


**INTERNATIONAL WORKSHOP: THE ROLE OF DEVELOPMENT BANKS IN CATALYZING  
SOUTH AMERICAN INFRASTRUCTURE IN THE 21ST CENTURY**

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 **Pardee School of Global Studies**  
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 **BANCO DE DESARROLLO  
DE AMÉRICA LATINA**

## **International Workshop: The Role of Development Banks in Catalyzing the Infrastructure of South America in the 21st Century**

***Hosted by:***

Development Bank of Latin America (CAF)

Pardee Center for the Study of the Long-Range Future (Pardee Center)

Global Development Policy Center (GDP Center)

***In partnership with:***

Pontifical Javeriana University of Cali

Infrastructure Policy Council (CPI) of Chile

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### EXECUTIVE SUMMARY

While Asia continues to grow, South America is stagnant. According to some projections, the region could have negative growth this year. There are multiple reasons for this, but at least one of them is the lack of investment in infrastructure. Development bank support for infrastructure investments in South America could unlock unlimited growth and development opportunities for the region, the benefits of which would far exceed the initial costs. The lack of investment in infrastructure is holding the region back. The region's annual investment in infrastructure in relation to gross domestic product (GDP) is only marginally higher than that of sub-Saharan Africa.

If the benefits are so great, why isn't the region making the necessary investments in infrastructure?

On May 16, 2023, an international workshop titled, "The Role of Development Banks in Catalyzing the Infrastructure of South America in the 21st Century" took place in Cali, Colombia, aimed at the exchange of ideas between professionals with experience and leadership in Latin America and other regions around the world. This made it possible to compare experiences and seek formulas that promote an even more active role for development banks in the expansion of infrastructure in South American countries. It was a cooperative effort of the Development Bank of Latin America (CAF), and the Pardee Center for the Study of the Long-Range Future (Pardee Center) at Boston University and the Boston University Global Development Policy Center (GDP Center), with the support of the Pontificia Universidad Javeriana de Cali, and the Infrastructure Policy Council (CPI) of Chile.

The emphasis in these discussions was on identifying the main problems that South American countries have faced in obtaining long-term financing for infrastructure projects that promote sustainable economic growth, as well as identifying solutions through the role played by development banks in the region. The idea is to use the inputs from these debates as a starting point for new studies on viable investment strategies in infrastructure that make it possible to reduce logistics and transportation costs and move toward more competitive economies.

Following deliberations in the workshop, several policy recommendations emerged:

- Extrapolate the Chilean experience as a management model
- Optimize structure and management of projects
- Link the public and private sectors by creating new financing channels
- Select appropriate projects
- Demand mechanisms that ensure the continuity of the plans by the governments in power
- Create standardized processes and contracts
- Show pre-investment as a sign of commitment
- Build reliability and credibility in governance
- Invest in regional cooperation

- Innovate financial products and public policies
- Improve technical capacity through various channels
- Value transparency, including fair distribution of risks and benefits
- Develop anti-corruption controls.

### INTRODUCTION

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### The State of Public Infrastructure in South America: Options and Challenges

There are two decisive figures that reflect the existing problem in Latin America. The region invests only 2.5 percent of GDP in infrastructure. Only sub-Saharan Africa invests less than Latin America, and it is only a few tenths of a percentage less. East Asia invests 8 percent of GDP in infrastructure, and the average in Maghreb and Middle East is over 4 percent. It takes more time to transport a product from the North of Argentina to the port of Buenos Aires, than it takes to get that product from Buenos Aires to Rotterdam.

The other figure is the cost of logistics and transportation in the region. This fluctuates between 13 percent and 18 percent per unit exported, which is double the 8 percent average among the countries of the Organization for Economic Cooperation and Development (OECD). This has a very negative effect on the competitiveness of exports. To change this situation, according to estimates by the Inter-American

Development Bank (IDB), investment in infrastructure would have to be doubled to 5 percent of GDP. It is estimated that the lack of investment in infrastructure costs the region at least 1 percent of GDP annually.

