing

Figure 14: Debt providers in Latin America and the Caribbean infrastructure transactions by region of origin of debt provider institutions (US\$ millions)

Figure 15: Contributions to project finance debt in Latin America and the Caribbean: main types of financiers (Transport, Energy, Water and Sanitation, and Social, 2004-2021)

Figure 16: Project finance debt in Latin America and the Caribbean by financier type and sector, by currency, (a) in absolute terms (US\$ million) and (b) in relative terms

Figure 17: Project finance debt maturity in Latin America and the Caribbean by type of financier and infrastructure sector

Figure 18: Contribution to project finance debt in Latin America and the Caribbean by type of financier, excluding Brazil, Mexico, and Colombia (2004-2021)

Figure 19: Effect of a one-time increase of the pension funds stock of resources allocated to infrastructure



Figure 20: Effect of increasing the flow of new funds managed by pension funds for infrastructure

Figure 21: Infrastructure financing – debt, by type of instrument

Figure 22: Average bond repayment maturity in different currencies

Figure 23: Debt financing by type of issuance currency

Figure 24: Infrastructure bonds and monetary policy rates – BNDES disbursements and infrastructure bonds issued

Figure 25: Green bond resources disbursed on infrastructure investments (US\$ million, 2014-2021)

Figure 26: Co-financing with green bonds for new infrastructure projects, by country and sector (US\$)

Tables

Table 1: Debt providers for infrastructure projects in Latin America and the Caribbean

Table 2: Share of project finance debt contributed by type of financier to each infrastructure sector (Latin America and the Caribbean, 2004-2021)

Table 3: Top-10 NDBs responsible for project finance debt in Latin America and the Caribbean

Table 4: Mobilization of Private Resources by Multilateral and Bilateral Institutions*, 2019

Boxes

Box 1: Example of Project Finance: Extending highways 2 and 7 in Paraguay

Box 2: Example of Corporate Finance - Eletrobras

Box 3: The growing role of extra regional investors

Box 4: Rumichaca-Pasto Highway

Box 5: Some examples of private financing mobilization with green bonds

Box 6: Sustainability linked bonds: A new instrument to invest in infrastructure?



Key messages

Investments in the region's economic and social infrastructure have been insufficient, inefficient, and unsustainable thus far, and the impact of the pandemic has exacerbated the sector's structural problems. In addition to developing an agenda for public investment processes to boost their efficiency, developing mechanisms to incentivize more active and sustainable investments from the private sector is also a must.

- The deficit of properly maintained assets, developed following transparent prioritization process, and backed up by sufficient cost-benefit assessments has negatively impacted both the quality with which their services are associated, and the competitiveness of economies in the region.
- In terms of investment efforts related to the size of the economy, Latin America and the Caribbean needs to invest at least 3.12% of its GDP in infrastructure every year until 2030 to comply with Sustainable Development Goals (SDGs). In addition, social infrastructure investment has to be accounted for. In the case of hospitals, the sector's investment needs are estimated to be around US\$153 billion just for new hospitals and equipment, and for upgrading existent infrastructure.
- Expecting a significant public investment boost in times of crisis is unrealistic. In Latin America and the Caribbean (LAC), public investment drops 10% in real terms during fiscal adjustments, doubling – or even tripling – the decline in other developing economies. The crisis brought by COVID-19 has exacerbated the region's known infrastructure development weaknesses, while limiting even more the space for further public investment in infrastructure. All of this while facing a worse fiscal balance and higher public resource opportunity costs. The average public debt has grown from 40% in 2008 to 62% of GDP in 2021, revealing a clear depletion of fiscal accounts.
- Understanding how economic and social infrastructure is funded and financed in the region, as well as how to boost and diversify the presence of public and private investors with different profiles is a key step towards generating and/or improving the conditions to attract higher and better funding and, therefore, contributing to close existing infrastructure gaps that hinder expanding access to services and improving their quality.

Despite the complex economic outlook of recent decades, the market of private financing for infrastructure in Latin America and the Caribbean has grown, displaying significant debt market development with the arrival of new instruments and players.

- An assessment of the region's infrastructure funding by country between 2004 and 2021 shows the predominant role of the Brazilian market, responsible for 35.3% of the regional market, followed by Mexico (21.7%), Chile (14.9%), Peru (9.3%), Colombia (7.1%), and Panama (2.8%). These six economies attract 90% of all infrastructure private funding in Latin America and the Caribbean.



- Overall, infrastructure in LAC has been financed through an 85/15 debt-equity ratio. COVID-19 has strongly affected infrastructure in different ways (e.g., interrupting projects, discontinuing project planning and structuring), which translated into a significant decrease in financing, affecting several debt providers (e.g., commercial banks, institutional, national banks) and instruments (loans and bonds).
- Regarding sectoral distribution, the historical predominance of the energy sector continues, followed by transport – where roads represent over half of the portfolio (53%), followed by airports (19%) and ports (13%). However, data reveals that sectors that have traditionally attracted less resources, such as water and sanitation and social sectors – including health, education, housing, prisons, cultural centers, and sports’ facilities –, have started gaining increasing relevance over the past decade. The commitment to implement private participation schemes that some countries have made in sectors such as hospitals (Brazil, Chile, Peru, and, more recently, Colombia), schools (Brazil, Uruguay), or infrastructure for water and sanitation services provision (Peru, Brazil) explains this growing trend.

Commercial banks are the main providers of infrastructure financing, but the pool of players has diversified in the region, with a growing presence of institutional investors and multilateral banks.

- Although by late 2014, data showed that approximately six out of every ten dollars allocated to infrastructure funding derived from commercial banks, this percentage decreased in following years – while the roles of national or state development banks have remained unaltered. On the other hand, investment banking and specific infrastructure investment funds have nearly doubled their market share, and multilateral banks have become increasingly engaged.
- Nevertheless, public banks have an important role in private infrastructure financing throughout the region. 91% of all infrastructure financing granted by LAC’s National Development Banks (NDBs) have done so under project finance schemes. Out of all NDBs in the region, 26 agencies in 10 countries have participated in private infrastructure financing under project finance schemes. In the analyzed period between 2004 and 2021, NDBs were the second largest source of project finance debt (20%), after the private sector (67%), surpassing the contributions of bilateral and multilateral development organizations (13%).
- At the same time, Multilateral Development Banks have increased their presence in the region; they are at the center of the agenda from billions to trillions of dollars. They are the main provider of development financing as they are financed with public funds, and the mandate to mobilize private resource is at the core of their statutes since their very foundation.
- Institutional investor resources have not been fully leveraged by the infrastructure sector, even though they could provide long-term financing to close the infrastructure gap necessary to achieve SDGs by 2030. Regulatory barriers, especially prudential barriers, limit how much of the pension fund investment portfolio can be assigned to infrastructure projects, the lack of properly structured projects, and the high perception of regulatory risks hamper further investments from being allocated to infrastructure.



The need for sustainable infrastructure financing is enormous, as is the potential of debt instruments such as sustainable bonds – increasingly present throughout the region. Strengthening the components of sustainability since project preparation is key to facilitating their access to sustainable financing instruments.

- One of the most evident changes in the infrastructure financing market in LAC is the growing relevance of bonds, despite their presence in only a small number of countries. These instruments have become the second most relevant source of debt, surpassing official financing. Bonds have primarily targeted existent infrastructure finance, while commercial and official loans have mainly focused on the construction of new assets.
- In recent years, financial markets have developed sustainable financing instruments to accelerate the pursuit of SDGs. Green bonds are a debt instrument used to finance projects, assets, and activities that support climate change adaptation and mitigation. The market for green bonds in Latin America and the Caribbean is still limited, but it continues to grow and is expected to gain further traction in the coming years. Green bond issuance between 2014 and 2021 add up to US\$30.2 billion, or 2% of the global volume. Although 14 of the 33 countries in the region have issued green bonds, Brazil, Chile, and Mexico account for 74% of the emissions and 84% of the amount issued.

Latin America and the Caribbean's economic and social infrastructure sustainable financing agenda is, without a doubt, a flourishing development agenda. It is an additional goal of the present document to serve as the basis and support for others to further examine the topics covered and to keep contributing to an analytical agenda of applied research of great relevance to the inclusive growth and economic recovery of Latin America and the Caribbean.



State of the (investment in) infrastructure: recent evolution and current context

Infrastructure is the backbone upon which every society develops its potential. It would be contradicting the evidence not to recognize the decisive contribution that investing in schools, transportation, hospitals, street lighting, water, and sanitation, among other areas has on sustainable and inclusive economic growth¹. A direct quantitative reading shows that each dollar invested in infrastructure can generate two dollars in Gross Domestic Product (GDP) (Serebrisky, 2014; Cavallo, Powell and Serebrisky, 2020). The net gains of investing on resilient infrastructure rises up to four dollars for every dollar invested (Hallegatte et al, 2019). The benefits of investing appropriately are substantial, as are the costs of failing to do so – the IDB’s 2019 Macroeconomic Report shows how the estimated costs of not investing to expand infrastructure capital stocks are significant and they increase over time. Failing to add new capital to existing infrastructure stocks costs countries in the region, on average, about 1 percentage point of GDP growth the first year, which can rise up to 15 percentage points of missed growth if policies persist over the course of 10 years. Likewise, not investing in infrastructure is regressive, reducing the economic opportunities of the most vulnerable social groups. On average, households in the two poorest quintiles of income distribution lose 11 percentage points of real income over a 10-year period. This decline is the product of the contraction of the supply side of infrastructure services, which consequently increases their cost. As more impoverished households allocate a larger share of their income to infrastructure services, the lack of investment hits the most vulnerable the hardest.



¹ As Serebrisky, Suárez-Alemán, Margot and Ramirez (2015), have shown, the theoretical analysis on the contribution of infrastructure to productivity and growth finds its origins in Arrow and Kurz (1970), the first to include public capital as an input to the aggregate production function of the economy. Empirical research began later with Aschauer (1998). Infrastructure Canada (2007) provides a comprehensive review of theoretical and empirical literature concerning the impact of infrastructure on productivity and growth while Lanau (2017) and IDB (2019) offer updated figures on the relationship and impact in Latin America and the Caribbean.



Sustainable Financing of Economic and Social Infrastructure in Latin America and the Caribbean

Figure 1. Average public and private investment in infrastructure as a percentage of GDP in Latin America and the Caribbean (2008-2017)

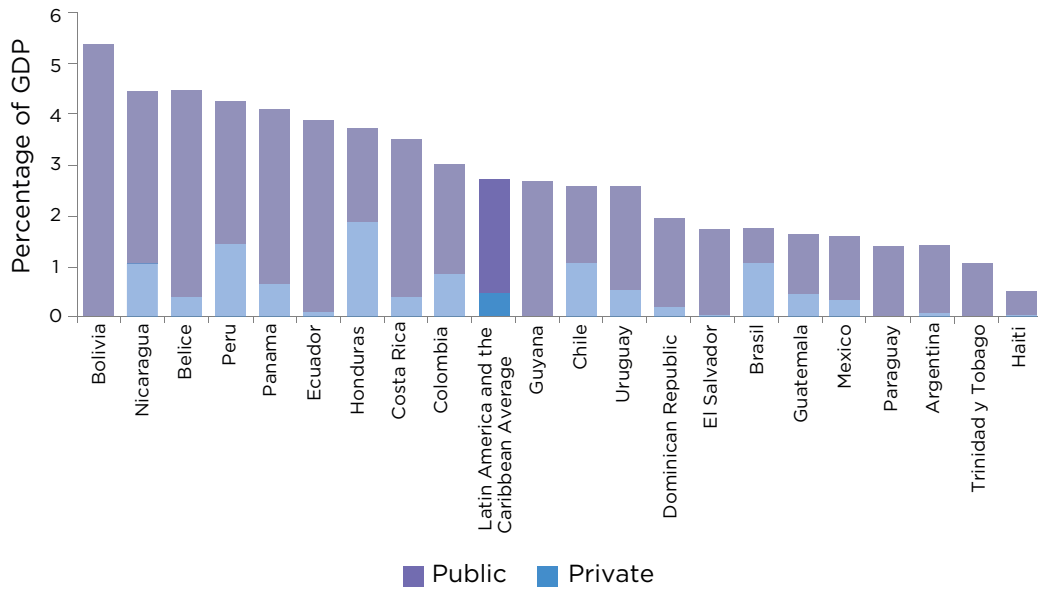
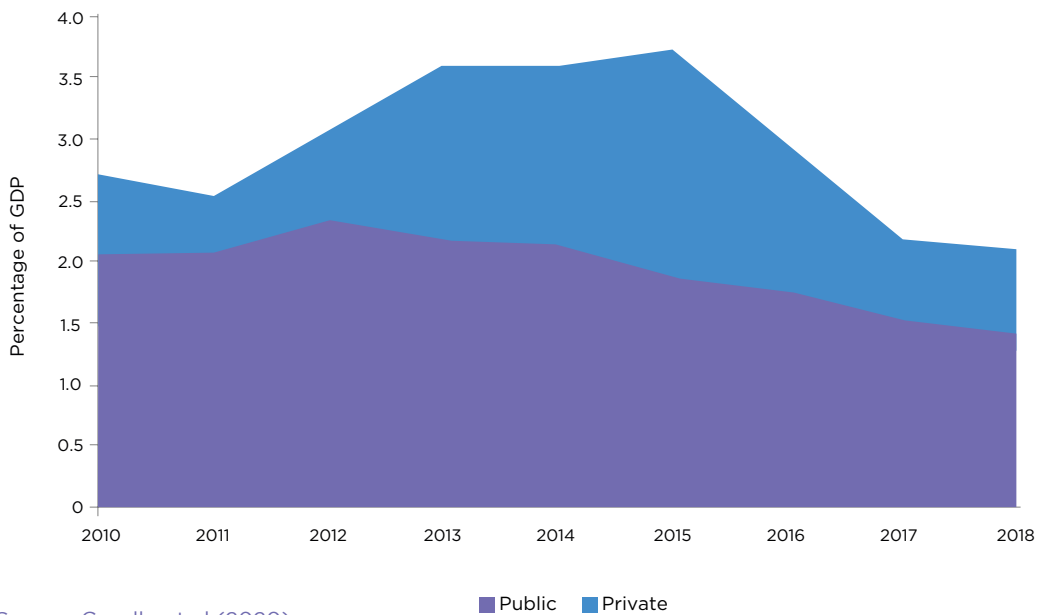


Figure 2. Share of public and private investment in infrastructure as a percentage of GDP in Latin America and the Caribbean (2010-2018)



Source: Cavallo et al (2020)



Acknowledging the direct and indirect positive effects of the appropriate development of infrastructure should have led countries in Latin America and the Caribbean (LAC) to intensify their investment efforts (at 2.8% of GDP) in recent years. Fay et al. (2019) document that LAC is the developing region that invests the lowest percentage of its GDP in infrastructure². As shown in Figure 2, the public sector represents two thirds of the total amount invested in infrastructure sectors – a percentage that is insufficient for economies like Brazil, Chile, Colombia, or Peru, as displayed in Figure 1. Data shows that investment in infrastructure has dropped since 2013. In an aggregated manner, although these volumes of investment have allowed the region to improve its access levels to basic services such as water, sanitation, power, or mobility of its inhabitants, they are far from enough in terms of both quantity and quality.

The region's investment on infrastructure not only lags behind other regions in terms of volume – it is also far from reaching the levels needed to provide the quality services that society demands and needs to develop competent economic activities. According to Brichetti et al. (2021), Latin America and the Caribbean need to invest US\$2.2 trillion in water and sanitation, energy, transport, and telecommunications through 2030 to expand and maintain the infrastructure necessary to achieve the Sustainable Development Goals (SDGs). Of this total, 59% should go to new infrastructure and 41% to maintenance and replacement of assets that have reached the end of their lifespan. In terms of investment efforts related to the size of the economy, Latin America and the Caribbean need to invest at least 3.12% of its GDP yearly on infrastructure until 2030. At the same time, social infrastructure investment needs must be considered in addition. In the case of hospitals, the sector's investment should rise to an estimated US\$153 billion in new hospitals and equipment and existing infrastructure upgrades alone (IDB, 2018, Suárez-Alemán et al., 2021).



² According to Fay et al. (2019), investments in other regions such as Eastern Asia, Northern Africa, or South Asia, are at 7.7%, 6.9%, and 5%, respectively.



Sustainable Financing of Economic and Social Infrastructure in Latin America and the Caribbean

Figure 3. Investment needs until 2030 to achieve the infrastructure component of SDGs in Latin America and the Caribbean, by IDB region classification (US\$ millions)

Region	Countries	New infrastructure	Maintenance and asset replacement	Total investment	Annual investment per capita
Central America (CID), Haiti, Mexico, Panama and Dominican Republic	Belize, Costa Rica, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Mexico, Panama and the Dominican Republic	382,699	230,077	612,776	243
Caribbean (CCB)	Bahamas, Barbados, Guyana, Jamaica, Surinam, Trinidad and Tobago	10,026	9,529	19,555	251
Andean Group (CAN)	Bolivia, Colombia, Ecuador, Peru and Venezuela	283,252	174,714	457,965	259
Paises del Cono Sur	Argentina, Brazil, Chile, Paraguay and Uruguay	634,573	495,866	1,130,439	322
Total Latin America and the Caribbean		1,310,550	910,186	2,220,736	282

Fuente: Brichetti et al (2021).

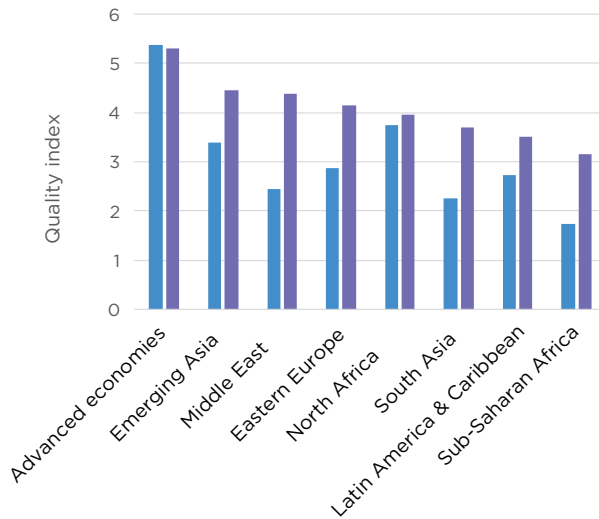
The lack of sufficient well-maintained assets developed following transparent prioritization processes and cost-benefit evaluations has negatively affected both the quality of their associated services and economy competitiveness.



Figure 4. Infrastructure quality, competitiveness, and efficiency gap in Latin America and the Caribbean

Quality gap

Infrastructure service quality in LAC and other regions, 2000-18

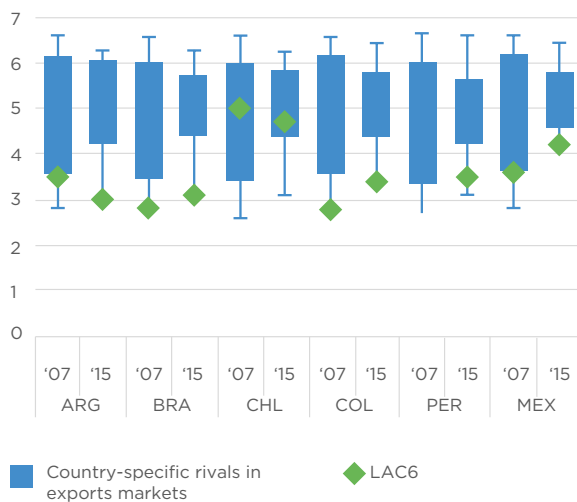


Fact: on average, infrastructure service quality in LAC only surpasses that of Sub-Saharan Africa, lagging behind every other region in the world.

Source: WEF (2019).