Investment in infrastructure in the region is not only low, but has been declining over time. In the 1980s it was 3 percent, and now it is 2.5 percent, when logic would say that the population increase, the progress that is taking place and the consequent increase in demand for infrastructure should lead to more investment, not less. On the other hand, in many South American countries the governments emphasize the export model of development, based on the fact that exports are the way forward to increase growth. However, the actions of these same governments do not correspond to that objective. If this model were believed, investment in infrastructure would be a priority.

What role can development banks play in strengthening the public-private partnership to leverage long-term capital formation with favorable conditions for both actors, and distribute investment risks more effectively? Colombia has done a great job in recent years in internalizing the lessons learned during the first generations of infrastructure projects. The fifth generation in force today seeks to break schemes regarding the implementation of infrastructure projects with a greater impact on intermodality and the four fundamental pillars of sustainability typical of this new stage. The first is proper governance; the second corresponds to social sustainability, incorporating principles of equality, diversity and equity in work teams; the third refers to environmental sustainability, taking climate change into account; and the fourth is the financing formula that adequately remunerates public and private actors. A key aspect of fifth generation projects is the impact they would have on the community. If they are properly applied with a level of interaction on the part of all those involved, with an emphasis on end users, the results will exceed expectations (El Espectador, 2022).

In the countries of the Southern Cone, it is worth mentioning projects that have tried to generate benefits at the subregional level. Bioceanic corridors are one of them. Proposed years ago, they have not materialized for various reasons, including mutual mistrust between the countries involved and uncertainty regarding the flows they would generate in the long term. This reveals an urgent need that only an intermediary financial institution can cover. This also leads to seeking this synergy that could occur with the intervention of development banks.

Since 2010, the first questions arose about the persistence of this infrastructure deficit in the region and how to quantify it. To this end, a summit was held that allowed the first brushstrokes to be made to assess the impact of infrastructure on economic growth in Latin America. The results of said meeting allowed us to conclude that, although under the neoclassical model infrastructure is not considered a decisive factor in sustainable growth, the effect that infrastructure investment generates for market players is positive, since the perception of an improvement in the productive capacities of the entire market is more significant for economic growth than the investment itself (Aportela & Durán, 2011). The exercise carried out highlighted the contrast that exists between the Latin American region and the Asian continent (especially East Asia) in terms of infrastructure investment and economic growth.

Along the same lines, joint efforts have been made with the Inter-American Development Bank and the UN Economic Commission for Latin America and the Caribbean (ECLAC) to create an infrastructure investment observatory known as "Infra Latam." This serves as a source of public data on the levels of investment in public and private infrastructure in recent years. The figures obtained allowed us to know very significant data such as the investment gap of the Latin American states during the golden decade (2000-2010), named for the high price of commodities (oil) that benefited the countries that exported these products in the region. The estimated gap reached \$250 billion that should have been invested each year. This showed that not everyone took advantage of the upward curve in the level of income presented during that decade. There were exceptions such as Ecuador and Panama that achieved investments above 5 percent of GDP for some years versus Colombia and Chile that presented only 2.5 percent.

According to other estimates provided by the CPI, an investment of \$2.2 trillion would be required in the next seven years to fill the investment gap and meet the sustainable development goals of the United Nations. This is based on estimates of public investment of 2.1 percent of GDP over the last ten years for the Latin American region, which contrasts with the 0.3 percent of GDP that is financed through private concessions, and further contrasts with the common belief of that the private sector has been a great source of financing for infrastructure projects in recent years. This is also the only private investments that reach 1.8 percent of GDP, achieving a total of 4.3 percent.

**Table 1: Investment needs in infrastructure until 2030 in Latin America and the Caribbean, millions of dollars.**

TIPO DE INVERSIÓN		Inversión nueva	Mantenimiento	Total brecha	Inversión necesaria anual para cerrar la brecha (como % del PBI)
AGUA Y SANEAMIENTO	AGUA: ACCESO SEGURO ALTO	90.620	52.041	142.661	0,20%
	SANEAMIENTO: ACCESO SEGURO ALTO	148.503	65.878	214.381	0,30%
	PLANTAS DE TRATAMIENTO DE AGUAS RESIDUALES	16.848	0	16.848	0,02%
ENERGÍA	ACCESO A ELECTRICIDAD	25.420	64.118	89.538	0,13%
	GENERACIÓN Y TRANSMISIÓN: ESCENARIO BASE	371.494	116.051	487.545	0,69%
TELECOMUNICACIONES	ACCESO A BANDA ANCHA DOMICILIARIA	44.086	38.160	82.246	0,11%
	INTERNET MÓVIL 4G	65.314	146.115	211.428	0,30%
TRANSPORTE	CARRETERAS	310.690	427.822	738.512	1,04%
	AEROPUERTOS: ACCESO ALTO	15.200	0	15.200	0,02%
	TRANSPORTE URBANO: ESCENARIO BRT	222.376	0	222.376	0,31%
<b>TOTAL</b>		<b>1.310.550</b>	<b>910.186</b>	<b>2.220.736</b>	<b>3,12%</b>

Source: IDB, 2021, Presentation by Carlos Cruz.

This measurement approach based on GDP and GDP per capita was maintained for about five years in "Infra Latam," but later it evolved towards a more specialized approach, which considered as the axis of measurement the ratio of services provided by the level of infrastructure, taking three main variables for its measurement: access, quality and cost.

This last measurement methodology made it possible to transform how it was quantified: it shifted from an approach that was concerned with knowing how many kilometers remained to build to date, to quantifying the maximum tolerable that each service has in terms of the number and duration of interruptions, as well as the opportunity of such interruptions, considering that having gas cut in winter is not the same as having the same gas cut in summer. This allowed the establishment of quality standards and setting goals within the short-, medium- and long-term (Brichetti et al., 2021).

And under this new scheme a question arises: do we really want to continue striving to reach 5 percent of GDP, or will we focus on achieving a quality service with current stock levels? What is the use of continuing to add new stock if we do not give adequate maintenance to the current one?

This new vision, based on quality, cost and accessibility, has generated an additional challenge, but has allowed for the creation of a clearer roadmap to prioritize a project plan aligned with the sustainable development objectives of the different countries. This, added to the Paris Agreement, makes it possible to achieve a synchronization of efforts at the national, subnational and sectoral levels.

Considering this new vision, development banking has expanded its field of action. This implies being able to connect projects that aim at development objectives and that serve to give continuity to ongoing projects. However, the most difficult thing for development banks is finding new projects that contain well-defined pre-feasibility and feasibility studies as well as project that are aligned with the axes of social sustainability, climate change and governance, and gender equality and social inclusion.

In these terms, it is key to define four challenges to be addressed in the short- and medium-term.

The first challenge lies in standardizing the infrastructure investment estimation information among the agencies interested in this process. Without reliable, relevant and consistent information, it is impossible to make decisions and design effective public policies. Today, very different figures are observed between multilateral organizations, development banks, ECLAC and the organizations of each country.

The second challenge is to recover the strategic sense of investment in infrastructure for economic development. The sense of urgency attached to this type of investment varies from government to government and from country to country. This corresponds to the public sector, since it is the responsibility of the State to provide the country with an adequate infrastructure. It is also key for the state to recover this leading role, which in previous years has increasingly been transferred to the private sector.



This challenge becomes even more difficult if we consider the environmental variable, since almost all infrastructure projects affect the territory. It is impossible to think that any of these projects will not alter the geography and the existing ecosystem in the area assigned for the work. On the other hand, if we limit ourselves to developing infrastructure policies under an axis solely of environmental impact, we will lose the long-range vision, which allows promoting spatial growth and the reduction of regional disparities within a country.

The third challenge refers to recovering and maintaining the share of investment in the fiscal budget in the long term. The heart of the problem lies in stopping postponing real long-term needs for immediate political urgency. In the face of an economic crisis, the first thing that is cut in the fiscal budget is the investment component, but when there is a wealth of resources, this does not increase proportionally, but social spending continues at the same rate. There are viable alternatives to it. The concession is one of them, which is not synonymous with privatization but is something very different. The leading role of the State must be maintained, and it must be much more focused on consolidating and adequately distributing risks to promote the active participation of the private sector as a strategic ally.