Competitiveness gap

Infrastructure quality compared to competitors 2007-15 (constant US\$)



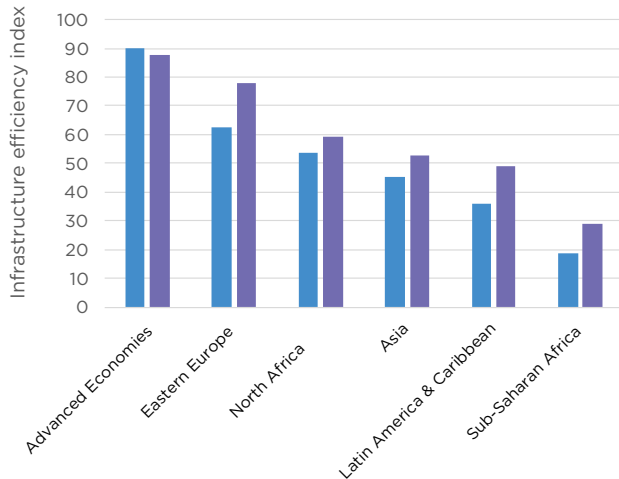
Fact: LAC-6 has worse infrastructure than its main commercial competitors in each country's most relevant exports markets.

Source: Cerra et al (2016).



Efficiency gap

Infrastructure investment efficiency by region, 2000-16



Fact: On average, countries in the region only harness one of every two dollars destined to infrastructure development.

Source: Suárez-Alemán, Serebrisky, y Perelman (2019).

Investing more and better is crucial to Latin America and the Caribbean. As Ahumada and Navajas (2019) have pointed out,

if countries in Latin America and the Caribbean could increase investment and productivity levels linked to infrastructure to those of OECD countries, the entire economy's productivity could accelerate up to 0.6 percentage points per year – as a consequence of the estimated impact on low-productivity sectors in the region alone –, which would represent a 75% increase over the historic average.

In Latin America and the Caribbean, expecting a significant boost in public investment in times of crisis is not very realistic³. The IDB's 2019 Macroeconomic Report shows that public investment typically drops over 10% in real terms during fiscal adjustments, doubling – or even tripling – the decline in other developing economies. The crisis brought by COVID-19 has exacerbated the region's known infrastructure development weaknesses, while limiting even more the space for further public investment in infrastructure. All of this while facing a worse fiscal balance and higher public resource opportunity costs. The average public debt has grown from 40% in 2008 to 62% of GDP in 2021, revealing a clear depletion of fiscal accounts. On top of COVID-19, there are also the consequences of expansionary fiscal policies since the financial crisis of

³ As Cavallo and Serebrisky (2016) state, "In adverse times, it is usually politically more practical for governments to cut (or postpone) capital expenditure projects than to curtail other expenses. For example, Latin America and the Caribbean's total expenditure between 2007 and 2014 increased a considerable 3.7% of GDP, although over 90% of that increment was allocated to current expenditure and only 8% was assigned to public investment."



2008/2009 (Blackman et al., 2020). Therefore, the fiscal space is tightly limited, and the short-term current spending needs lead to explore other options to alleviate this pressure or even create further fiscal space. This situation undermines increased public investment in infrastructure, which in 2020 and 2021 kept dropping to under 1.5% of GDP⁴.

While the region displays enormous potential for public investment efficiency gains – in other words, getting more out of fewer resources⁵ – it is critical to boost mechanisms that incentivize more active and sustainable investments from the private sector. The private sector's participation can contribute improve the development, operation, and maintenance of assets and infrastructure service provision in times of crisis, as well as to preserve appropriate investment levels amid enormous fiscal difficulties. Private participation in infrastructure asset financing, construction, and operation in the region is decisive to promote quality infrastructure services, contributing to the region's economic growth, and to reducing inequality among its inhabitants by granting them access to more and better opportunities.

Understanding how economic and social infrastructure is funded and financed in the region and how to boost and diversify the presence of public and private investors with different profiles is crucial to generate and/or improve the conditions to attract more and better financing, and therefore covering unmet investment needs.

Understanding infrastructure financing

Funding vs. Financing

Within the realm of public infrastructure, there are multiple, and well differentiated, sources of project funding and financing. Who funds (or pays) for infrastructure? Ultimately, society. Take for example a road connecting two villages. To pay for its development and/or operation and maintenance, the government can decide to set up a toll scheme, where users pay every time they use it. In this case, payment is linked to road usage. Alternatives include direct payment for the availability of the road (payment for availability), payment for its optimal maintenance (payment for performance), or payment for a certain volume of individuals (State payment based on use). In any of the latter, government payments are part of public expenditure, which is always made up of tax collection from the people. So, whether it is directly (user) or indirectly (through taxes), citizens always pay for infrastructure. The public sector has several direct investment mechanisms for public infrastructure. Although the public sector has traditionally focused its activities

⁴ Infralatam (2022).

⁵ Serebrisky, Suárez-Alemán, Pastor, and Wohlhueter (2018) found that Latin America and the Caribbean could save nearly 1% of regional GDP by reducing cost overruns in public infrastructure development to figures comparable to the global average by avoiding delays or better using and maintaining existing infrastructure, among others.



on investing in developing new infrastructure through public expenditure allocation, there are other public tools for infrastructure investment, among which sectoral sovereign funds stand out. Sovereign funds are autonomous public entities that collect taxes from a specific infrastructure sector to invest back in it (earmarking). The most popular forms of sovereign funds in the region are road infrastructure and telecommunications funds. The former takes a portion of fuel taxes and traffic fine collection to invest in road maintenance and road network improvements⁶.

And, who finances infrastructure? Often, the significant amount of resources needed to create public infrastructure leads players to turn to third parties to obtain the required capital for their development. Public infrastructure can be developed, operated, and maintained directly by the public sector (traditional public works) or the private sector (Public-Private Partnership, or PPP). In either case, the infrastructure belongs to the State. Both the public and the private sector can resort to different agencies – commercial banks, national banks, multilateral development banks, or capital markets – to gain access to the upfront resources.

When the road from the previous example is developed directly by the State, the government itself can tap third parties to help finance it (e.g., a sovereign guarantee loan from a multilateral development bank) and also establish whether or not to set up tolls. This would constitute Traditional Public Works (TPW) with paid tolls or public resources. When the road is developed, operated, and maintained by the private sector (namely, a special purpose vehicle, or SPV, made up of several private agencies), the SPV can seek for third parties to help finance it (e.g., a mix of equity and debt provided by commercial and multilateral banks and equity markets) and it is the one who decides on a toll system or payment for availability/performance/use. This would constitute a public-private partnership with fees or public resource payments.

The private sector's involvement in developing infrastructure can adopt many forms and is always present – from construction contracts for the development of traditional public works and its operation and maintenance, and in PPP schemes, to the involvement of multiple private players in the financing of any of these schemes. Improving the ability and conditions to efficiently attract the private sector to develop infrastructure is always necessary under any contractual scheme, given that the main goal is to make the best use of public resources that pay for all public infrastructure.

The public sector has traditionally accounted for a large part of total public infrastructure investment in the region, compared with a one-third portion provided by the private sector (20% in the past decade) (Serebrisky, Suárez-Alemán, Pastor, and Wohlhueter, 2018). In addition to Traditional Public Work schemes –which dominated the development of

⁶ One of the region's most developed fund is FOVIAL in El Salvador. This kind of fund is also present in several Central American countries, Brazil, and the Dominican Republic.



infrastructure in the region during most of the last century, and where the private sector participated/participates separately during the phases of infrastructure design, construction, or operation–, new alternative schemes appeared, where the private sector adopts a coordinating role, frequently managing all project cycle phases: design, construction, operations, service provision, and asset maintenance: this type of scheme is known as Public-Private Partnership. PPPs based on contracts between the public and private sectors became increasingly popular, and are mostly present in sectors such as energy, ports, airports, roads, among others (Suárez-Alemán, Astesiano, Ponce de León, 2020a, 2020b).

Private infrastructure financing: Corporate and Project Finance

There are various ways to structure infrastructure financing, either through specific projects (Project Finance), or relying on a company's balance sheet (Corporate Finance). Project Finance is a technique that employs non-recourse (or limited recourse)⁷, where credit institutions analyze the project's expected income flow as a mean to repay the loan. This arrangement normally requires establishing a Special-Purpose Entity/Vehicle (SPE/SPV) to oversee project development. Unlike Corporate Finance, lending institutions don't grant funds based on the company's asset and liability portfolios. Instead, they analyze the project as an independent entity, with its own assets, contracts, and cash flow, essentially independently from the agency that promotes the project (World Bank, 2016)⁸. An example of project finance is an SPV that is financed to develop and operate a toll road.

In the case of Corporate Finance, lenders assess the loan based on the strength of the borrower's balance. In other words, debt repayment is fully guaranteed by the sponsor. A Corporate Finance example could be an energy distributing company that obtains a loan to extend its distribution network into new territories within its jurisdiction. In general, the transaction costs in this model are lower than in project finance. That's why in the latter, investment in financially structured projects tends to be greater, to absorb the mechanism's higher transaction costs. Independently of the financing method, the project's assets can be financed by a combination of debt and equity.

⁷ The term “non-recourse” denotes the lending agency's inability to sue company shareholders in case of payment default. Similarly, there may be situations in which recourse is limited as a consequence of the sponsor or the contractor being the most relevant, or sole, shareholder. In these cases, especially observed in less sophisticated markets, recourse are established on the lender's side, particularly during construction phase.

⁸ This method is also known as off-balance from the perspective of the capital investors' parent group.



Often State-owned enterprises (SOEs) can oversee project development as a sponsor and/or shareholder of the project company.⁹

BOX 1

Example of Project Finance: Extending highways 2 and 7 in Paraguay

For the extension project of Highways 2 and 7 in Paraguay, *Rutas del Este S.A* – a Specific Purpose Vehicle in charge of designing, financing, building, maintaining, and operating the project – was created in 2016. This concession holder is made up of two companies, *Sacyr Concesiones* and *Ocho A S.A*. In October 2019, the project reached its financial closure to double the highways 2 and 7 number of lanes on over 140 kilometers. The project is expected to relieve traffic and cut driving time between Asunción and Ciudad de Este, the country’s largest cities and main economic hubs. [IDB Invest](#) provided a financial package of US\$200 million to the concessionary “*Rutas del Este*”. In addition, the concession holder issued a US\$458 million, 17-year bond. The financial structure of IDB Invest consists of a guarantee, which assumes the construction risk associated with using the bond’s resources, and a loan for the same duration and repayment source as the bond. The combination of a guarantee and loan allows the concessionary to employ the bond’s issuance resources from day one, increasing the operation’s efficiency. In January 2022, to cover the project’s remaining costs, [IDB Invest](#) proposed a new financial tool that complements that provided in 2019 – structuring and buying a bond of the project in the US market to provide US\$219 million to *Rutas del Este S.A*.

This project is the first Public-Private Partnership contract signed under Paraguay’s PPP Law.

⁹ Herrera-Dappe et al (2022a and 2022b) will conduct an updated assessment on SOEs and the performance of related infrastructure companies. The World Bank (2017) shows how, on a global scale, over 66% of public financing for infrastructure projects proceeded from SOEs, figures particularly influenced by the growing participation of public companies in project financing among the southern and eastern regions of Asia and Pacific, apart from central Europe and Western Asia. In the case of LAC, the numbers are considerably different to the aforementioned regions. The authors concluded that LAC has comparatively less participation in infrastructure investment SOEs, where only 9% of the investment in these projects came from public companies in 2017. At the sectoral level, energy has the highest participation (14% of the financing of sector projects came from SOEs), followed by water and sanitation (7%), and to a lower extent, transport (3%).



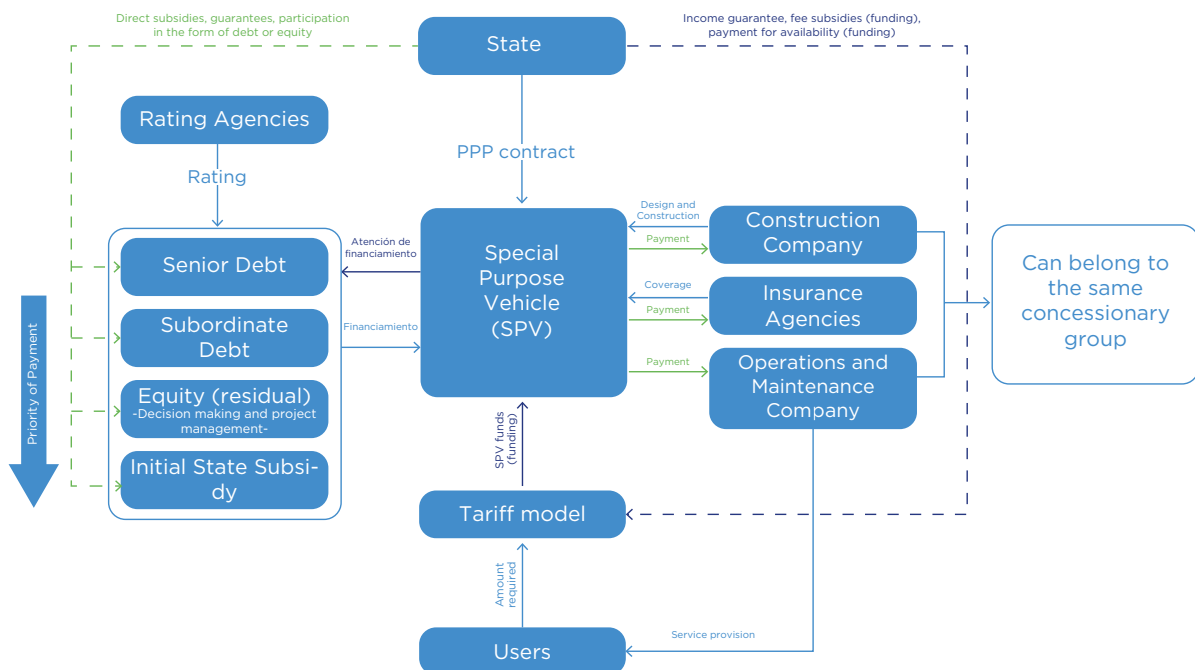
BOX 2

Example of Corporate Finance - Eletrobras

Eletrobras - Brazil's largest electric power generating company - is a clear example of a case in which creditors assess a loan based on the soundness of the borrower's balance. In 2008, CAF signed an A/B¹⁰ loan with *Eletrobras* for US\$600 million to finance the mixed capital company's investment plan. This structured loan - with a US\$150 million contribution by CAF for part A, and US\$450 million for part B - financed by a syndication of 11 banks led by CAF and CITI aimed at increasing the installed capacity for generation, transmission, and distribution to meet Brazil's growing demand through direct financing from the company's investment plan.

During infrastructure development, its economic and financial success will depend on the ability to balance the equation between financing and payments, a particularly complicated task due to the multiplicity of players. PPPs' financial structure is based on project finance, where financing is backed up by the resources that the project itself creates. This scheme's success will depend on the balance between the interests of users, the State, the operator, shareholders (SPV owners and others who invest resources in the project), and lenders (banks or other institutional investors who provide resources to the project in the form of debt) (Villalobos, 2017), its incentives alignment, and its risk allocation. Figure 5 presents the basic financial structure of PPP projects.

Figure 5. Basic financial structure of PPP projects



Source: Villalobos (2017).

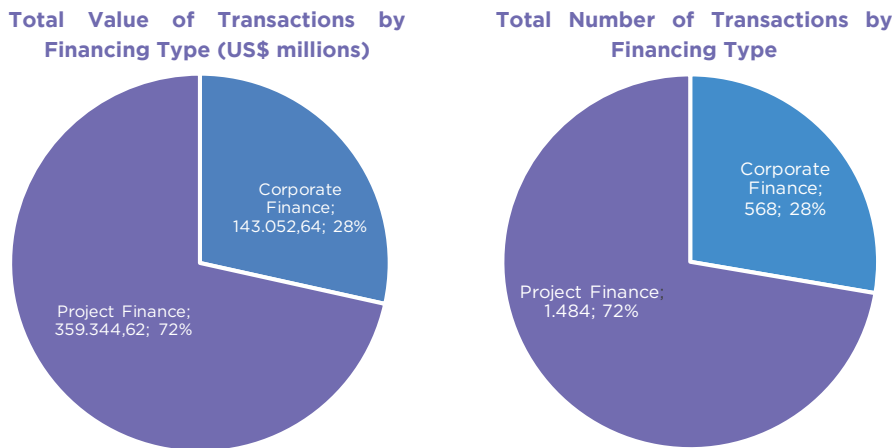
¹⁰ A/B loans are co-financing mechanisms developed by multilateral organizations to finance development projects together with other international financial institutions.



In short, the correct implementation of PPP schemes depends on two key concepts: risk management and yield. The failure or success of these partnerships will be determined by their ability to generate good contracts, with the right incentives, and where the relationship between public and private benefits both sides, and therefore, society as a whole. This way, PPPs constitute a better alternative than traditional schemes in that they imply a better use of public resources, normally manifested through an appropriate level of risk transfer – when they are better addressed by the private sector – and increased performance in terms of infrastructure development, operation, and maintenance – compensating for financing costs. When this equation has a positive result, PPPs generate value for money, and just then become the right choice as an infrastructure development model.

Collecting and systematizing precise information to help find infrastructure-financing patterns (whether in project finance or corporate finance schemes) is complex. There is no single data source to provide this information, although there are several commercial sources that can provide partial information¹¹. After reviewing them, this document leveraged information from the IJ Global Database, a source widely used by Multilateral Banks, given its coverage of developing countries and diverse infrastructure sectors. The IJ Global Database includes sufficient and relevant information since 2004. This document takes data available until 2021, a period for which financing transactions, such as project finance, represent 72% of the private financing sample^{12 13}.

Figure 6. Relative weight of project’s financial schemes in the infrastructure sector in Latin America and the Caribbean



Note: The Figure excludes transactions cataloged by IJ Global as “Financed by the Public Sector” or “Non-commercial financing”.¹⁴

Source: prepared by the authors based on data from *IJ Global* (2022).

¹¹ Examples of databases are: IJ Global, PPI, Prequin, Dealogic, Refinitiv, InfraPPP, and Infralatom. This document used data from IJ Global given the scope of the data they provide and the temporal possibility of replicating the data assessment.

¹² Initially, the information analyzed based on IJ Global includes the total sample of transactions with financial closure in every sector for the 26 countries in Latin America and the Caribbean for the 2004-2021 period. The sample excludes transactions that involve more than one country or sector. It does consider: primary financing, refinancing, additional mechanisms, portfolio financing, company acquisitions, and asset procurement.

¹³ By not taking into consideration Corporate Finance transactions, those in the telecommunications sector – which represent nearly 20% of all transactions of this type, and 6% of the total sample – are almost entirely left out of this assessment. This analysis includes the telecommunications sector to underscore its share across the different types of financing schemes in the region.

¹⁴ This category comprises operations that don’t imply capital from the private sector nor commercial lender debt. IJ Global reserves this designation for transactions where the counterparts that provide capital are predominantly state-owned and where debt (if any) is entirely provided by financial development institutions.