The fourth consideration has to do with the loss of the long-term sense of governments. This leads to replacing the plans of a government with totally different ones, which means that infrastructure projects whose construction can take between ten and 12 years are abandoned a few years after they started. The key lies in separating the *vision* from the *mission* when establishing government plans. The vision is what should inspire the long-term development of a country along with the investment required for it, while the mission must be aligned with this vision and can be refined with each government.

In this sense, it is essential to recover the relevance of planning, especially in the field of infrastructure, so that it aims at obtaining certain shared objectives and that it integrates the different institutions that participate in the decision-making processes. Thus, the concept of the institutionalization of decisions must be incorporated through supra-ministerial bodies that supervise and ensure the completion of large-scale projects. This has been done in Australia and New Zealand, where they have set up a supra-ministerial technical committee independent of political will, which operates as an adviser to the highest political authority in infrastructure matters.

This mechanism will have to be adapted to the realities of each one of the countries, but it would make it possible to build a shared vision, integrating the role of the different institutions, arbitrating the resources between the different executing agencies and deciding whether major projects should be financed with public or private resources.

In this sense, one could think about the implementation of a fiscal rule for public investment, which would become a national commitment and would generate different possibilities for a public-private partnership. Generating clear expectations for the private investor is fundamental because it is a message about where the

resources are going to be located, how many resources are going to be located and where development is headed.

In search of these solutions, the role of multilateral banks is fundamental in the following areas: a) in the generation of qualitative and quantitative research to quantify the multiplier effect of its implementation; b) the generation of collaborative spaces at the level of authorities, professionals and academics in the region; c) long-term financing through the issuance of bonds; d) the establishment of guarantees to reduce financial costs of the issuing countries; e) the requirement of mechanisms that ensure the continuity of the plans by the governments in power and f) specialized support that development banks can provide to improve governance in projects.

### A CASE STUDY: BAD COMMUNICATION OR A STRUCTURAL PROBLEM?

Today, there are very deep discussions in the media, including on social networks, which somehow capture the feelings and perceptions of the community about proposals for new infrastructure, which further stresses interventions on the territory. The discussion that has taken place regarding the environment and the disturbance that large infrastructure works represent is something that makes people uncomfortable. The way forward is taking charge of that discomfort in order to learn how to deal with it.

An example of this is what happened in Chile. In 2017, it was decided a large-scale port in San Antonio, 120 kilometers from Santiago, would be built. This constituted an alternative to what was traditionally the main port, Valparaíso. Six years have passed and to this day, it is still in the second round of discussions on the environmental impact of the project. In the second round, 3,500 questions were received questioning the design and implementation of that port. This is not because they have not known how to negotiate with the community, nor because they have not known how to disclose the benefits of the project. What happens is that, if one makes a port for advanced economies that is going to be sheltered by a city in a developing country, the local communities have the right to question where the other part of the project is.

The 90,000 inhabitants who live in San Antonio ask, “If they are going to install a port in this place to serve advanced economies, what is left for me?” This is a valid question because the port offers only 1,200 people jobs, in a city where there are no universities, there are no more sources of work or even parks.

The problem is twofold. First, the port is not being considered from a comprehensive perspective, considering the larger scope and impact of the project. Second, this lack of a comprehensive lens results from Chile’s fragmented institutional framework. The port is a state company that, in theory, depends on the Ministry of Transport, but in practice, the state port company is the one that makes the decisions on its own. The city is included by the Ministry of Housing, which has a very big problem with informal housing, which is why there is a whole campaign in Chile to provide these people with more permanent housing. But there is no concern, for example, about transport networks from and to the interior of the city.

To feed the port, railways are required that operate separately from the port, separate from the city and separate from the Ministry of Public Works, which is the institution that promotes transportation to the port through the highway system. There are four state institutions that do not talk to each other and that operate with their own degrees of freedom without complementing their investments with each other. The mayor then, representing the community, demands to understand what is happening. Every big project faces relatively similar things. That is why an institutional approach is required to think comprehensively about how it will affect the San Antonio community. There is no other way to generate this integration of the different institutions that act on the same territory, if it is not through an integrated plan that allows us to look at the territory in its complete form.