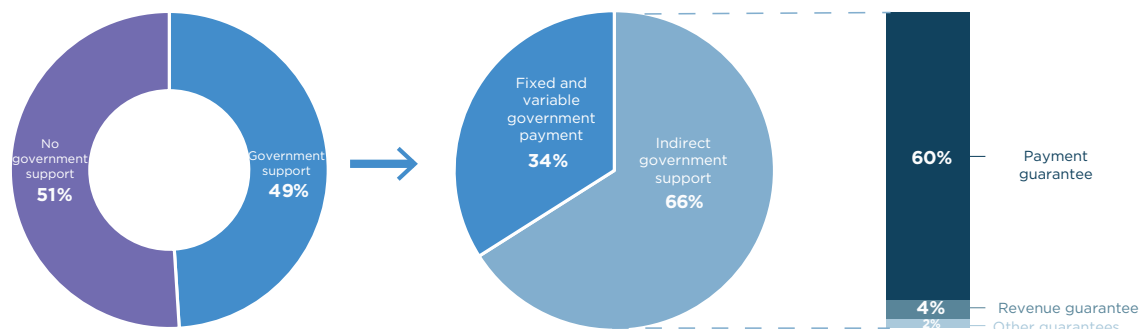


The financial market analysis for infrastructure in the following sections relies on information related to *project finance*, taking into consideration the number and the aggregated sum of transactions in the database given that this modality allows us to establish direct and unequivocal links between financial instruments and the investment assets. On the other hand, this cannot be applied to *corporate finance* with the information from the available databases.

Public mechanisms to facilitate private infrastructure financing

The public sector has mechanisms to facilitate private infrastructure project financing. The role of the public sector in facilitating private infrastructure financing consists of covering the lack of financial project feasibility to be entirely financed by the private sector ([IDB, 2021](#)).

Figure 7. Types of public support for projects with private participation in the region



Source: World Bank PPI database www.ppi.worldbank.org as of April 15, 2016.

The main public mechanisms to facilitate private financing of infrastructure in the region are funding provided by national or subnational governments, and financing offered by national development banks (NDB¹⁵). National and subnational government funding can be effective or contingent. The most effective traditional funding in LAC to improve a projects' financial feasibility is paying for part of the construction costs¹⁶. Contingent funding in general implies the provision of different types of payment guarantees¹⁷ to reduce the project's risk profile and facilitate private investment. Meanwhile, national development banks play a relevant role in financing infrastructure in the region, particularly providing long-term funding in the local currency. The next section explores further into the role NDBs have had as the main source of public support to the private financing of infrastructure in LAC.

¹⁵ National Development Bank (NDB): refers mainly to public banks operating within the national territory and whose statutes include mandates on economic and/or social development.

¹⁶ For example, in the case of Peru, the national government has pledged to make irrevocable payments to cover construction costs once the private constructor reaches certain developmental milestones.

¹⁷ For example, a guaranteed minimum income. For a full review of the public guarantees to mobilize private investments for infrastructure, see (World Bank, 2019).



Private infrastructure financing in Latin America and the Caribbean: how, how much, and who - (2004-2021)¹⁸

Recent evolution of infrastructure financing in Latin America and the Caribbean

From the historical perspective of the global macroeconomic and financial context, the period between 2004 and 2021 is complex¹⁹ and strongly marked by the financial crisis of 2008-2009 and the impact of COVID-19 since 2020. Both crises had different origins and implications but were largely significant in terms of economic activity.

The initial section analyzed the effect that each crisis had on the evolution of public investment in infrastructure, which has suffered major capital spending cuts due to current expenditures in times of crises, as it is usually the case in Latin America and the Caribbean (Izquierdo et al., 2018). According to the website Infralatam, public investment in infrastructure in 2020 and 2021 was 1.4% of GDP on average, the lowest since Infralatam started reporting public investment data. The reduction of public resources allocated to infrastructure combined with the need of several countries to set up policies that cut public spending triggered the development of numerous reports by multilateral development banks, the G-20, and different academic centers, proposing further involvement of the private sector in infrastructure as the most feasible and practicable way to maintain and improve infrastructure capital and service quality (see, for example, G-20, 2011; Inderst, 2013; OECD, 2013).

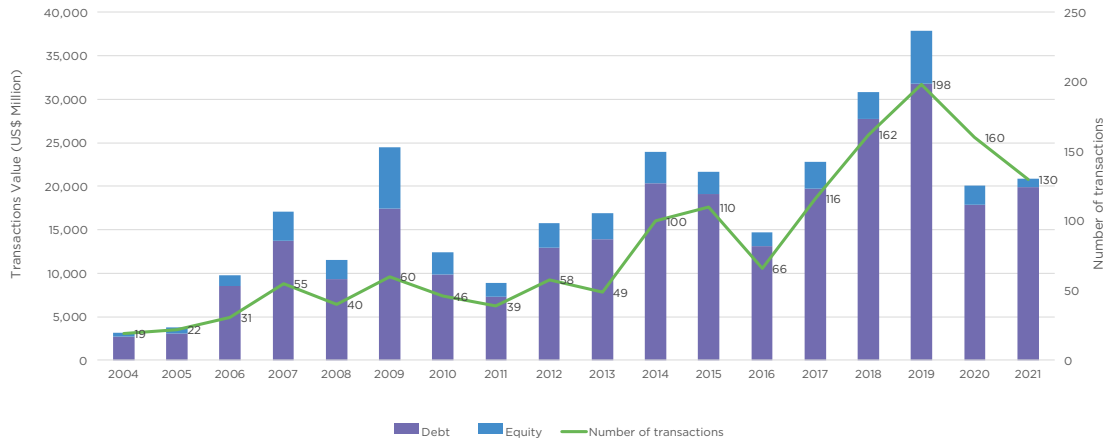
Despite facing complex economic and financial circumstances in recent decades, the private financial market for infrastructure has grown, albeit unevenly as shown in Figure 8.

¹⁸. This section applies a scheme assessment close to that developed by Serebrisky, Suárez-Alemán, Margot and Ramirez (2015).

¹⁹ The analyzed period takes place between 2004 and 2021, given the available data.



Figure 8. Evolution of private infrastructure financing – equity and debt– by year, Latin America and the Caribbean. 2004-2021. (US\$ millions)



Source: prepared by the authors, based on data from IJ Global (2022).

Based on a sample of 1,461 transactions worth a total of US\$316 billion²⁰ involving the Transport, Energy, Water and Sanitation, and Social sectors, we provide a diagnosis of the reality of private infrastructure financing in Latin America and the Caribbean²¹. Overall, infrastructure in LAC has been financed through an 85/15 debt-equity ratio. COVID-19 has strongly affected infrastructure in different ways (e.g., interrupting projects, discontinuing project planning and structuring), which translated into a significant decrease in investment.

The 2008/2009 financial crisis exhibited similar patterns throughout LAC and the rest of the world. Similarly, there was a considerable drop in private infrastructure financing. As Serebrisky, Suárez-Alemán, Margot, and Ramirez (2014) point out, *monoliners* (financial vehicles that acted as instruments to improve credit conditions) disappeared, and commercial banks' interest in granting long-term loans consequently halted as a result of strict credit regulations (imposed by the Basel III regulations).

²⁰ Based on the information published on the World Bank's Private Participation in Infrastructure (PPI) Project Database, this represents approximately 90% of total projects between 2014 and 2021, and 61.5% of the total sum. <http://www.ppi.worldbank.org>

²¹ Information analyzed on the basis of *IJ Global*. The data sample only takes into account projects whose financing modality is by project and not corporate. Similarly, the sample includes projects identified as having reached financial closure, and the year in which it took place was within 2004-2021. The sample does not include transactions that imply more than one country or sector.

At the sectoral level, transactions under the categories of: Oil and Gas, Mining, Telecommunications, Ethanol Distribution, and Defense, are excluded.

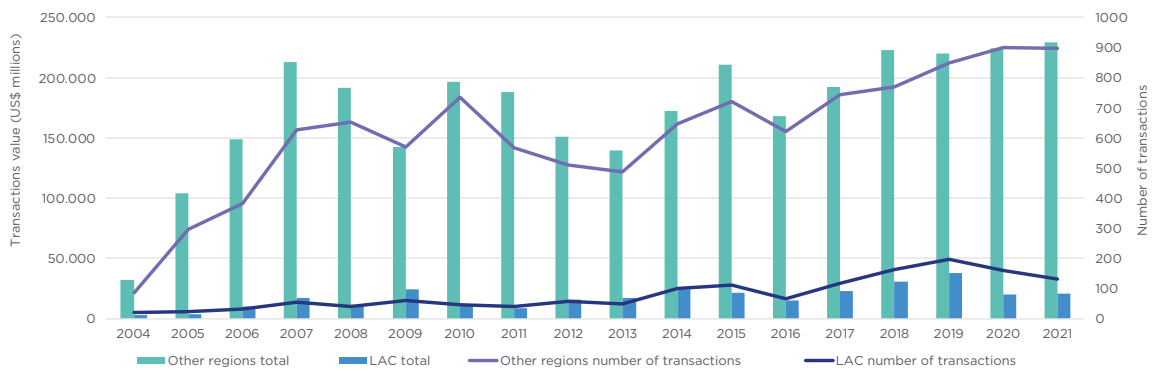
In addition, labels were reclassified as follows: transactions originally considered within the category of renewables in the database, were classified as *energy* in this sample. Transactions in a subsector of water and sanitation but under the umbrella of social sector, were classified as part of the water and sanitation sector. Transactions in the social sector under the *municipal* subsector were evaluated on a case by case basis and reclassified as either *energy* (in the case of public lighting) or housing, depending on each individual description.



Sustainable Financing of Economic and Social Infrastructure in Latin America and the Caribbean

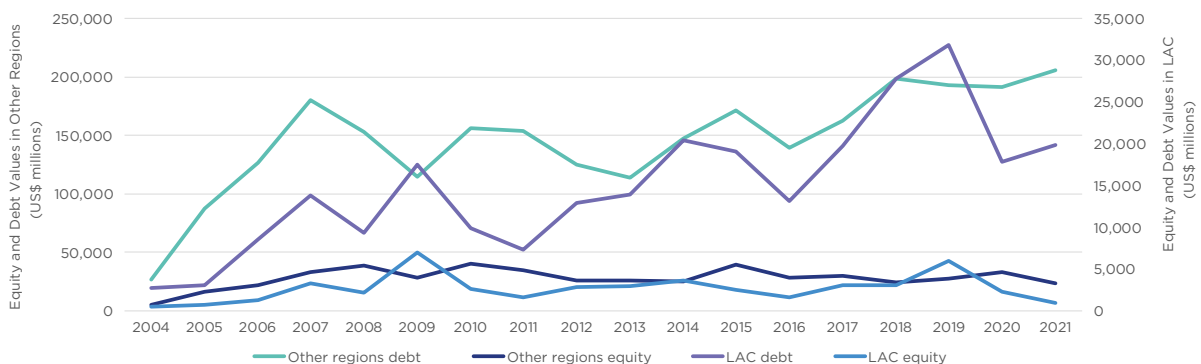
However, comparing the patterns that infrastructure financing have followed after the pandemic in LAC vis-à-vis the rest of the world reveals significant differences. Overall, data shows slight growth and the plateauing in 2020 and 2021 (blue columns in Figure 9) compared to previous years. The impact of the crisis brought about by the pandemic in terms of financing ratios is reflected similarly both in LAC as well as in the rest of the world, as opposed to the impact of the financial crisis of 2008. This reveals how recent crises have affected LAC in particular, both in terms of number of transactions and in total sums. This divergence (growth in the rest of the world and strong contraction in LAC) can be explained by a series of factors, including more economic contraction in LAC and deep interest rate cuts in other regions, which boosted fund mobilization towards infrastructure.

Figure 9. Evolution of total infrastructure financing – by year, Asia-Pacific, Europe, MENA, North America, and Sub-Saharan Africa.



Source: el prepared by the authors, based on data from *IJ Global* (2022).

Figure 10. Evolution of infrastructure financing – equity and debt – by year, Asia-Pacific, Europe, MENA, North America, and Sub-Saharan Africa.



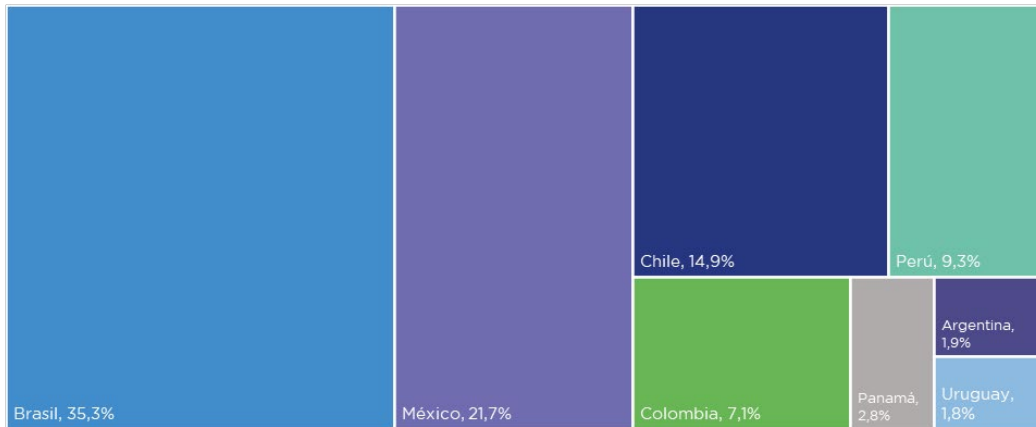
Source: prepared by the authors, based on data from *IJ Global* (2022).



Regional assessment of private infrastructure financing in Latin America and the Caribbean

An assessment of the region's infrastructure financing between 2004 and 2021 broken down by country reveals the predominant role of the Brazilian market, responsible for 35.3% of the regional market, followed by Mexico (21.7%), Chile (14.9%), Peru (9.3%), Colombia (7.1%), and Panama (2.8%). These six economies attract 90% of private infrastructure financing in LAC.

Figure 11. Distribution by country of total infrastructure financing in Latin America and the Caribbean (2004-2021)



Source: Prepared by the authors, based on data from *IJ Global* (2022).

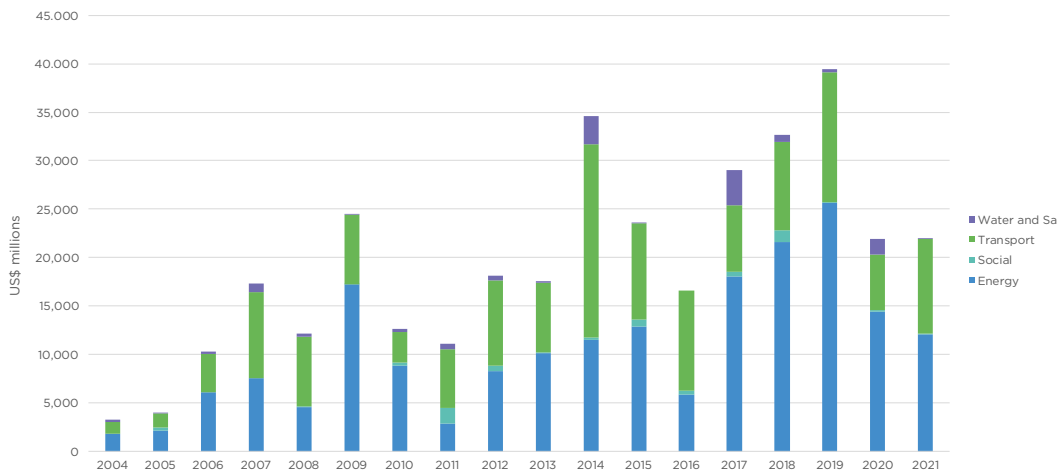
Note: The graphic displays 95% of the total value of private infrastructure financing in LAC. The Dominican Republic, Ecuador, Honduras, Jamaica, Costa Rica, El Salvador, Guatemala, Paraguay, Bahamas, Trinidad and Tobago, Bolivia, Nicaragua, Belize, and Haiti account for the remaining 5.3%.

Concerning sectoral distribution, the historic predominance of the energy sector continues²², followed by transport – where roads represent over half the portfolio (53%), then airports, (19%) and ports (13%). Data shows that less traditional sectors like water and sanitation are present in the market since the beginning of the century, but have gained traction since 2014, and social (including health, education, housing, prisons, cultural centers, and sports centers) became increasingly present over the past decade. The firm commitment of certain countries to include private participation schemes in sectors such as hospitals (Brazil, Chile, Peru, and more recently, Colombia), schools (Brazil, Uruguay), or infrastructure for water and sanitation services (Peru, Brazil) can explain this growing trend.

²² Including the subsectors of energy transmission, distribution, and storage, oil-fired, gas-fired, coal-fired, nuclear energy, cogeneration, carbon sequestration and storage, and public lighting. Renewable energies include: photovoltaic solar energy, onshore wind power, hydrogen, biomass, hydroelectricity and hydraulic energy, geothermal power, waste-to-energy, solar thermal power, and other renewable sources. The sample does not take into consideration ethanol distribution.



Figure 12. Distribution of infrastructure financing in Latin America and the Caribbean, by country, year, and sector.

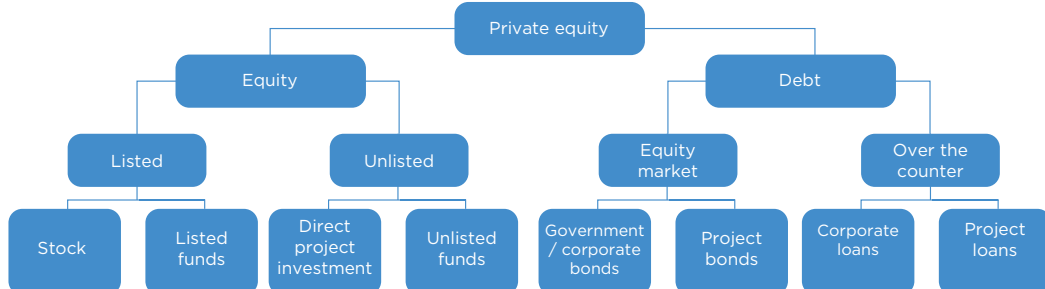


Source: prepared by the authors, based on data from *IJ Global* (2022).

Instruments used to channel private investments towards infrastructure

Private infrastructure financing can take two different forms. As Serebrisky, Suárez-Alemán, Margot, and Ramirez (2014) have described, investors can finance infrastructure projects directly providing them with capital, or they can loan to specific infrastructure projects or companies (Figure 13). Investments can be assigned through listed financial instruments, such as the infrastructure company’s shares and listed companies’ stock, and listed infrastructure fund investments, or through non-listed instruments like equity or debt transactions, and those made in private markets or unlisted infrastructure funds. The relative importance of each channel varies greatly between countries. The use of equity market instruments depends on the development of each market locally, the regulatory and governance frameworks, and investors’ capacities and knowledge (Estache, Serebrisky, and Wren-Lewis, 2016).

Figure 13. Types of private infrastructure financing



Source: Serebrisky, Suárez-Alemán, Margot, and Ramirez (2015).



The instruments used for financing and the role of those who provide the funds change depending on the development phase the infrastructure project is in. In general, banks are better prepared to assume the risks associated with complex infrastructure operations and to face the information asymmetries, particularly in projects' initial design and construction phases, while issuing long-term bonds; institutional investor financing is a more feasible alternative to extend and consolidate investment finance in the more advanced stages of a project's cycle (Canuto 2014; Ehlerst 2014). Capital and bank loans (a form of over-the-counter debt financing) are therefore more common during construction, when risks are higher, while project bonds usually emerge during operation phases, when projects can generate cash flows and are therefore less risky.

Main infrastructure financing providers in Latin America and the Caribbean

Based on data from nearly 1,500 transactions accounting for approximately 90% of infrastructure projects with private involvement in the region, we can conduct an assessment of the evolution of the main players in the market, focused on debt providers.

Table 1. Debt providers for infrastructure projects in Latin America and the Caribbean

Type of agent	2004-2014	2015-2021
Commercial Banks	60.34%	49.70%
National or State Development Banks	19.43%	19.94%
Multilateral Development Banks	8.71%	11.74%
Investment Banks	4.42%	8.97%
Export Credit Agencies	3.72%	2.38%
Private Companies	1.54%	3.06%
Government Agencies/Public Authorities	0.60%	
Investment or Infrastructure Funds	0.46%	1.24%
Construction, Engineer, or Development Companies	0.17%	0.22%
Insurers	0.07%	0.90%
Pension Funds	0.02%	0.05%

Note: For the 2004-2014 period, the assessment considers 99.49% of the sample that was classified. For the 2015-2021, the assessment considers 98.20% of total transactions.

Although towards the end of 2014 data showed that approximately six out of every ten dollars invested in financing infrastructure came from commercial banking, this percentage dropped over the following years, while the role of national or state development banks remained unaltered. On the other hand, investment banks and specific infrastructure investment funds have nearly doubled their participation,



while multilateral banks have also become significantly more prominent. As Annex A shows, IDB Invest represents 1.63% of the debt market in our sample. Annex A also includes a detail of the main equity providers.

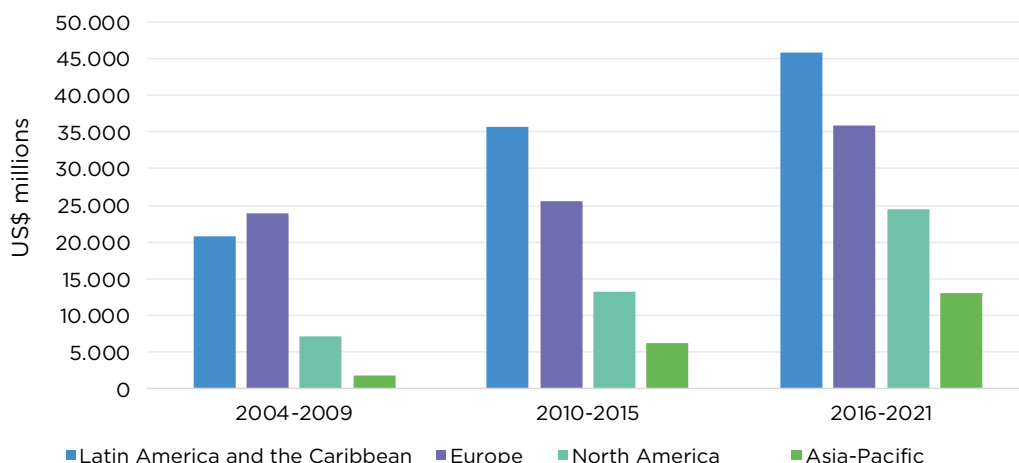
BOX 3

The growing role of extra regional investors

An assessment conducted in recent decades on the origin of the main infrastructure transaction debt providers in Latin America and the Caribbean allows us to reach several interesting insights that deserve their own report. From a preliminary analysis, we can highlight the following:

- **Latin America and the Caribbean consolidates its presence as the main provider of debt financing in the region.** The main origin and destination of debt resources within the region are the same LAC markets. At the beginning of the century, most infrastructure debt financing funds in Latin America and the Caribbean came from Europe. But in a market that has more than doubled its size in two decades, debt providers from within the region have become the major issuers for LAC. Over the past 5 years, almost 38% of infrastructure financing through debt instruments came from within the region.
- **Most infrastructure financing through debt in LAC comes from mature capital markets, mainly Europe and North America.** Although LAC has grown as an issuing market to the point where it has established itself as the main issuer for the region, still one out of every two dollars financing infrastructure in the region through debt can be traced back to Europe and North America.
- **Asia as an issuing market.** At the beginning of the century, the presence of debt providers for infrastructure financing was merely anecdotal if we rely on information available today. In 15 years, Asian participation has grown more than 700%. Table A3 in the Annex includes the list by country.

Figure 14. Debt providers in Latin America and the Caribbean infrastructure transactions by region of origin of debt provider institutions (US\$ millions)



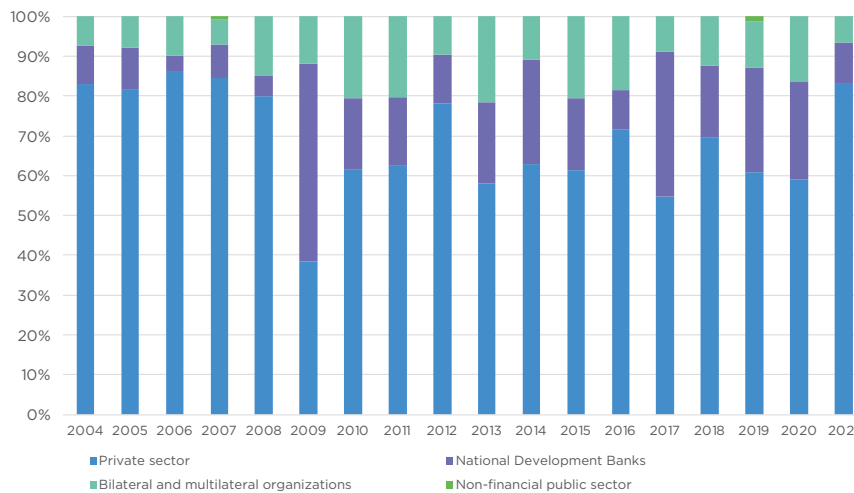
Source: prepared by the authors, based on data from IJ Global (2022).



Role of National Development Banks in infrastructure financing

Public banks have a relevant role in the private financing of infrastructure in the region. 91% of all infrastructure financing granted by National Development Banks (NDB) in Latin America and the Caribbean has been provided under project finance schemes. Of all NDBs in Latin America and the Caribbean, 26 institutions in 10 countries have participated in private infrastructure financing under project finance schemes.²³ During the analyzed period of 2004-2021, NDBs were the second largest source of project finance debt (20%) after the private sector (67%), and surpassing contributions made by bilateral and multilateral development organizations²⁴ (13%) (Figure 15). The main sectors in which NDBs have participated are water and sanitation, and energy, with 24.4% and 23.7%, respectively (see Table 2).

Figure 15. Contributions to project finance debt in Latin America and the Caribbean: main types of financiers (Transport, Energy, Water and Sanitation, and Social, 2004-2021)



²³ Brazil, Mexico, Chile, Peru, Colombia, Panama, Uruguay, Argentina, Dominican Republic, and Bolivia.

²⁴ This category includes financial agencies, national development banks, agencies that support exports, and other agencies that contribute to the growth of developed countries in North America, Europe, and Asia, as well as agencies and multilateral development banks that have financed projects in Latin America and the Caribbean.



Table 2. Share of project finance debt contributed by type of financier to each infrastructure sector (Latin America and the Caribbean, 2004-2021)

Sector / Type of financier	PRI	NDB	BMO
Transport	73.40%	15.70%	10.70%
Energy	61.10%	23.70%	15.10%
Water and Sanitation	66.40%	24.40%	9.30%
Social	80.50%	17.70%	1.90%
Average	67%	20%	13.00%

PRI: Private sector

NDB: National Development Bank

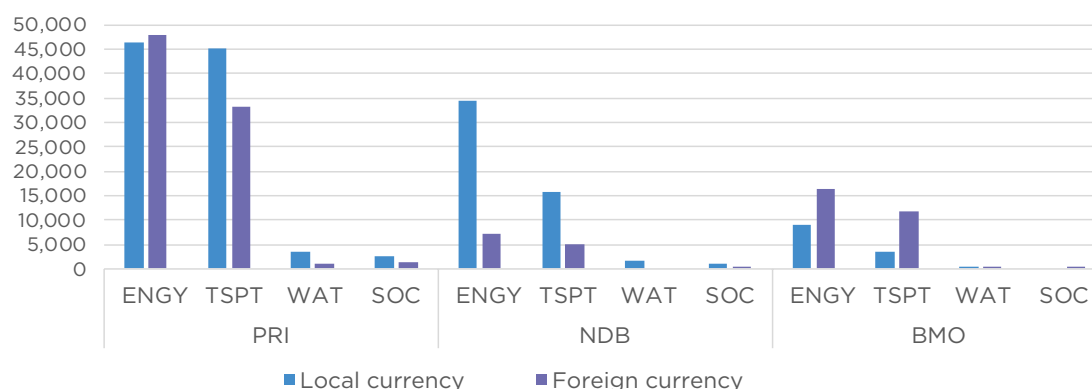
BMO: Bilateral or multilateral development agency

Source: Prepared by the authors, based on data from IJ Global (2022).

Public banks offer convenient financial conditions to support the private financing of infrastructure. Private infrastructure financing often requires loans in local currency and with longer terms to benefit projects' financial feasibility. In the 2004-2021 period, NDBs were the type of project finance debt providers denominating the largest share of their financing in local currency, with 81% of the total. This ratio widely surpasses that of the private sector (54%) and of bilateral and multilateral organizations (31%). The sectors where public banking provided most of its financing in local currency are water and sanitation (100%), social (90%), and energy (83%) (Figure 16). The energy sector displays the largest difference between the debt ratio in local currency provided by the NDB and the private sector (83% from the NDB compared to 49% from the private sector).

Figure 16. Project finance debt in Latin America and the Caribbean by financier type and sector, by currency

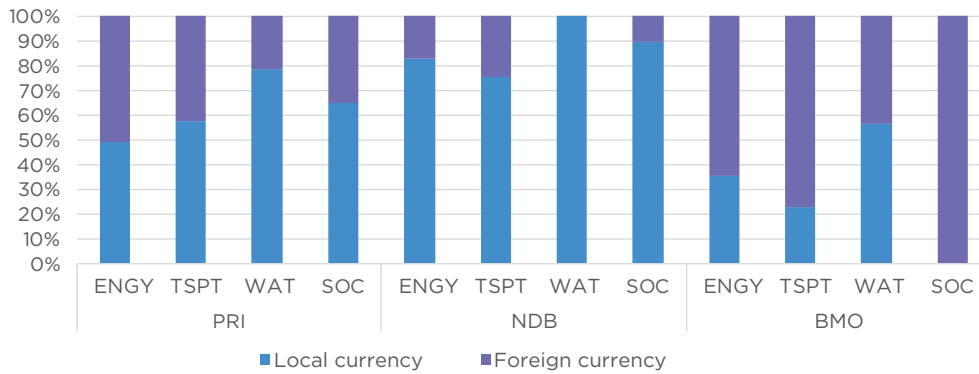
Absolute terms (US\$ million)





Sustainable Financing of Economic and Social Infrastructure in Latin America and the Caribbean

Relative terms



PRI: Private sector

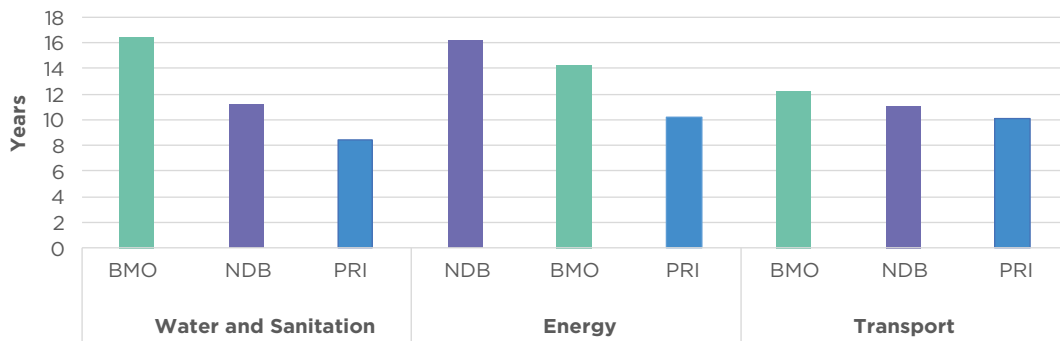
NDB: National Development Bank

BMO: Bilateral or multilateral development organization

Source: prepared by the authors, based on data from *IJ Global* (2022).

NDBs also provide long-term financing to improve infrastructure projects' bankability. NDBs have longer maturity than the private sector, closer to those of the bilateral and multilateral development organizations (see Figure 17), to better fit the timelines required for the development and operation of infrastructure. NDBs' project finance loans have an average term of 13 years, 3 more than the average of private sector debt (9.5 years). Sectoral differences show that NDBs offer the longest extensions for energy projects (16.2 years), surpassing by 2 years the length offered by bilateral and multilateral organizations, and by 6 years the maturity of the private sector. In the water and sanitation sector, NDBs offer 11.2 years on average (2.7 years more than the private sector) and 11.1 years for transport (1 more than the private sector).

Figure 17. Project finance debt maturity in Latin America and the Caribbean by type of financier and infrastructure sector



Source: prepared by the authors, based on data from *IJ Global* (2022).



NDBs finance projects in 10 countries in the region, but they concentrate 95% of their activity in four countries: Brazil (78%), Mexico (16%), Colombia (2.9%), and Chile (2.7%). Activity is also focused on a small number of institutions. Out of 26 national development banks that participate in private infrastructure financing, the top 10 provide 96% of investment in the region over the 2004-2021 period. BNDES is the national development bank that has financed the most project finance debt in the region, 55% of the total, followed by Banobras with 9% (see Table 3).

Tabla 3. Top-10 NDBs responsible for project finance debt in Latin America and the Caribbean

(Percentage of the total debt provided by NDBs, 2004-2021)

Position	Institution	Country	Percentage
1	BNDES	Brazil	55.0%
2	Banobras	Mexico	8.6%
3	Banco do Nordeste do Brasil	Brazil	8.2%
4	Banco do Brasil	Brazil	6.5%
5	Caixa Económica Federal	Brazil	4.6%
6	Banco Nacional de Comercio Exterior	Mexico	3.8%
7	BancoEstado	Chile	2.7%
8	Financiera de Desarrollo Nacional (FDN)	Colombia	2.7%
9	Banco da Amazonia	Brazil	2.5%
10	Nacional Financiera	Mexico	1.8%

Source: prepared by the authors, based on data from IJ Global (2022).

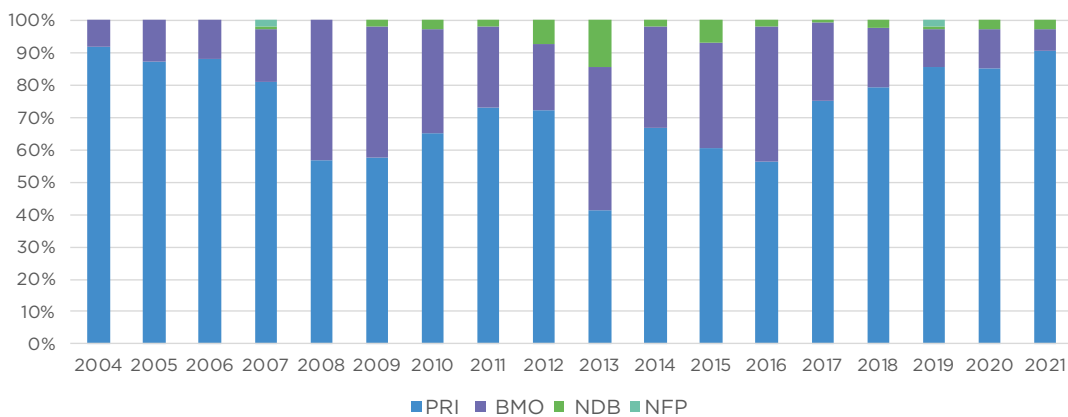
The main NDBs in the region are highly relevant private infrastructure financing institutions in their countries, playing a key role by responding to market failures and attracting private sector investment. For example, BNDES offers 33% of all project finance debt financing in Brazil²⁵, while Banobras represents 8.1% of the total in Mexico, and FDN, 6.9% in Colombia. However, in Chile, Peru, Argentina, and Uruguay, NDBs don't appear among the top five providers of project finance. In countries with less private infrastructure financing, shallower financial markets, and lacking specific NDBs devoted to infrastructure, bilateral and multilateral development organizations gain further relevance among the main providers of project finance resources. This is the case in Ecuador, Paraguay, Jamaica, Honduras, El Salvador, Nicaragua, Haiti, and Belize, which receive funds from the IDB, BCIE, CDB, IFC, Fonplata, KfW, OPIC, FMO, Proparco, and others (see Annex).

²⁵ Since 2017, the importance of BNDES in project finance loans in Brazil has been decreasing. That year it was 64% of total. The reduction of direct transfers from the Brazilian treasury to BNDES and the removal of the implicit subsidy to its loan basic rate set off in 2017 explain its declining relative importance for Brazil's infrastructure financing.



The role of NDBs in infrastructure financing in LAC gets diluted if Brazil, Mexico, and Colombia are left out of the equation (Figure 18). Setting these countries aside, the contribution of project finance debt changes ostensibly. For the rest of the region, the private sector emerges as the main financier (66.4%), followed by bilateral and multilateral development organizations (20.6%) and NDBs (3.2%). In other words, NDBs contributions to total project finance debt in LAC go from 20.5% to 3.2% when excluding Brazil, Mexico, and Colombia²⁶.

Figure 18. Contribution to project finance debt in Latin America and the Caribbean by type of financier, excluding Brazil, Mexico, and Colombia (2004-2021)



PRI: Private sector

BMO: Bilateral or multilateral development organization

NDB: National Development Bank

NFP: Non-financial public

Source: prepared by the authors, based on data from IJ Global (2022).

The role of multilateral institutions as mobilizers of private investment

The term mobilize and its relationship to development finance was coined in 2015 in a report called *From Billions to Trillions: Transforming Development Finance*. This publication was prepared jointly by a group of Multilateral Development Banks (MDBs)²⁷ and the IMF in April of that year. The document pointed out that achieving Sustainable Development Goals required trillions of dollars in financing, but there were only billions of dollars in public funds available. Most trillions were in the hands of the private sector, many of them invested in low-performing assets due to the enormous liquidity that followed the financial crisis of 2008.

²⁶ As a side note, NDBs are not currently financing infrastructure projects in the Water and Sanitation sector outside of these three countries.

²⁷ African Development Bank, the Asian Development Bank, the European Bank for Reconstruction and Development, the European Investment Bank, the Inter-American Development Bank, and the World Bank.



Blended finance is one of the mechanisms that make mobilizing private resources by multilateral institutions possible. The OECD (2018) defines it as “the strategic use of development finance for the mobilization of additional finance towards sustainable development in developing countries.” Partially due to its vastness, there is still much disagreement and confusion around the concept. There are about fifteen ongoing definitions of blended finance (Spratt, Lawlor and Coppens, 2021). The differences revolve around the inclusion of public funds in mobilized figures and the level of concessionality of the public funds.

For the purpose of this document, blended finance is any co-finance arrangement that combines concessional and non-concessional public resources with private resources in order to leverage the participation of the latter. The public portion is used to mitigate risks, whether real or perceived, hindering the involvement of private investors. Once the project’s risks have been mitigated, private resources flow. Therefore, multilateral organizations enable investments, which would be otherwise inexistent because the risks perceived by investors are too high for the expected returns. The total investment is a multiple of the original public resources. When this occurs, we consider the multilateral institution to have mobilized private investment. The greater the multiple, the more powerful the mobilization instrument.

Multilateral organizations are at the center of the agenda from billions to trillions. They are the main providers of development finance, they are financed with public resources, and their statutes include a mandate to mobilize private resources. They have a series of instruments to conduct this²⁸. As an example, we shall briefly describe two of them: A/B loans and guarantees.

A/B loans are instruments used by multilateral organizations whose borrowers are agencies from the private sector and are based on their Preferred Creditor Status (PCS). A PCS is an implicit agreement, based on precedents, where MDBs are given priority for debt and main services repayment over other creditors (Kotecha, 2019). These loans have two portions - A and B. One MDB provides portion A of the loan with its own resources, while a different private financial institution participates in co-financing portion B. As part of this agreement, the MDB is legally responsible for the loan (lender of record). This way, it can share its PCS and special relationship with borrowing countries with B lenders, curtailing risks and attracting additional resources. The B lender can be a bank syndication, which increases the instrument’s potential of leveraging additional resources even more.