## The Colombian Experience in the Public-Private Partnership (PPP) in Infrastructure

### Milestones or Events Prior to the Current Situation

Colombia has had notable development in the last 15 years regarding the management of infrastructure projects, mainly in the transportation sector, and specifically at the level of highways and airports, which are the two modes of transportation that received the greatest attention. In terms of railways, there was also notable progress from the private sector, since it has one of the most efficient railways in Latin America; however, its presence is only at an industrial level since it is used to transport 30 to 40 million tons of coal per year. From an administrative point of view, the most salvageable aspect of Colombian history is that it has now evolved into the fifth generation of concessions.

There were palpable fruits from the implementation of the first and second generation of concessions, such as the road used to get from the Cali "Alfonso Bonilla Aragón" airport to the south of the city where this workshop was held. After that first and second generation, there was another important milestone, the structuring of the project called "Ruta del Sol," a thousand kilometers of highway that linked Bogotá with the Caribbean Coast, and with another crossroad from Valledupar to Cartagena. However, for this last section, there was a drastic change in terms of the way the structuring process was approached, thanks to the support of the World Bank, with a modification of the risks in relation to their reallocation and mitigation thanks to the guarantees of the Government to the private sector. This occurred between 2007 and 2010, but unfortunately, part of that concession ended up involved in the corruption issues associated with Odebrecht that affected the entire Latin American region and other parts of the world, causing setbacks and discredit in such processes.

For the fourth generation, institutional change was developed in the national government. Two vice ministries were created in the Ministry of Transportation: a Vice Ministry of Infrastructure and a Vice Ministry of Transportation. New entities were created such as the National Infrastructure Agency, which oversaw private participation, and the National Institute of Roads, which oversaw public works from the national government.

During the fourth generation, investment in highways in Colombia was promoted. However, in addition to stimulating the level of financing that today is one of the highest in Latin America, Colombia in recent years has been one of the countries that has generated greater financing from both the traditional financial market and the foreign capital market. Several Colombian highways have quite successfully issued bonds in the New York market, something that is not easy for a country like Colombia.

Parallel to this institutional transformation, there was a transformation of the markets for production, engineering, materials and consultancy for projects associated with infrastructure. The number of companies that provide services to concessionaires and the State increased notably, not only in the engineering area but also in the legal area where lawyers have played a fundamental role in the constitution of regulations and legal agreements. And it is important to highlight that the good actions undertaken by the government not only generated financing and construction as the main milestones, but also a development of knowledge and a proliferation of markets that have later contributed in different ways to the way in which it currently exists.

### Current Challenges

First, Colombia has a very significant problem in the capital market. It is very small, which means that the indebtedness rates are not competitive in the local market. Traditional or mixed sources of financing, such as public-private alliances, are also not very accessible because they do not have the institutional trajectory that supports them or because they are too complex.

In addition to the national government, there are subnational governments that grant concessions and create public-private partnerships. The two most notorious currently are the Government of Antioquia and the Government of Cundinamarca. However, most municipalities in Colombia do not have the technical capacity to manage infrastructure works, since they require combined financing structures such as the one present in highway and airport works in Colombia, which is based on a source of end user payment through tolls, and from the government. Nowadays it is almost impossible for Colombia to install a new toll, or to raise any toll that is already installed, if it does not correspond to a totally new work. Thus, there is an expansion of the infrastructure challenges, which goes hand in hand with a depletion of the revenue sources that have normally been used to support traditional financing sources.

For this reason, it is very important to separate what flow is required as financing of the work and the flow of repayment that is generated to recover the investment. For financing there is the banking or capital sector, but for the flow of repayment of said financing, there are no guarantees that sustain the public-private combination in the long-term. That is why the public contribution is urgently needed through future terms or other mechanisms that make it possible to make payments that are destined both to public works and partially to private works.