A guarantee is a commitment undertaken by an entity to answer for the financial obligations of another entity. If the latter doesn’t fulfill its

²⁸. An economic assessment conducted by Broccolini, Lotti, Maffioli, Presbitero and Stucchi (2019) indicates that the number of loans, the sum of syndicated loans, the average number of lending banks per loan, and average loan maturity increase after the appearance of a syndicated loan with MDB participation.



obligations, the guarantee will make the payments. Guarantees come in different forms and MDBs' policies endow them with flexibility to take different shapes. MDB guarantees can be divided into four large categories: total or partial, depending on their scope, and bank type or insurance type, according to their procedures and their time of payment in case they are called (Pereira dos Santos, 2018).

According to OECD estimates, guarantees were responsible for one third of the private capital mobilized between 2012 and 2020, more than any other financial instrument used for this purpose by development financing agencies²⁹. They have the advantage of not requiring upfront funding, as opposed to loans, which involve disbursements in advance³⁰, giving them great leveraging potential. However, their use has been relatively limited³¹. Pereira dos Santos and Kearney (2018) argue that this is partially due to the internal incentives of multilateral agencies favoring the use of traditional loans, and these institutions' capital provisioning regulations that quantify guarantees for their total value, independently of whether they have been triggered. On the demand side, the perception of private investors and governments that these instruments are costly, complex, and bureaucratic hamper their appeal.

There are other ways in which MDBs can act to mobilize private resources. As the Pasto-Rumichaca case illustrates, MDBs can assume the role of an anchor investor, making it easier for the borrower to access a long-term finance solution with the participation of institutional investors through capital markets. Multilateral agencies can also act as direct capital investors or through investment funds³². MDBs reputation of being exempt intermediaries guided by high social, environmental, and governance standards, and who stand out for the integrity of the operations they finance constitutes an additional factor of trustworthiness among investors while promoting their role as private resource mobilizers.

MDBs have developed a joint methodology to report annual mobilized private resources through all their financial instruments. Some European bilateral development financial institutions have adopted this methodology and have been reporting their figures together with MDBs. Mobilizations in 2019, the most recent available data, are summarized in Table 4.

In most co-financing operations, it is unclear whether the mobilized sums should be attributed to MDB participation. These cases are considered indirect mobilization. When there is direct and active MDB participation,

²⁹ <https://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/mobilisation.htm>. Other instruments considered and their contributions to the total mobilized sum during this period are: direct investment (26.1%), credit lines (14.5%), syndicated loans (14%), participation in collective investment vehicles (8.3%), and simple co-financing (4.4%). The OECD uses its own methodology to calculate private resource mobilization, which is different to that employed by multilateral organizations in their most recent joint report.

³⁰ Although some guarantees are funded (e.g., a deposit account), this is usually not the case of those offered by multilateral organizations.

³¹ In December 2021, guarantees represented 0.6% of the IDB Group's stock of loans and 2.9% of the World Bank's.

³² A long list of instruments and mechanisms is available at OECD (2020a).



mobilized sums are classified as direct, which account for less than a third of total MDB participation³³. There is no regional breakdown for the infrastructure sector available in the joint MDB report.

Table 4. Mobilization of Private Resources by Multilateral and Bilateral Institutions*, 2019

	Directa [†]	Indirecta [‡]	Total
Latin America and the Caribbean	5.2	9.4	14.6
Africa	5.8	8.5	14.4
Asia	5.6	12.8	18.4
Middle East	2.4	4.5	6.9
Europe and Central Asia	35.5	85.4	120.9
Total	54.5	120.6	175.2
<i>- out of which infrastructure</i>	<i>10.3</i>	<i>51.7</i>	<i>62.0</i>

Source: Mobilization of Private Finance by Multilateral Development Banks and Development Finance Institutions, 2019.

*African Development Bank (AfDB); Asian Development Bank (ADB); Asian Infrastructure Investment Bank (AIIB); Belgian Corporation for International Investment (SBI-BMI); Belgian Investment Company for Developing Countries (BIO); CDC Group PLC; COFIDES; Deutsche Investitions- und Entwicklungsgesellschaft mbH (DEG); European Bank for Reconstruction and Development (EBRD); European Investment Bank (EIB); Finnish Fund for Industrial Cooperation Ltd (FINNFUND); Investeringsfonden for Udviklingslande (IFU); Inter-American Development Bank (IDB); Inter-American Investment Corporation (IDB Invest); International Finance Corporation (IFC); Islamic Corporation for the Development of the Private Sector (ICD); Islamic Development Bank (IsDB); Multilateral Investment Guarantee Agency (MIGA); Netherlands Development Finance Company (FMO); Norwegian Investment Fund for Developing Countries (Norfund); Oesterreichische Entwicklungsbank AG (OeEB); Proparco Sociedade para o Financiamento do Desenvolvimento (SOFID); Società Italiana per le Imprese all'Estero (SIMEST); Swedfund Swiss Investment Fund for Emerging Markets (SIFEM); The World Bank (WB).

[†] Financed by a private entity in commercial conditions, due to the active and direct participation of a multilateral institution.

[‡] Financed by private entities concerning a specific activity that a multilateral institution is financing, without it playing an active or direct role.

Although mobilizations amplify the impact of MDB loans, these sums are still far from the high leverage rates that the From Billions to Trillions report recommends. As a reference, total net development assistance in 2019 was US\$167.8 billion.³⁴

In many countries in Latin America and the Caribbean, national development banks play a significant role in financing development. However, the use of blended finance and other mechanisms to mobilize

³³ The detailed definitions of direct and indirect mobilizations are available in MDBs' Reference Guide for the joint report of private investment mobilization, available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/813091529416636675/mdb-methodology-for-private-investment-mobilization-reference-guide>.

³⁴ World Bank, World Development Indicators.



private resources is still at an incipient stage among these institutions (OECD, 2020b). As a first step, national development banks could adopt the joint MDB methodology and put together annual reports of their mobilized sums, following the example of some European bilateral development institutions. The systemic report will draw attention to the topic and boost the adoption of instruments and mechanisms that facilitate leveraging private resources in the region.

Institutional investors – The solution to boost infrastructure financing?

Infrastructure is planned, built, and operated to provide services for long periods of time. For example, many metro systems use tunnels and stations built at the beginning of the 20th century. Their long-term operation makes infrastructure an asset that fits into the temporal horizon of institutional investors, because they can develop a predictable and stable source of income that matches the long terms of the liabilities of pensioners and other institutional investors like insurers and investment funds (with a growing role in sovereign funds among investment funds).

Institutional investors' potential hasn't been fully exploited by the infrastructure sector, although they could provide the needed long-term financing to help bridge the infrastructure gap and achieve the Sustainable Development Goals by 2030, which would require Latin America and the Caribbean to increase investments from 1.8% of GDP (annual average between 2008 and 2020) to 3.2% (Brichetti et. al, 2021). Institutional investors –pension funds, insurers, and investment funds– are major financial market players. In Organization for Economic Cooperation and Development (OECD) countries alone, in 2020 they handled over US\$80 trillion in managed assets, including US\$38 trillion from insurers and US\$35 trillion from pension funds. In LAC, institutional investors managed nearly US\$1.5 trillion, approximately 30% of GDP (OECD, 2021).

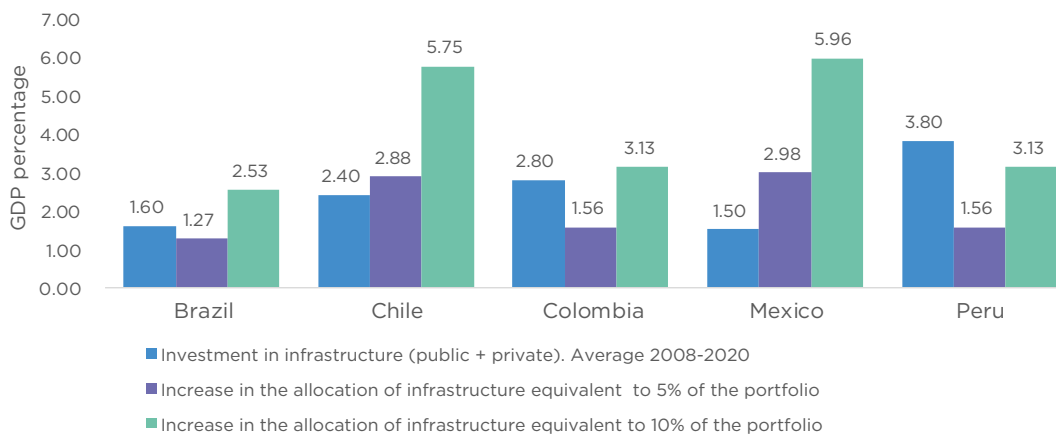
This section aims at simulating the impact of higher allocations of assets managed by institutional investors on infrastructure. Due to lack of information, this exercise will focus exclusively on pension funds in LAC. The data on the allocation of these funds to infrastructure is not readily available, mainly because these funds don't consider infrastructure as a type of asset. The OECD is leading an effort to cover this deficit on information. In 2014 and 2018, they surveyed pension funds on their allocations to infrastructure. Pension funds in Australia and Canada are leading direct investment in infrastructure globally, assigning about 5% of all managed assets to the sector. In 2021, the top-ranking institutional investor fund in investments on infrastructure assigned 20% of its portfolio to infrastructure. The fund in the tenth position only allocated 1.6%.



Latin America and the Caribbean has a growing resource portfolio managed by pension funds. The largest portfolios in 2021 were in Mexico (60% of GDP), Chile (58%), Colombia (31%), Peru (31%), and Brazil (25%). However, their investments in infrastructure are low. OECD data (2014) shows that allocations from large pension funds include only six funds in Latin America and the Caribbean in their sample. According to this data, the percentage of funds destined to infrastructure is at 0.2% in Chile, 1% in Mexico, and 7% in Brazil. Alonso, Arellano, and Tuesta (2015) report that the average assignment to infrastructure in Brazil, Chile, Colombia, Mexico, and Peru is 2.6%. Based on previously analyzed Infrastructure Journal data, we estimate an average regional allocation of 1.1% between 2005 and 2021.

Calculating the impact of increasing pension funds' budget assigned to infrastructure is a relevant exercise when it comes to analyzing their potential to bridge the infrastructure gap in the region. Current pension fund allocation in Latin America and the Caribbean – independently of the value reported by the few available sources – is low and has not been enough to boost investment in infrastructure. However, there are no clear indicators of what a reasonable degree of exposure to infrastructure from pension funds in Latin America and the Caribbean would be. To a large extent, the exposition depends on the quality of assets and the prudential regulations of pension funds.

Figure 19. Effect of a one-time increase of the pension funds stock of resources allocated to infrastructure



Sources: Brazil: Superintendencia Nacional de Previdencia Complementar; Chile: Superintendencia de Pensiones; Colombia: Superintendencia Financiera de Colombia; Mexico: Comisión Nacional del Sistema de Ahorro para el Retiro; Peru: Superintendencia de Banca, Seguros y AFP; investment in infrastructure: Infralatam, and PPI (World Bank).

Next, we will analyze two alternative scenarios: (a) a minimum hypothesis of a 5% of portfolio fund investment to contribute significantly to increasing investment in infrastructure and (b) a maximum hypothesis of a 10% of portfolio fund investment, as a result of further funds available for infrastructure from pension funds around the world (observed in Canada). An initial approach to the extent of the impact of investing in infrastructure focuses on the level of stock by calculating total additional infrastructure investments stemming from reassigning the cumulative stock of pension funds' managed assets. According to this exercise,

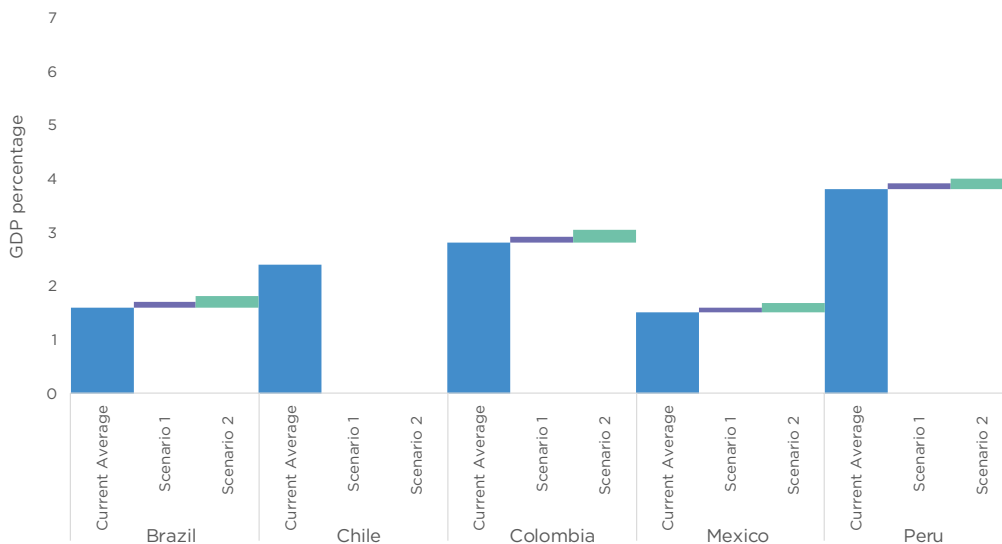


investment in infrastructure would increase the most in Chile and Mexico (Figure 19) because the ratio of assets to GDP is larger there. In Mexico, investments in infrastructure could increase by 3% to 6% of GDP. These additional resources imply, in the scenario of a 10% allocation, quadrupling the annual investment in infrastructure. Although the funds assigned to infrastructure would only be available once, their impact could be very significant, as long as investments are efficient (i.e., selecting the best projects and their adequate execution).

These results are mainly due to two complementary factors: the infrastructure investment ratio and the assets managed by investment funds as a percentage of GDP. Countries with larger rates of investment in infrastructure, like Colombia and Peru, will need higher percentages of managed assets destined to infrastructure to considerably increase infrastructure investment. In Chile and Mexico, where the proportion of assets managed by pension funds is higher, any difference in portfolio allocation has a higher impact on infrastructure: 10% of the assets managed by pension funds would represent a new source of investment equivalent to nearly 6% of those countries' GDP.

These figures stem from using the stock of managed assets to increase investments in infrastructure, which represents a one-time increase that cannot be repeated over time. Once pension funds reach the hypothetical 5% (or 10%) of exposure to infrastructure, there are no additional funds left to finance investments in infrastructure. To increase the rate of investment in infrastructure not just once but continuously over time, it would be necessary to increase investments based on flows instead of stock.

Figure 20. Effect of increasing the flow of new funds managed by pension funds for infrastructure



Sources: Brazil: Superintendencia Nacional de Previdencia Complementar; Chile: Superintendencia de Pensiones; Colombia: Superintendencia Financiera de Colombia; Mexico: Comisión Nacional del Sistema de Ahorro para el Retiro; Peru: Superintendencia de Banca, Seguros y AFP; investment in infrastructure: Infralatam and PPI (World Bank).

Note: In Chile the funds managed are measured as a percentage of GDP. Therefore, the impact of increasing the flow is zero.



Pension funds can invest in infrastructure through additional funds obtained from new contributions to the system and their capital gains. The amount of additional funds can be estimated by analyzing the variations in managed equity from one year to the next. Flows are not expected to be as significant as stocks. Managed pension funds' assets tend to grow by the year (except during financial crises like 2008, or when regulations allow contributors and beneficiaries to withdraw part of their funds, as was the case in 2021 in Chile and Peru). Between 2015 and 2021, managed assets grew by an average annual rate of nearly 2% of GDP in Brazil, Colombia, Mexico, and Peru, with a much lower growth rate in Chile. Investing 10% of these increased managed assets in infrastructure would represent a total annual increment of investment in infrastructure of 0.2% of these countries' GDP, except for Chile (Figure 20). It is worth noting that increased resources destined to investment can grow over time as long as the Gross Domestic Product rises, even when the ratio as a percentage of GDP doesn't.

Increases in funds assigned to infrastructure considering the previously mentioned assumptions will not be enough for Latin America and the Caribbean to reach the infrastructure investment rates of other developing regions, such as fast-growing Asian economies. Investing 10% of additional managed assets –a very optimistic scenario– would boost investment in infrastructure by around 0.2% of GDP per year. The results show that attracting resources managed by pension funds to infrastructure won't be the decisive factor that changes the slow and deficient dynamic of investment in infrastructure in Latin America and the Caribbean. However, in a region that urgently needs to bridge the infrastructure gap in terms both of quantity and quality, every dollar counts. Therefore, it is essential to create favorable conditions to attract investment from pension funds and other institutional investors. This requires a continued effort to make infrastructure an appealing asset to these investors.

Regulatory barriers, especially prudential barriers, limit the percentage of pension funds' investment portfolio that can be allocated to infrastructure and could constitute the main restriction to increase investment in infrastructure. Alonso et al. (2015) developed a prudential regulation flexibility index for infrastructure investments. According to this index, in 2015, Belgium, Canada, Ireland, and the Netherlands had the most permissive regulations to invest in infrastructure with a score of 10.58. Mexico obtained the highest score in Latin America (6.04), ranking 34th among 68 countries considered in the index. Brazil (5.64), Peru (5.24), Colombia (4.18), and Chile (3.07) displayed more restrictive values in this index. Quantitative restrictions to funds allocated to infrastructure frequently vary and the OECD surveys and analyzes them to monitor and report changes (see for example, OECD, 2021).

In many cases, restrictions in the form of caps to pension funds' allocation to infrastructure are not operational. This is because in practice, pension funds assign fewer resources to infrastructure than those allowed by



existing regulations. This is due to other limitations to channeling further resources to infrastructure. The main reason is probably that pension funds have an incentive structure oriented towards investing in standardized, exchangeable, and comparable assets. The challenge infrastructure faces is to, as much as possible, mimic the features that other more appealing assets have to attract higher percentages of funds' portfolios. In addition to regulatory restrictions imposing quantitative limits to the percentage of the portfolio allocated to infrastructure, there are other barriers to investing in infrastructure, as well as investment funds' internal limitations concerning the minimum rating of the assets they can invest in, which can affect other projects, without exceeding the set threshold. Some of these limitations are institutional (lack of staff specialized in infrastructure, regulatory complexity, low standardization of operation contracts and infrastructure management), while others result of the size of the market or even market failures (little transparency, high costs of recurring to justice, lack of information about infrastructure assets performance, etc.). Among all the possible reasons, one of the most limiting for infrastructure development as a type of asset is the combination of a very small project portfolio and very high regulatory risks born of the high difficulty to predict infrastructure assets' source of funding. If the risks associated to the infrastructure cycle are not reduced, their potential as a type of asset will not be effective, and institutional investors will fail to see them as an attractive choice for investment.

Is the debt market changing in Latin America and the Caribbean?³⁵

According to IJ Global (2022), bond offerings to finance infrastructure grew to their highest values, reaching nearly US\$500 billion in the past two years. These instruments surpassed commercial loans for the first time in 2020, when they represented half of the debt financing. Although the COVID-19 pandemic is a relevant factor, bond growth is a trend that has been developing over the past 10 years. An opposite trend is observed in official loans, which have declined 28% in volume, driving their relative participation among debt instruments to 4%, less than half of the level recorded in 2017.

Data shows that at least two factors have boosted bond emissions. On the demand side, the response to the 2008 financial crisis increased global liquidity, triggering more stringent banking regulations. The framework of Basel III, established in response to the crisis, restricted banks' ability to offer long-term loans to infrastructure projects, mainly in developing

³⁵. Project finance, corporate finance, and public finance data were integrated into this section's analysis to allow us to have an overarching perspective of the main debt market trends for infrastructure financing with private participation, both in the region and compared with the rest of the world.



countries³⁶. Institutional investors were called to fill the empty space left by the banks (Garcia-Kilroy, 2017). As we will further discuss in more detail, bonds are the most appropriate debt instruments to channel resources from these investors. On the supply side, a growing number of infrastructure projects with private participation have reached their operational phase in the past decade. At this stage, refinancing operations are common, and bonds fit well within these structures. Out of the total bonds issued in 2021, 96% were destined to refinancing operations and only 16% to project finance.