In this sense, innovations in terms of financing instruments have become a necessity. For this, it is necessary to modernize the capital markets that allow the incorporation of green bond instruments and attract

institutional investors. That requires all the financial engineering to package and manage risks on an individual basis. As a result, there is a very big opportunity to modernize the markets to attract sophisticated investment. Fortunately, Colombia is one of the Latin American countries that has already developed its green taxonomy, so the next step is much more viable.

The second great challenge for Colombia is to establish work programs that are developed under a long-term vision. Doubts have been generated about the continuity in the constitution of public-private alliances for the coming years and most of these doubts are generated by a wrong interpretation of the intervention of private entities. They are considered a kind of privatization, or as a way to favor certain segments of the population. The continuity of the PPP scheme is under discussion. For example, in the current National Development Plan, the government only included three highways, only one of which is significant, but there is a drought of major road works. Instead, there is a strong emphasis in the construction of trains, which is an important form of transport, but in the current conditions of the country, it is not a mode of transport that is going to be widely deployed throughout the territory.

The third challenge is adaptation to climate change and how it relates to the environment and communities. For example, the most challenging highway is Valle del Cauca, which is currently blocked due to environmental issues and the opposition of the communities for ten years. To a large extent, there has been a lack of education in benefits versus the costs with communities. Every time the construction of a bridge is announced, the debate focuses on the environmental impact that it brings but not the benefit.

The fourth challenge corresponds to logistics. From the first plan, it was insisted that in a country like Colombia, it is more important to improve access to cities and generate logistical facilities than to extend or pave network arcs. Logistics in the strict sense are not a transport activity, instead belonging to the configuration of the economy and can benefit from advances such as artificial intelligence and others to optimize traffic.

Finally, what remains to be done in Colombia, and represents a challenge, is connectivity in road networks. The Constitution of 1991 divided the responsibilities of the road network into three packages: the national network in charge of the National Government, the secondary networks at the level of the departmental governments and the tertiary networks and rural roads in charge of the municipalities. The split is logical, but not financially viable. There is neither money nor technical capacities to make secondary or tertiary plans, which is why there is a deficit of secondary and tertiary road networks, while the needs at the level of primary networks are still being resolved. That has not been resolved and a different arrangement would have to be sought than the one we currently have.

## START-UP OF MEGAPROJECTS

In terms of megaprojects, the story does not change much in terms of the risks and complexities faced during implementation. However, megaprojects can be noted for their success for planning over a long-term horizon.

Aside from the fact that they are regularly long-lived and cost more than \$1 billion on average, megaprojects usually involve:

- Large-scale public policy products;
- Long-term planning;
- Dynamic governance structure;
- Critical and complex interaction with the end user;
- In-depth and detailed public exposure; and
- Complex procedures and technology.

Every megaproject faces countless challenges to overcome. However, regardless of the strategies, there are fundamental principles that must be applied to achieve sustainable success over time. These are proper preparation, hard work and learning from failure.

Here it is important to emphasize learning from failure as the most important of all, since adequate preparation and hard work can be replaced at the beginning of the project through the adequate selection of the work team, but the lessons learned during the development of a project constitute the key that will connect and support the growth curve in the long term. There is nothing more important in infrastructure projects than being able to learn from each other. If we don't share the lessons learned, we will never improve. We will never grow. And that includes all the mistakes you make along the way. "Success" is unfortunately a poor teacher because when we are successful we assume that this is how things will always be. But fortunately, problems have projects, and projects have problems, and we learn from those problems and share them.

They reflect large-scale policymaking, and their dynamic governance structures are significant, but perhaps even more important is megaprojects inherently have a long-term horizon. Planning with a long-term perspective is fundamental because it is what will set the guidelines and adequate times to consider in resolving the rest of the factors.

Dynamic governance and support become very important. For example, during the stages of the megaproject "The Great Excavation," detailed in the case study below, there were seven governors involved. However, each governor supported the previous governor in terms of completing the next stage of the project.

The other key ingredient for the development of an infrastructure project is to widely disseminate the benefits that the project would generate to the community. For this, the analysis of the cost-benefit relationship is transcendental.

### Case Study: "The Big Dig" ("Great Excavation")

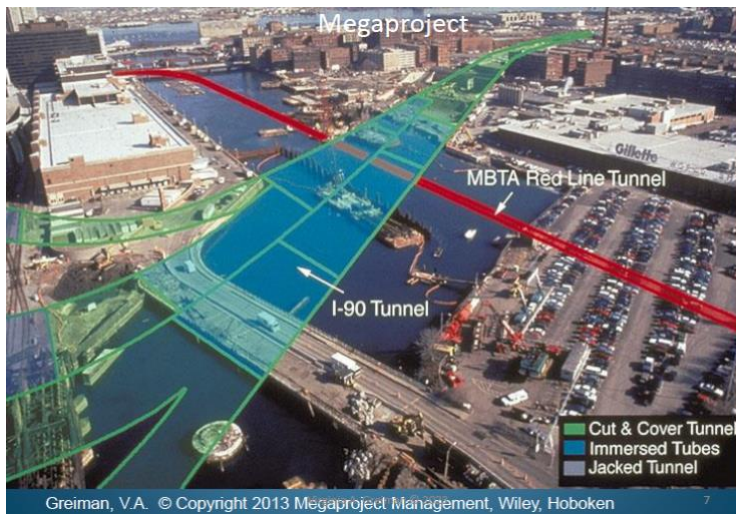
One of the most significant examples in the history of the United States has been the mega-project carried out in Boston, Massachusetts called the "Big Dig." This was a monumental project that transformed the city's underground infrastructure and improved quality of life. This ambitious initiative had sought to replace and modernize the old networks of public services, such as the sewage system and drinking water as well as electricity and telecommunications. The project was originally scheduled to be completed in 1998 at an estimated cost of \$2.8 billion (in 1982 dollars, \$7.4 billion adjusted for inflation as of 2020). However, the project was completed in December 2007 at a cost of more than \$8.08 billion.

The project was also taken on in response to traffic congestion in Boston, which were built centuries before the advent of the automobile, as well as addressing aging underground infrastructure with frequent flooding and breakdown issues. In addition to upgrading the pipes and cables, the opportunity was taken to integrate innovative technologies and smart systems into the infrastructure.

The Big Dig was a collaborative effort between local government, private companies and engineering experts. A detailed plan was established that included coordinating different work teams, managing deadlines, and minimizing disruptions for residents and businesses. The planning lasted almost 30 years, the construction work was carried out between 1991 and 2006, and the project concluded on December 31, 2007, when the partnership between the program administrator and the Massachusetts Turnpike Authority ended.

The project was carried out in different phases, beginning with the areas most affected by infrastructure problems. Each phase involved excavating streets and sidewalks to access underground pipes and cables and replacing them with new, more efficient systems. Advanced excavation and repair technologies were used to speed up the process and reduce disruption to the community. In addition to infrastructure improvements, the Big Dig also aimed to revitalize and beautify affected areas. It was complemented with landscaping improvements, park construction and sidewalk renovation to create more attractive and functional public spaces.

Figure 1: The Big Dig: The Largest Megaproject in the United States



**Source:** Presentation by Professor Virginia Greiman

Consequently, there were many technical challenges. As can be seen in the photo, one of them was that tunnels were being built over the road transit system.

Several studies were done before the project started, and the estimated costs were huge (\$14.7 billion), but the benefits were much higher (roughly \$52 billion). However, quantifying the benefits is challenging due to the variables involved, and the benefits encompass not only infrastructure improvements but also improvements to quality of life and the environment.

Exploring other types of megaprojects, it is possible to mention some that have also been successful. Other successful projects include the Paris-Lyon high-speed rail line, the expansion of the Docklands light rail in London, the Madrid metro, the Mexico interchange and the I-5 project in Utah. There are also tremendously successful projects in developing countries like the aluminum production plant in Mozambique and the Benin Agricultural Production project.

This shows that successful megaprojects are viable anywhere in the world, regardless of the region to which they belong. Despite the differences, the important thing is to identify what has been the common factor of the challenges and strategies that these countries have had to face.