The debt market in Latin America and the Caribbean has not been foreign to these trends. However, there are important nuances on which we intend to shed light in this section. The shift towards capital markets to meet credit needs has been sharper in a relatively restricted group of countries. Brazil, Mexico, and Chile account for about two thirds of the infrastructure bonds market in the region (Borensztein, Cavallo, and Pereira dos Santos, 2022). A second shift that we will discuss in the section is the increasing indebtedness in local currency, which is ever more highly concentrated in a few countries. Brazil, Mexico, and Colombia represent almost all debt in local currency. The experiences of some countries in the region indicate possible paths to amplify financial instruments and mobilize resources towards developing the infrastructure sector.

More bonds, less official debt

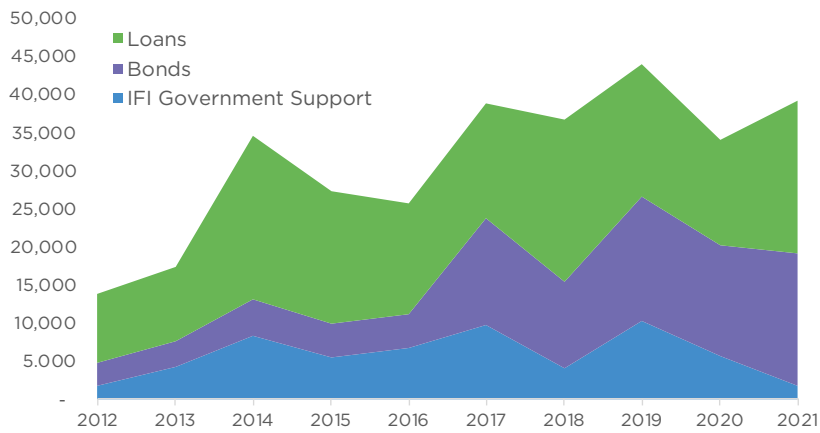
One of the most evident changes in the infrastructure finance market in Latin America and the Caribbean is the growing importance of bonds, despite their presence in only a small group of countries. These instruments have become the second most relevant source of debt, exceeding official financing. Between 2017 and 2021, bonds represented 37% of the infrastructure sector's debt in the region. In the previous five-year period (2012-2016), they were only responsible for 17% of the debt generated to finance infrastructure (Figure 21). This shift responds to a fourfold rise in bond emission volume, while official and commercial loans grew 30% and 40%, respectively, between both five-year terms.

³⁶ For more details about the potential impacts of Basel III on banking financing for infrastructure see Garcia – Kilroy (2017).

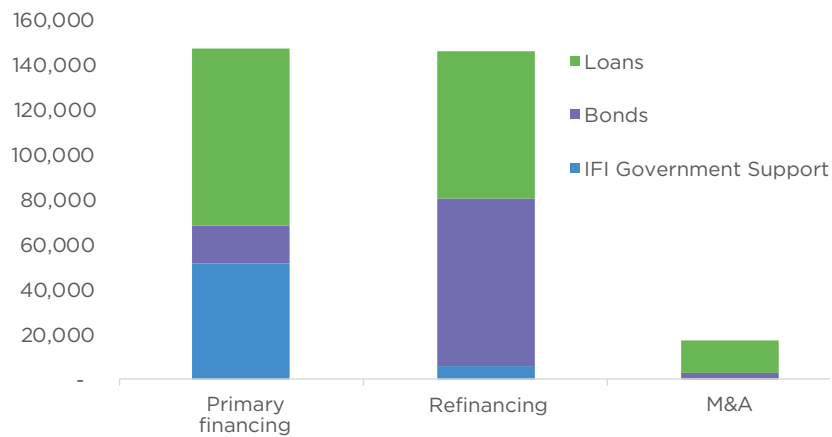


Figure 21. Infrastructure financing – debt, by type of instrument

Infrastructure Debt Financing by Instrument, 2012 - 2021 (exc. Oil & Gas and Mining)



Debt Infrastructure Financing by Transaction Type, 2017 - 2021 (exc. Oil & Gas and Mining)



Source: prepared by the authors, based on data from IJ Global (2022).

Bonds have been mainly used to finance existing infrastructure, while commercial and official loans have mainly financed the construction of new assets. Figure 21 presents the data into three categories according to the destination of the resources: refinancing, primary financing, and mergers and acquisitions. Approximately 60% of project refinancing operations is done through bonds. In primary funding – that destined to build new assets – commercial and official financing is already predominant, with less than 15% of bond participation.

The extent to which each debt instrument is used in the construction or operational phase is linked to its financial features. During construction phase, risks are much higher than during the subsequent



operation phase³⁷. Cost overruns and delays are a common problem of infrastructure development, even more so in Latin America and the Caribbean, where they nearly double the global average (Serebrisky et al., 2017)³⁸. In addition, projects don't generate enough cash flow to pay for debt interests for years. Therefore, they require extended grace periods. Commercial and official banks are flexible enough and have the necessary structure to deal with stressful situations that stem from renegotiating the loan's original conditions. They can also provide longer grace periods. This is not the case with bondholders. This group of investors is diffuse and heterogeneous. They are usually not willing (or able) to deal with lack of liquidity. Coordination problems often makes renegotiating loans impossible, because many bondholders would need to agree with the new terms. During the operational phase, cash flow is more stable and predictable, which in turn makes bonds a more attractive instrument to refinance debt. They are also employed to finance existing assets extension and improvement (brownfield), given that in many cases they already have a cash flow and a record of demand.

Despite their limitations to finance the construction of new assets, bonds present some advantages, mainly when they are associated with bank loans. First, they enable hybrid financial structures that leverage loans and mobilize resources. Second, they facilitate better adapting risks to borrowers' profiles in different project phases. In bridge loan structures or mini-perms, banks absorb the higher risk in the construction phase. Once this phase concludes and the operational phase begins, bonds are issued for the project's remaining time lapse. Third, they boost the base of investors. During the operational phase, risks drop significantly, which attracts a large number of bondholders.³⁹ Fourth, they simplify financing in local currencies. At the same time, the growth of the bond market has displayed increasing indebtedness in local currencies to finance infrastructure projects. This topic will be covered in the next section. Bonds can be tailor-made, allowing project cash flows to match them. Because projects' revenues are usually in the country's local currency, having debt in the same currency constitutes an attractive option both for financiers and concessionaires. Box 4 offers an example of a hybrid financial structure comprising bonds and official and commercial loans, illustrating the aforementioned points.

On the one hand, bonds offer a series of advantages, mainly when they are issued in the local currency and during a project's operational phase, while on the other, they present some challenges beyond being inadequate during the construction phase. Perhaps the most significant of them is

³⁷ According to Moody's (2022), there is a higher likelihood of default during the first two years of project finance execution due to risks associated to construction.

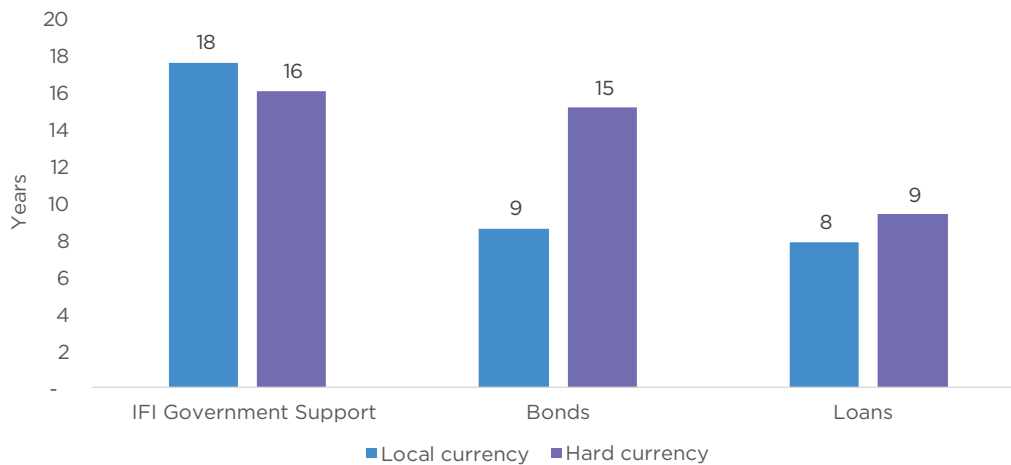
³⁸ In addition, cost overruns and delays can reach up to 1% of regional GDP.

³⁹ Among them are those who are socially responsible and have a mandate to balance financial returns with the positive social and environmental impact of their investments. They tend to invest in thematic bonds like green bonds, which will be discussed in the next section.



their average maturity (Figure 22). Infrastructure projects take very long to mature and repay so they require debt that considers similar terms, namely, between twenty-five and thirty years. Although bonds issued in foreign currency have longer maturities, fifteen years on average, in local currency the average is just nine years. Public and multilateral banks continue to be the main providers of long-term loans. Despite a recent reduction of loan volumes (Figure 21), the Rumichaca-Pasto operation is an example of how multilateral agencies can act to mobilize public resources, develop the local market, and extend bond repayment terms. Given the equity constraints of these institutions, they are increasingly serving as mobilizers instead of just playing their traditional role as direct lenders.

Figure 22. Average bond repayment maturity in different currencies



Source: prepared by the authors, based on data from IJ Global (2022).



BOX 4

Rumichaca-Pasto Highway

The Rumichaca-Pasto toll road is a fourth generation (4G) PPP led by the Government of Colombia. The project comprises 83 km of Highway 25 located in the Department of Nariño, in the south of the country, connecting the border crossing with Ecuador and Ciudad de Pasto. The project contemplates: i) rehabilitating 15.7 km; ii) building a 62.1 km two-lane stretch; iii) improving 5.2 km of road connecting Catambuco and Pasto; iv) constructing seven bridges and two toll stations; and v) operating and maintaining the road for the entire duration of the concession. The tender was held under the criteria of lower net present value of revenues, bounded to a minimum contract length of twenty-five years and a maximum of twenty-nine.

When the works began in July of 2019, Concesionaria Vial Unión del Sur ensured an eight-year mini-perm for US\$575 million with a syndicate of nine banks. At the same time, the FDN approved a US\$47 million liquidity line to support mitigating exchange rate risks. In February 2022, at the end of the construction phase, a loan operation was agreed for US\$799 million to refinance the original mini-perm, pay subordinate loans and dividends to sponsors, cover operational and maintenance costs until works concluded, and fund an escrow account.

The loan was divided in four stages to optimally fit the concession's cash flow with the costs and timeline of debt servicing. 65% of the loans were made in Colombian pesos, and the rest in US dollars. Concerning projected revenues, 65% are in Colombian pesos, divided between tolls (37%), future collection in local currency (21%), collection differentials (17%), future collection in USD (24%) and other revenues (2%). This revenue structure mitigates demand risks, increases cash flows predictability, and facilitates long-term financing.

With the support of IDB Invest, the concessionaire structured one of the four stages of the refinance loan package with bonds denominated in local currency, indexed to the real value unit (UVR), reflecting the variation of the consumer price index. The issued sum is equivalent to US\$262 million with a nineteen-year term. IDB Invest acted as the anchor investor, having acquired 52% of the bonds issued for qualified investors under US jurisdiction.

IDB Invest has collaborated with the design of the methodological framework to use the funds according to criteria aligned with the principles of social bonds as established by the International Capital Market Association (ICMA). Due to the positive impact that it has on communities located in its areas of influence, among other factors, the project has obtained a social bond certification. It is considered the largest issuance in its type in the region aimed at financing an infrastructure project.

Source: IJ Global and IDB Invest.

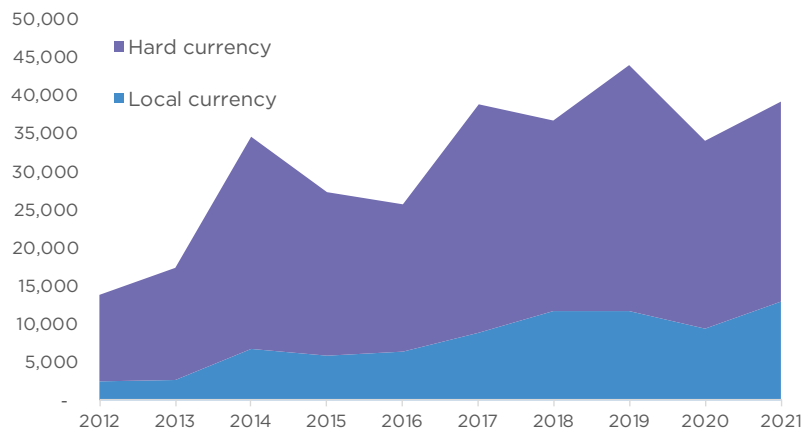


Increasing financing in local currencies

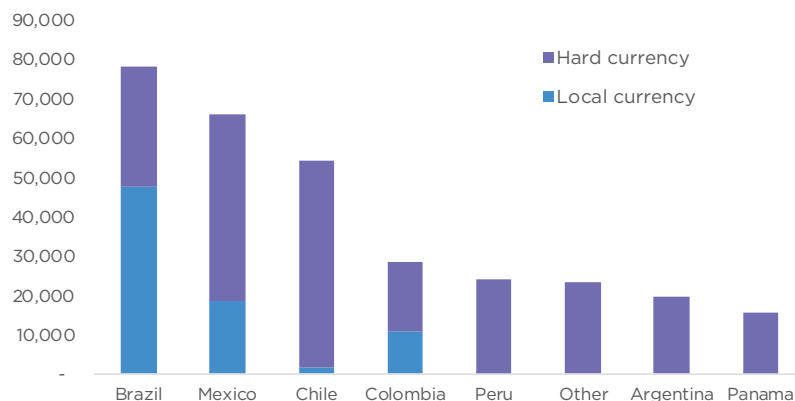
A second trend observed in the debt market in Latin America and the Caribbean is increasing financing in local currency, which has grown from around 18% in 2012 to 33% in 2021 (Figure 23). Aggregate figures hide an important concentration in three countries. Only in Brazil, Mexico, and Colombia there is momentum in the infrastructure financing market in local currency and, to a smaller extent, in Chile. Over half the debt in local currency is concentrated in Brazil, somewhat evenly distributed between official loans, commercial loans, and infrastructure bonds. Mexico is responsible for a third of the region’s debt in local currency. Unlike Brazil, most debt in Mexican pesos is through commercial banks. Commercial banks also play an important role in providing loans in local currency in Colombia, where there is higher bond participation than in Mexico.

Figure 23. Debt financing by type of issuance currency

Latin America: Infrastructure Debt by Currency 2012 - 2021



Latin America: Infrastructure Debt by Country and Currency, 2012 - 2021



Source: Prepared by the authors, based on data from IJ Global (2022).



The evolution of the debt market in local currency can be explained to a certain degree by each country's policy options and their macroeconomic and institutional context. A brief description of Colombia's and Brazil's recent experiences are useful to reveal the factors driving this market.

Colombia has had a significant concentration of loans in local currency in the transport sector, aimed at financing its PPP program. Loan operations normally rely on multiple national and international financial institutions, and different sources of finance such as loans, bonds, and debt funds. Unlike Brazil, the participation of public banks as direct lenders is limited but significant in the mobilization of private resources. The *Financiera de Desarrollo Nacional*, or FDN, a public bank in Colombia dedicated to financing infrastructure funded in 2011, has participated in financing the main roads in Colombia's 4G program⁴⁰. Out of a total COP 91.1 billion in program credit between 2016 and 2020, FDN has provided 13.5%, assuming the role of coordinator of other lenders⁴¹.

Brazil stands out in the region for the predominant role of the country's public development banks, especially BNDES, which for many years was practically the only provider of long-term lending for infrastructure projects with private participation in the country. In 2011, foreseeing the growing need for additional sources of infrastructure financing, the government of Brazil introduced *debentures incentivadas*, tax-exempt private infrastructure bonds⁴². The tax benefit is conditional given that certain requirements are met, including that the resources be used to finance infrastructure projects and that the bonds are denominated in reais⁴³.

Infrastructure bonds have proven to be a successful infrastructure finance instrument in local currency. Today, they are more relevant in volume than BNDES (Figure 24). However, they mainly finance projects that are already in their operational phase, while BNDES continues to be the primary loan provider for large projects during their construction phase. BNDES' relevance is also linked to its capacity to provide loans for over 20-year terms. The average term for bonds is approximately ten years. Three modifications in macroeconomic policies boosted the development of these infrastructure bonds. First, the revision (reduction) in fiscal transfers to BNDES that began in 2015 and the creation of a new baseline interest rate for new loans, TLP, in 2017. These two measures limited the capital BNDES had available for loans and closed the gap between its cost of financing and that of bonds. Second, the expansionary monetary

⁴⁰ A detailed discussion on Colombia's 4G program is available at Suárez-Alemán, A., et al. (2019).

⁴¹ FDN, Corporate Presentation. <https://portal.fdn.com.co/es/informacion-general/presentaciones>. Accessed on 03-15-2022.

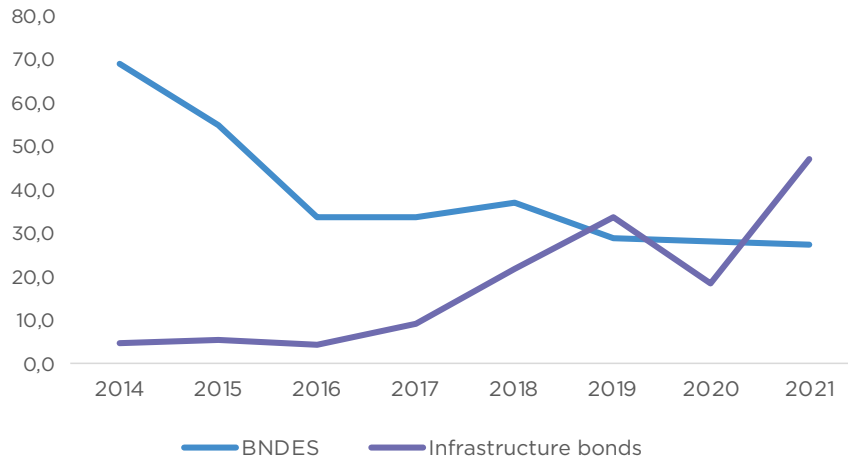
⁴² For a discussion on the recent evolution of the infrastructure bonds market in Brazil, see Borensztein, Cavallo and Pereira dos Santos (2022).

⁴³ Law #12431, of 2011 regulates infrastructure bonds listing eight conditions to obtain the tax break. For more details, see Brazil's Ministry of Economy's *Boletim de Debentures Incentivadas* at: <https://www.gov.br/economia/pt-br/centrais-de-conteudo/publicacoes/boletins/boletim-de-debentures-incentivadas> Accessed on 03-28-2022.



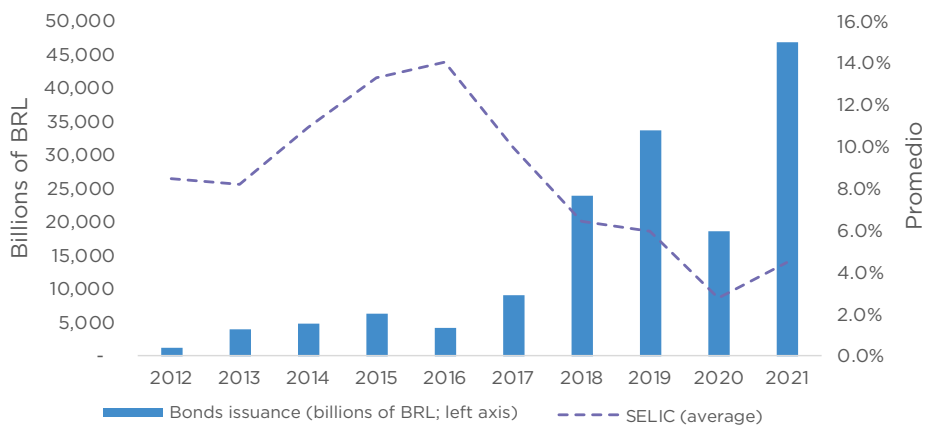
policy until the second half of 2021 drove interest rates to very low levels, boosting the demand for high-yield assets (Figure 24). Third, the implementation of Basel III framework since 2013 has gradually limited local commercial banks' capacity to provide long-term loans⁴⁴.

Figure 24. Infrastructure bonds and monetary policy rates - BNDES disbursements and infrastructure bonds issued
Infrastructure Bonds and Monetary Policy Rates (SELIC)



Source: Brazil's Economy Ministry and Central Bank

BNDES disbursements and Infrastructure Bond



Source: prepared by the authors, based on data from IJ Global (2022).

⁴⁴ New regulations have been implemented under an eight-year time scheme concluded in January 2022. See <https://www.bcb.gov.br/detalhenoticia/14666/nota>. Accessed on 03-28-2022.



Sustainable infrastructure finance: the role of green bonds

In recent years, financial markets have developed sustainable financial instruments to boost the attainment of SDGs. Green bonds are debt instruments used to finance projects, assets, and activities that support climate change adaptation and mitigation. They can be issued by governments, municipalities, banks, and public or private corporations. The green categorization of a bond can apply to any kind of bond, including private placements, securitizations, or guaranteed bonds. For a bond to be considered green, the issuer must have made a commitment to use the resources to finance or refinance green projects. The Green Bond Principles (GBP)⁴⁵ establish which types of projects can be considered eligible. For example, eligible projects within these principles include investments in infrastructure such as renewable energy, waste management, or clean transport. Therefore, green bonds constitute a new type of financial asset with the potential to expand available financing in the region for infrastructure projects.

Latin America's green bonds market is still limited, but it continues to grow and is expected to gain traction in coming years. Green bonds issued between 2014 and 2021 add up to US\$30.2 billion, equivalent to 2% of the global volume. Although 14 of the 33 countries in the region have issued green bonds, Brazil, Chile, and Mexico concentrate 74% of all issuances and 84% of the amount issued. Bonds denominated in local currency have been growing in importance until reaching 66% of the total⁴⁶, mainly driven by issuances from non-financial corporations and national development banks. Most issuances by sovereign and local governments were in hard currencies (US dollars and euros). In terms of volume, local issues have increased substantially, but the US dollar is still dominant, with nearly two thirds (60%) of green issues in LAC (US\$18.2 billion). The average sum issued is US\$183 million with an average 10-year deadline (30% of long-term issues have deadlines established between 10 and 20 years)⁴⁷. A longer term can provide issuers enough time to undertake larger infrastructure projects that are more capital intensive, at a fixed financing cost. Transport low in carbon emissions and the green construction industry in LAC are expected to grow with the help of these debt instruments ([Climate Bond Initiative, 2021](#))⁴⁸.

⁴⁵ The most internationally renowned principles of green bonds are those of the International Capital Markets Association and the Climate Bond Initiative.

⁴⁶ In Brazil, the main issuer of green bonds in the region, issues denominated in BRL have equaled those in US dollars (63 transactions in BRL and 64 in USD). This is a positive sign of a latent demand for bonds denominated in local currency.

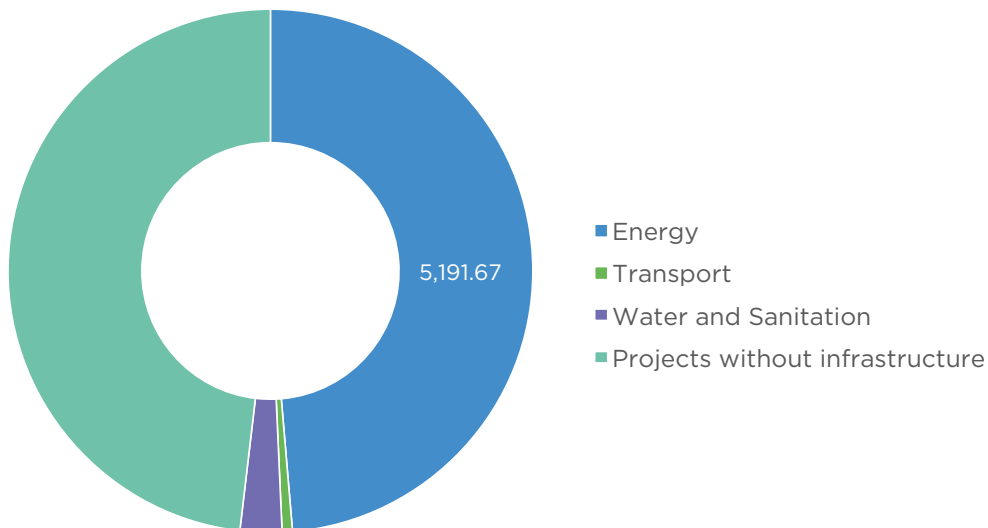
⁴⁷ Agreements of at least US\$500 million represent 53% (US\$16 billion) of the total volume ([Sustainable Bond Insight, 2021](#)).

⁴⁸ There are three specific barriers to develop the green bond market: (i) higher issuance cost; (ii) more complex issuance procedures; and (iii) more rigorous processes to report and quantify the impact. Nevertheless, this segment is expected to keep growing and become essential for a sustainable economic recovery (Mejia-Escobar et al., 2020).



Green bonds in LAC have devoted half of the resources obtained to investing in infrastructure projects. The Green Bond Transparency Platform (GBTP)⁴⁹ has been collecting information on green bond issuances throughout the region, from the very first ones in 2014 to date. GBTP shares data on those projects to which issuers have assigned resources obtained from green issuances. Out of the resources marked as disbursed since 2014, 51.9% (US\$5.56 billion) have been allocated to infrastructure projects, while the remaining 49.8% (US\$5.14 billion) have been assigned to projects and activities to support climate change adaptation and mitigation that has not been integrated into infrastructure investments. Investments in infrastructure have mainly focused on renewable energy projects (93.8%), while water and sanitation, and transport have seen minor investments (5% and 1.2%, respectively).

Figure 25. Green bond resources disbursed on infrastructure investments (US\$ million, 2014-2021)



Note: Supranational issuers were disregarded for this exercise.

Source: prepared by the authors, based on data from the Green Bond Transparency Platform (2022).

Green bonds have proven to be an instrument with the potential to mobilize additional resources for infrastructure projects⁵⁰. Although 49% of disbursed resources (US\$2.72 billion) have been assigned to refinancing existing infrastructure projects, 51% of green bonds (US\$2.81 billion) have been invested in new projects. In addition, green bonds have managed to attract additional cofinancing for infrastructure projects. Issuers report the infrastructure projects in which they have invested in GBTP, specifying

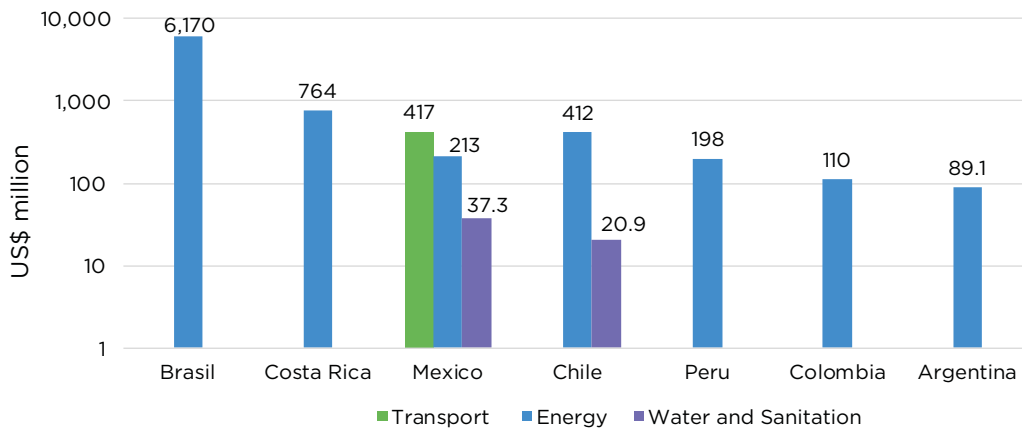
⁴⁹. The [Green Bond Transparency Platform](#) is an initiative promoted by the IDB to boost transparency and knowledge of the performance of projects financed by green bonds issued in the region. The platform collects and consolidates data reported by green bond issuers in Latin America. The platform currently has information on over 80% of the bonds issued in Latin America.

⁵⁰. Green bonds assigned to financing infrastructure are for higher values and have more extended deadlines, which better adapt to the long-term financial needs of infrastructure projects. Green bonds used to finance infrastructure projects are for an average amount of US\$210 million and 11.7 years – US\$79 million and 2.7 years more than green bonds that have not been allocated to infrastructure projects. Water and sanitation, and transport projects also stand out, with an average amount of US\$400 million.



whether there were co-financing sources for the projects' capex. The US\$2.81 billion disbursed to finance new infrastructure projects represent 25% of total financed projects' capex, and the remaining 75% (US\$8.43 billion) is estimated to have been co-financed with additional funding sources. Co-financing sources can be diverse and include from issuers' own resources, aside from green bonds to capital offered by private project sponsors or financed through debt provided by financial institutions. Next, Figure 26 presents the breakdown of co-financing obtained through green bonds by country and sector that joined the green bonds in financing new infrastructure projects.

Figure 26. Co-financing with green bonds for new infrastructure projects, by country and sector (US\$ million, 2014-2021)



Co-financing to support new projects has taken place mainly in Brazil, by private non-financial corporations and for energy projects. In every country in the region except Mexico, the energy sector receives the highest portion of co-financing for greenfield projects financed by green bonds. Ninety four percent of co-financing (US\$7.96 billion) has been destined to energy projects while transport obtained 5% of co-financing (US\$417 billion) and water and sanitation 1% (US\$58 million). In terms of countries, Brazil stands out with 73% of co-financing (US\$6.17 billion), followed by Colombia (9%), Mexico 8%, and Chile 5%. At the institutional level, it is worth noting that green bond issuers that attract the most co-financing to their projects are private corporations, followed by national development banks. Sovereign issuers and private financial corporations presented in the GBTP database used the resources obtained by their green bonds to finance 100% of capex and did not co-finance greenfield projects or others neither with their own nor with third-party resources.



At the same time, green bonds have also begun to mobilize resources intraregionally. Some green bonds in LAC have been issued in one country, but have allocated part of their resources to investing in another country's infrastructure projects. In Colombia, the Banco de Colombia carried out a green issuance of which US\$18 million (23% of the total) was disbursed for a wind power project in Nicaragua. Meanwhile, in Chile, AES Gener disbursed US\$19 million (4% of the total) to solar power projects in Colombia, and CMPC disbursed US\$1 million (1% of the total) to wastewater treatment projects in Argentina.

BOX 5

Some examples of private financing mobilization with green bonds

In Brazil, Albion Capital LTD issued two green bonds in 2021 for US\$36.6 million for solar energy generation that included co-financing from two other private sponsors for 10% of CAPEX. Separately, also in 2021, The Athon Group made a US\$423.4 million green bond issuance in Brazil for solar energy generation, which had a 30% infrastructure investment private funds participation. In Argentina, the AES Gener Group in 2020 made a US\$48.5 million issuance that garnered commercial debt cofinancing from commercial banks (75% of CAPEX) for investment in solar and wind energy generation. In Mexico, FIRA issued US\$388 million worth of bonds between 2018-2020 to finance solar energy generation and agricultural irrigation infrastructure. In this case the loans accounted for 80% of projects CAPEX, with the remaining 20% provided by lenders' capital. In Costa Rica, the National Bank in 2016 issued US\$500 million in bonds for energy projects. These projects had an average 50% cofinancing from KfW.



BOX 6

Sustainability linked bonds: A new instrument to invest in infrastructure?

Sustainability linked bonds (SLB) are a new debt instrument, part of the sustainability financial suite available in financial markets to achieve economic and social development goals. They are different from green and social bonds in two main aspects: (i) they include commitments linked to SDGs through specific and quantifiable objectives; and (ii) the resources obtained from their issuance are freely available. The issuer makes a commitment to achieve certain development goals. Failure to achieve these goals leads to an additional increase in the bond's coupon. This acts as a penalty to the issuer, whose interests would increase. The resources obtained by the issuer are unrestricted and there are no eligibility criteria nor investment commitments attached to the resources⁵¹. This instrument has still not been widely adopted, and has thus far been dominated by private corporate issuers. However, some of these issuers are companies that offer infrastructure services. The world's first SBL world belonged to ENEL in Italy, which in 2019 launched a 500 million British pound emission committed to attaining over 45% of energy produced by renewable sources by 2023⁵². Failure to reach this objective would involve a 25-basis point increase on coupon payments. At the same time, Greece's PPC (Public electric company) issued a bond of this type in 2021 for 650 million Euros. Their commitment was to cut CO2 emissions by 40%, mainly by shifting their energy matrix to integrate more generation from renewable sources⁵³. There are some SLBs in the region, mostly in Brazil. Chile stands out as the country where the world's first sovereign SLB was issued. Chile made a US\$2 trillion emission in 2022 that complies with Paris Agreement principles, and is committed to having 60% of the country's power supply proceeding from renewable sources by 2032⁵⁴.

51 Dembele, F., R. Schwarz and P. Horrocks (2021), *Scaling up Green, Social, Sustainability and Sustainability-linked Bond Issuances in Developing Countries*, OECD Publishing, Paris.

52 [ENEL](#), Press Release, 2019.

53 [PPC](#), Investor Information, 2021.

54 [S&P, Market Intelligence](#), 2022.



Conclusions: A development agenda under development

Developing a document on sustainable financing of economic and social infrastructure in Latin America and the Caribbean is an exercise that is:

- 1) necessary, given the significant gaps in infrastructure services' quantity and quality that require more and better investments;
- 2) challenging and motivating, because the need to develop effective financial instruments that mobilize private capital in a much larger scale is urgent; and
- 3) incomplete, due to the scarcity of available data, which hinders conducting assessments with the necessary thoroughness to inform policy decision-making.

Although there is more information available through private databases (especially in relative terms, compared to times when understanding the patterns and main figures in the market was complex in itself), there are not many descriptive statistic exercises revealing the main infrastructure market trends in Latin America and the Caribbean. The current paper has been elaborated to help close that gap. These exercises are crucial, because –although it is necessary to identify the region's infrastructure investment needs, by calculating gaps and their impact–, it is equally essential to solve the other side of the equation, namely, to develop and quantify the most appropriate instruments to obtain and efficiently employ the financial resources associated with the gaps. In a complex macroeconomic and fiscal context where resources for an exclusively public investment are scarce (and the opportunity cost is increasingly higher), understanding how the financing market, products, instruments, and main players operate is key to identifying the most favorable strategies to mobilize resources. That's why this exercise, although incomplete, is essential.

Secondly, the assessment conducted here reflects a market that shifts at a considerable pace, with the presence of new players who have become increasingly involved. The incipient (and fast) development of a sustainable infrastructure financing market – focused on sustainability bonds–, the latent potential in various economies for finance mechanism in local currencies, the growing presence of financing sources from outside the region, the decisive role of multilateral development banks, and the (always promising) expansion of institutional investors' participation, constitute in themselves challenging topics that require deeper exercises to understand the market and develop public policy recommendations



leading to efficient financing (rates, maturity, amounts) for sustainable infrastructure throughout the region. That's why this exercise is (incomplete but) challenging and motivating.

Lastly, this is a partial assessment. It focuses on the areas that, given the region's current context, deserve special attention from the authors' perspective. This is not to say that there aren't other equally important or more relevant topics, which haven't been deeply examined in this document. Some matters that deserve being looked into include: **a)** a deep analysis of equity market providers; **b)** the role of state-owned enterprises and corporate financing of infrastructure; **c)** sustainable infrastructure certifications; **d)** the tax treatment of infrastructure financing; **e)** the interaction of sectoral economic regulators and their peers in the financial sector, to identify and overcome investment barriers; **f)** a more comprehensive assessment of local and international private financiers (who they are and why they are financing infrastructure in LAC); and **g)** the state of blended finance for infrastructure in the region, among others. That's why this is a partial assessment.

The sustainable finance agenda for economic and social infrastructure in Latin America and the Caribbean is, without a doubt, a development agenda under development. This paper has the ulterior purpose of serving as a foundation and support for others to explore further into these topics and to keep contributing to a relevant analytical applied research agenda for the inclusive growth and economic recovery of Latin America and the Caribbean.





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Annex

Table A1: Top 100 Private Equity Providers for Latin America and the Caribbean Infrastructure Projects

2004-2014				2015-2021		
No	Institution Name	Share	Aggregated	Institution Name	Share	Aggregated
1	Odebrecht	5.02%	5.02%	Enel Green Power	5.35%	5.35%
2	AES Corporation	4.70%	9.71%	Transmissora Alianca de Energia Eletrica	2.34%	7.69%
3	Abengoa	4.41%	14.12%	Engie	2.19%	9.88%
4	ICA	4.41%	18.54%	Episol	2.07%	11.95%
5	Engie	3.18%	21.71%	Interconexion Electrica	1.95%	13.90%
6	Invepar	2.64%	24.35%	Prumo Global Logistics	1.93%	15.83%
7	Furnas	2.56%	26.91%	Arteris	1.89%	17.73%
8	Goldman Sachs	2.55%	29.46%	Acciona	1.84%	19.57%
9	Obrascon Huarte Lain	2.36%	31.81%	Equatorial Energia	1.70%	21.27%
10	Companhia de Concessoes Rodoviaras (CCR)	1.99%	33.80%	Celeo Redes	1.60%	22.87%
11	AEI Energy	1.82%	35.62%	Mainstream Renewable Power	1.59%	24.47%
12	Acciona	1.72%	37.34%	AES Corporation	1.58%	26.05%
13	ENEVA	1.61%	38.95%	Tractebel	1.49%	27.54%
14	Amazônia Energia II (fund of Banif and Santander)	1.31%	40.27%	EDP	1.44%	28.98%
15	Antofagasta	1.26%	41.53%	Omega Energia	1.36%	30.34%
16	Mitsui & Co	1.21%	42.74%	Enel	1.29%	31.63%
17	Impulsora del Desarrollo y el Empleo en America Latina	1.20%	43.94%	Rio Energy	1.27%	32.89%
18	Andrade Gutierrez	1.10%	45.05%	Echoenergia	1.25%	34.14%
19	Pacific Hydro	1.09%	46.14%	EDF Renewables	1.23%	35.37%
20	EDP Group	1.06%	47.20%	Cubico Sustainable Investments	1.20%	36.57%
21	Government of Peru	1.05%	48.24%	El Condor	1.11%	37.68%
22	EDP	1.02%	49.27%	Voltaia	1.09%	38.77%
23	Chesf	1.01%	50.28%	Obrascon Huarte Lain	1.07%	39.84%
24	Eletrosul	1.01%	51.29%	Ebrasil	1.06%	40.90%
25	General Electric	0.96%	52.25%	Golar LNG	1.06%	41.96%
26	APM Terminals	0.92%	53.17%	Furnas	1.04%	43.00%
27	Mitsubishi Corporation	0.91%	54.08%	Sacyr Concesiones	1.02%	44.02%
28	Elecnor	0,89%	54,97%	Rumo Logistica	1,01%	45,03%
29	IC Power	0,89%	55,86%	Siemens	1,01%	46,04%
30	Andrella	0,84%	56,70%	Actis	0,98%	47,02%
31	Primav Ecorodovias	0,75%	57,45%	Tokyo Gas	0,96%	47,98%



Sustainable Financing of Economic and Social Infrastructure in Latin America and the Caribbean

2004-2014				
No	Institution Name		Share	Aggregated
32	Ashmore International Energy		0.74%	58.19%
33	Brenco Brasil		0.73%	58.91%
34	DP World		0.72%	59.63%
35	SN Power		0.71%	60.34%
36	InterGen		0.69%	61.03%
37	Cemig		0.69%	61.72%
38	Camargo Correa		0.68%	62.40%
39	Santander		0.68%	63.08%
40	Sacyr Chile		0.66%	63.74%
41	Grupo Terra		0.63%	64.37%
42	CPFL Energia		0.60%	64.96%
43	Renova Energia		0.58%	65.54%
44	Controladora de Operaciones de Infraestructura		0.57%	66.11%
45	Cobra Instalaciones y Servicios		0.56%	66.67%
46	Voltalia		0.56%	67.23%
47	Companhia Paranaense de Energia		0.55%	67.77%
48	Termoflores		0.53%	68.30%
49	Quimpac		0.52%	68.81%
50	Sigma SAFI		0.51%	69.32%
51	MMX Mineracao e Metalicos		0.50%	69.82%
52	Isolux Corsan		0.49%	70.31%
53	Pacsa		0.48%	70.79%
54	Tokyo Gas		0.48%	71.26%
55	ACS Group		0.47%	71.74%
56	FCC Group		0.46%	72.20%
57	Mubadala Investment Company		0.46%	72.66%
58	Trafigura Beheer		0.46%	73.12%
59	State of Queretaro		0.46%	73.58%
60	Israel Corporation		0.44%	74.02%
61	Sacyr Vallehermoso		0.44%	74.46%
62	Fisterra Energy		0.41%	74.87%
63	Terminal Investment		0,41%	75,28%
64	HydroChile		0,39%	75,67%
65	Chapecoense Geracao		0,39%	76,06%
66	Trasmissione Elettrica Rete Nazionale (TERNA)		0,39%	76,45%

2015-2021		
Institution Name	Share	Aggregated
Roadis	0.96%	48.94%
Concecol	0.89%	49.83%
China Three Gorges New Energy Corp (CTGNE)	0.85%	50.68%
APG Asset Management	0.83%	51.52%
Cobra Instalaciones y Servicios	0.82%	52.34%
Grup TCB	0.79%	53.13%
Patria Investments	0.79%	53.92%
Iridium Concesiones de Infraestructuras	0.79%	54.71%
X-ELIO	0.77%	55.47%
Abertis	0.72%	56.19%
Latin America Power	0.71%	56.91%
Atlantic Energias Renovaveis	0.71%	57.61%
ENEVA	0.70%	58.31%
Denham Capital Management	0.69%	59.00%
Zuma Energia	0.66%	59.67%
Global Infrastructure Partners	0.65%	60.32%
Unipar	0.65%	60.97%
Hidrovias do Brasil	0.65%	61.62%
Abengoa	0.62%	62.24%
Sonnedix	0.62%	62.86%
Toesca Administradora General de Fondos	0.60%	63.46%
Construcap Group	0.60%	64.06%
CMA CGM	0.60%	64.65%
China Three Gorges Corporation	0.58%	65.24%
BP Global	0.58%	65.81%
Actis Energy 3	0.56%	66.37%
Neoen	0.55%	66.92%
BRK Ambiental	0.55%	67.47%
Cymi Constructora	0.54%	68.01%
Herdoiza Crespo Construcciones	0.53%	68.54%
Grupo Romero	0.52%	69.05%
Isolux Corsan	0,51%	69,56%
Neoenergia	0,48%	70,05%
Grupo Energia Mexico	0,48%	70,52%
Cymi Holding	0,46%	70,99%



Sustainable Financing of Economic and Social Infrastructure in Latin America and the Caribbean

2004-2014				2015-2021		
No	Institution Name	Share	Aggregated	Institution Name	Share	Aggregated
67	China Three Gorges Corporation	0.37%	76.82%	Companhia de Energias Renováveis (CER)	0.46%	71.44%
68	Maple Energy	0.37%	77.20%	ContourGlobal	0.45%	71.89%
69	Prumo Global Logistics	0.37%	77.56%	Alupar Investimento	0.43%	72.32%
70	Pinfra	0.36%	77.92%	Chesf	0.43%	72.75%
71	InterEnergy	0.33%	78.25%	Brookfield Asset Management	0.43%	73.18%
72	Skanska	0.33%	78.58%	Bow Power	0.42%	73.60%
73	Enel Green Power	0.33%	78.91%	Empresa Brasileira de Terminais e Armazens Gerais (EBT)	0.42%	74.02%
74	Statkraft	0.32%	79.23%	Aleatica	0.41%	74.43%
75	Meco Constructors	0.32%	79.54%	Macquarie	0.40%	74.83%
76	FI-FGTS	0.30%	79.84%	Techint	0.40%	75.23%
77	Araguaia	0.29%	80.13%	Grupo Mexico	0.40%	75.63%
78	Petrobras	0.29%	80.42%	China Merchants Port Holdings	0.40%	76.03%
79	BSB Energetica	0.29%	80.71%	Brookfield Infrastructure Partners	0.39%	76.42%
80	Korea Southern Power	0.29%	81.00%	ACS Group	0.39%	76.80%
81	Salus Fundos de Investimento Participações em	0.27%	81.27%	Grupo Bal	0.37%	77.17%
82	Samsung Group	0.27%	81.54%	Companhia Paranaense de Energia	0.37%	77.54%
83	Mota-Engil	0.27%	81.81%	Genneia	0.37%	77.91%
84	Agrupacion de Companias Constructoras de Veracruz SA de CV	0.27%	82.08%	Vamcruz Participacoes	0.36%	78.27%
85	FONADIN	0.26%	82.34%	OPDEnergy	0.36%	78.63%
86	Transelec	0.26%	82.60%	BR Vias	0.36%	78.98%
87	Desarrolladora Homex	0.26%	82.85%	Casa dos Ventos	0.35%	79.33%
88	Government of Guatemala	0.25%	83.10%	Central Puerto	0.35%	79.68%
89	Astaldi	0.25%	83.35%	Partners Group	0.35%	80.03%
90	Grupo Lakas	0.25%	83.60%	Glenfarne Group	0.35%	80.37%
91	Minera Valparaiso S.A.	0.23%	83.83%	Compania Hondurena de Energia Solar (Cohessa)	0.35%	80.72%
92	Celulosa Arauco y Constitucion S.A.	0.23%	84.06%	FIP Brasil Energia	0.34%	81.06%
93	Grana y Montero	0.23%	84.28%	Yacimientos Petroliferos Fiscales (YPF)	0.33%	81.40%
94	Endesa	0.22%	84.50%	Qair Brazil	0.33%	81.73%
95	Centennial	0.22%	84.72%	Astaldi	0.33%	82.06%
96	Norfund	0.21%	84.93%	Ministry of Transport and Public Works (Uruguay)	0.32%	82.38%
97	KEPCO	0.21%	85.14%	InfraRed Infrastructure Fund III	0.32%	82.70%
98	Aneel	0.21%	85.35%	EOSOL Energy	0.32%	83.01%
99	Aldesa Group	0.21%	85.56%	P2 Brasil Private Infrastructure Fund IV	0.32%	83.33%
100	Banobras	0.21%	85.77%	Salus Fundos de Investimento Participacoes em	0.31%	83.64%

Source: Prepared by the authors based on data from *IJ Global* (2022).



Table A2: Top 100 Private Debt Providers for infrastructure projects in Latin America and the Caribbean

2004-2014				2015-2021		
No	Institution Name	Share	Aggregated	Institution Name	Share	Aggregated
1	BNDES	10.41%	10.41%	BNDES	12.72%	12.72%
2	Santander	7.39%	17.80%	Santander	10.63%	23.34%
3	BBVA	5.04%	22.84%	Sumitomo Mitsui Banking Corporation	5.16%	28.51%
4	Bradesco	3.73%	26.57%	Citigroup	3.20%	31.70%
5	BNP Paribas	3.61%	30.18%	Goldman Sachs	2.95%	34.65%
6	HSBC	3.60%	33.78%	Banco do Nordeste do Brasil	2.52%	37.17%
7	Itau-Unibanco	3.05%	36.83%	Bradesco	2.48%	39.65%
8	Credit Agricole Group	3.00%	39.83%	Credit Agricole Group	2.39%	42.04%
9	Banobras	2.78%	42.62%	Scotiabank	2.16%	44.20%
10	WestLB	2.64%	45.26%	Natixis	2.08%	46.28%
11	Banco do Brasil	2.18%	47.44%	JP Morgan	1.97%	48.25%
12	Goldman Sachs	2.10%	49.53%	BNP Paribas	1.75%	50.00%
13	Citigroup	2.05%	51.58%	IDB Invest	1.63%	51.63%
14	Inter-American Development Bank	1.98%	53.56%	Itau BBA	1.52%	53.15%
15	Caixa Economica Federal	1.97%	55.54%	Bancolombia	1.50%	54.65%
16	Grupo Financiero Inbursa	1.92%	57.46%	BTG Pactual	1.49%	56.13%
17	International Finance Corporation	1.85%	59.31%	BBVA	1.46%	57.59%
18	Corpbanca	1.70%	61.01%	Inter-American Development Bank	1.39%	58.98%
19	Sumitomo Mitsui Banking Corporation	1.49%	62.50%	KfW IPEX Bank	1.22%	60.20%
20	Banorte	1.47%	63.97%	International Finance Corporation	1.14%	61.34%
21	Bank of America	1.30%	65.27%	MUFG Bank	1.13%	62.47%
22	Japan Bank for International Cooperation	1.18%	66.46%	Societe Generale	1.08%	63.55%
23	Overseas Private Investment Corporation	1.18%	67.64%	Banco Nacional de Comercio Exterior	1.07%	64.62%
24	Itau BBA	1.15%	68.79%	Banobras	1.06%	65.68%
25	MUFG Bank	1.00%	69.79%	DnB NOR Bank	1.00%	66.68%



Financiamiento sostenible de la infraestructura económica y social en América Latina y el Caribe

2004-2014				2015-2021		
No	Institution Name	Share	Aggregated	Institution Name	Share	Aggregated
26	Credit Suisse	0.92%	70.71%	Financiera de Desarrollo Nacional (FDN)	0.97%	67.65%
27	Scotiabank	0.81%	71.52%	Itau-Unibanco	0.95%	68.60%
28	Dexia Group	0.81%	72.32%	Overseas Private Investment Corporation	0.90%	69.50%
29	Banco do Nordeste do Brasil	0.80%	73.12%	CaixaBank	0.83%	70.33%
30	Morgan Stanley	0.75%	73.88%	Banco da Amazonia	0.75%	71.08%
31	ABN AMRO Bank	0.73%	74.61%	HSBC	0.73%	71.82%
32	BTG Pactual	0.73%	75.34%	Instituto de Credito Oficial	0.73%	72.54%
33	Corporacion Andina de Fomento	0.71%	76.05%	Banco Sabadell	0.71%	73.26%
34	DnB NOR Bank	0.70%	76.75%	Corporacion Andina de Fomento	0.66%	73.92%
35	Banco Centroamericano de Integracion Economica (CABEL)	0.67%	77.42%	KfW	0.65%	74.57%
36	Banco Votorantim	0.67%	78.08%	Banco do Brasil	0.64%	75.22%
37	BNP Paribas Fortis	0.66%	78.74%	Banorte	0.61%	75.83%
38	Banco de Credito del Peru	0.66%	79.41%	Morgan Stanley	0.54%	76.37%
39	Mizuho Financial Group	0.65%	80.05%	Intesa Sanpaolo	0.53%	76.90%
40	ING Group	0.60%	80.65%	SMBC Nikko Securities	0.52%	77.42%
41	Societe Generale	0.58%	81.23%	Banco Davivienda	0.52%	77.94%
42	BancoEstado	0.53%	81.76%	North American Development Bank	0.50%	78.44%
43	FONADIN	0.53%	82.28%	Credit Suisse	0.50%	78.94%
44	Bancolombia	0.51%	82.80%	Banco de Bogotá	0.49%	79.43%
45	Export Import Bank of the United States	0.51%	83.31%	BancoEstado	0.48%	79.91%
46	Banco General	0.51%	83.81%	Corpbanca	0.47%	80.38%
47	NordLB	0.49%	84.30%	UBS	0.47%	80.84%
48	Banco Nacional de Comercio Exterior	0.49%	84.79%	Mizuho Financial Group	0.46%	81.31%
49	World Bank	0.48%	85.27%	Deutsche Bank	0.45%	81.76%
50	Instituto de Credito Oficial	0.47%	85.75%	Banco de Credito e Inversiones	0.44%	82.20%
51	Haitong Bank	0.46%	86.21%	Nacional Financiera	0.43%	82.63%
52	FI-FGTS	0.45%	86.66%	Mitsubishi UFJ Financial Group	0.38%	83.02%



Sustainable Financing of Economic and Social Infrastructure in Latin America and the Caribbean

2004-2014				2015-2021		
No	Institution Name	Share	Aggregated	Institution Name	Share	Aggregated
53	Banco Invex	0,43%	87,09%	China Development Bank	0,36%	83,37%
54	Export Development Canada	0,43%	87,51%	FMO	0,34%	83,71%
55	JP Morgan	0,41%	87,92%	European Investment Bank	0,33%	84,05%
56	KfW	0,41%	88,33%	Cassa Depositi e Prestiti	0,33%	84,37%
57	CaixaBank	0,39%	88,72%	Grupo Aval	0,31%	84,69%
58	Novo Banco	0,39%	89,11%	Financial Trust Fund for Infrastructure Debt in Uruguay	0,30%	84,98%
59	Banco de Credito e Inversiones	0,37%	89,48%	New Development Bank	0,29%	85,27%
60	North American Development Bank	0,36%	89,84%	Bank of China	0,28%	85,55%
61	Banco Continental de Panama	0,34%	90,17%	Others	0,28%	85,83%
62	Nacional Financiera	0,33%	90,50%	Proparco	0,27%	86,10%
63	Export-Import Bank of Korea	0,32%	90,83%	Korea Development Bank	0,27%	86,37%
64	FMO	0,31%	91,14%	Grupo Financiero Inbursa	0,27%	86,64%
65	Caixa Geral de Depósitos	0,31%	91,45%	Allianz	0,26%	86,91%
66	Royal Bank of Scotland	0,31%	91,76%	Scotia Capital	0,26%	87,16%
67	Deutsche Bank	0,31%	92,07%	Banamex	0,26%	87,42%
68	Caja Madrid	0,28%	92,34%	Citigroup Global Markets	0,25%	87,67%
69	Natixis	0,27%	92,61%	Mizuho Securities	0,25%	87,92%
70	Banco da Amazonia	0,25%	92,86%	Banco de Credito del Peru	0,25%	88,17%
71	Millennium BCP	0,25%	93,11%	Banco de Occidente	0,24%	88,41%
72	Banco de Chile	0,23%	93,33%	Export Development Canada	0,24%	88,65%
73	Value Grupo Financiero SA de CV	0,22%	93,55%	DEG	0,24%	88,89%
74	Banco de Occidente	0,19%	93,74%	CAF-AM Central Railway Financial Trust	0,23%	89,12%
75	Eksport Kredit Fonden	0,18%	93,92%	Banco ABC Brasil	0,23%	89,35%
76	Global Bank	0,18%	94,10%	XP Investimentos	0,22%	89,57%
77	China Machine New Energy Corporation	0,17%	94,27%	Citibank	0,22%	89,79%



Sustainable Financing of Economic and Social Infrastructure in Latin America and the Caribbean

2004-2014				2015-2021		
No	Nombre del Agente	Participación	Agregado	Nombre del Agente	Participación	Agregado
78	Banco Internacional del Peru	0,17%	94,44%	International Bank for Reconstruction and Development	0,22%	90,01%
79	Proparco	0,16%	94,61%	Strabag	0,22%	90,23%
80	COFIDE	0,16%	94,77%	ICBC	0,22%	90,44%
81	Bank of America Merrill Lynch	0,16%	94,93%	ING Bank	0,21%	90,65%
82	Banco de Bogotá	0,16%	95,09%	US International Development Finance Corporation	0,21%	90,86%
83	Nordea	0,15%	95,24%	Bank of America	0,21%	91,07%
84	DEG	0,13%	95,37%	Banco Centroamericano de Integración Económica (CABEI)	0,20%	91,27%
85	Skandinaviska Enskilda Banken	0,12%	95,49%	AMP Capital Infrastructure Debt Fund IV	0,20%	91,47%
86	DekaBank	0,11%	95,60%	Credicorp	0,20%	91,67%
87	Royal Bank Trinidad & Tobago	0,11%	95,71%	Banco Popular	0,18%	91,85%
88	Pentagono SA DTVM	0,10%	95,81%	China Co-financing Fund for Latin America and the Caribbean	0,18%	92,03%
89	UBS Investment Bank	0,10%	95,91%	Caixa Economica Federal	0,17%	92,20%
90	IM Trust SA Corredores de Bolsa	0,10%	96,01%	ING Group	0,17%	92,38%
91	Helaba	0,10%	96,11%	FCP 4G	0,16%	92,54%
92	General Electric	0,10%	96,21%	Banco BICE (Chile)	0,16%	92,70%
93	Banco del Bajío	0,09%	96,30%	Bank of America Merrill Lynch	0,15%	92,85%
94	Rabobank	0,09%	96,39%	Jefferies Group	0,15%	93,00%
95	Banco Popular	0,09%	96,48%	CAF-Ashmore Infrastructure Debt Fund	0,15%	93,14%
96	Banco BICE (Chile)	0,09%	96,57%	General Electric	0,15%	93,29%
97	Banco Industrial	0,09%	96,66%	EuroAmerica	0,14%	93,43%
98	Korea Finance Corporation	0,09%	96,75%	DNB Markets	0,14%	93,58%
99	DZ Bank	0,09%	96,83%	Banco Security	0,14%	93,72%
100	Corporación Interamericana para el Financiamiento de Infraestructura	0,09%	96,92%	MetLife	0,14%	93,86%

Source: Prepared by the authors based on data from *IJ Global* (2022).



Table A3: Top 20 Debt Provider Countries for Infrastructure Projects in Latin America and the Caribbean

Countries were grouped based on the location of the headquarters of the debt provider institutions in the database.

2004-2009			2016-2021	
1	Brazil	27.53%	Brazil	23.74%
2	Spain	15.87%	United States	16.89%
3	United States	11.99%	Spain	13.84%
4	France	9.13%	Japan	8.99%
5	Germany	7.16%	France	7.41%
6	Mexico	5.95%	Colombia	5.28%
7	United Kingdom	3.40%	Mexico	3.90%
8	Netherlands	2.94%	Canada	3.23%
9	Japan	2.73%	Germany	2.87%
10	Belgium	2.65%	Chile	2.11%
11	Switzerland	2.02%	China	1.33%
12	Canada	1.22%	Switzerland	1.18%
13	Chile	1.20%	Venezuela	1.03%
14	Panama	1.04%	Norway	0.94%
15	Honduras	0.90%	Netherlands	0.80%
16	Portugal	0.90%	Luxembourg	0.64%
17	Venezuela	0.74%	Italy	0.62%
18	Peru	0.42%	United Kingdom	0.61%
19	China	0.42%	Peru	0.56%
20	Colombia	0.37%	Honduras	0.47%

Source: Prepared by the authors based on data from *IJ Global* (2022).