## CHALLENGES

Among the most relevant challenges are:

- **Adaptation to a changing social and economic environment.** No project is static. New variables



will appear that must be adapted to during the life of the project.

- **Creation of public value.** Most megaprojects are questioned in terms of the benefits they will bring to the public. It is key to have indicators about these benefits since they will be essential to withstand and defend the interruptions of its execution.
- **Cultural diversity.** Consolidating the needs of the different beneficiary groups of the work is a difficult challenge, but if an intercultural consensus is not sought, the results will not be celebrated by the communities when the work ends.
- **The erosion of public trust.** If the project does not have short- and medium-term milestones that allow it to celebrate its partial successes, public confidence will gradually be lost until the results are presented.
- **Alignment of objectives between multiple stakeholders.** The alignment of objectives between the direct beneficiaries and the other interested parties is a task that requires time and adequate management.
- **Development of the largest ecosystem.** Tuning the project in an integral way with the other needs and opportunities of the ecosystem is transcendental to generate acceptance and support from the community affected by the megaproject.
- **Corruption.** The development banks have a lot to contribute to counteract this evil, because they are the ones that have the money and set the requirements to deliver it.

### Strategies

Among the most relevant strategies are:

- a) **Selecting the right project.** A project must have strategic alignment with the mission of the organization, ensuring that the project is financially, economically and socially prepared. The first obstacle to selecting it is to adequately answer the question: What is the strategic alignment of your project with the mission of the sponsors? Second, it is necessary to ensure that the project is financially viable, contemplating a large margin of additional resources for unexpected contingencies. Third, there must be a working business model. The project may not be economically feasible because, while there are private investors to attract, but the project may not work for them. If there is no alignment of interests, there will be constant conflicts. Finally, the project must be aligned with the social interests of the final beneficiaries. If the project does not add enough value to the end user, there is no point in doing it.

- b) **Exploring all options with stakeholders before escalating commitments.** This requires having answers to the following questions: are we socially prepared? Have we met with all the stakeholders? Do we understand what they want or why they are participating? Would we meet the sustainable goals and are we prepared to do so? Many times, this is shortened process due to political interests, but it is not advisable to enter the next stage without really being ready.
- c) **Establishing integrated and collaborative project teams with shared incentives and risks aligned with the project outcome.** Although projects have multiple employers and multiple government agencies involved, there must be a single team. To achieve that, trust must be generated, and trust is not created by itself, it takes time. If trust is broken during the execution of the project, progress cannot be made without first recovering it, because it can lead to its failure. To build trust, work must be done to create transparent processes, with an equitable distribution of risks and rewards.
- d) **Using sustainable methodologies to improve the ecosystem.** Climate change is costly, but significant progress can be made through the implementation of sustainable methodologies and the application of technical studies that demonstrate the estimated impact of the project. Previous projects can offer a blueprint of technological advances that can be used in a new project.

For South America, where subregional collaborations are being sought, as is the case of the bi-oceanic corridors, joining as partners is an excellent path, but for this it is key to consider additional strategies to those already mentioned to ensure that the relationships are maintained:

1. **Creation of cross-border collaborations.** Partnerships and alliances are key to your success.
2. **Creation and execution of regulations, documents and contracts.** Rules and regulations prevent mishaps, yet these same rules can prevent progress. This requires adequate governance and regulation, but accompanied by rapid decision-making, because with each delay the costs increase.
3. **Consider the benefits of a “treaty” to establish the framework for cooperation.** The benefit of a large government document must be considered, and then the creation and execution of government documents and contracts. Contracts must exist for all interactions that occur between the parties.
4. **Reduction of opposition by optimizing the benefits of the project.** Problems and dissatisfied stakeholders should be identified and means sought to involve them in participating in the project. They should be open to taking their ideas to improve the project. Reducing opposition to the project must be a constant concern. This opposition may be due to its environmental impact, not creating enough jobs or not delivering what was promised. Keeping this reality in mind is the most important aspect of your success, even more important than meeting costs and

schedule.

5. **Independent supervision and advice.** The best way to achieve this is to look for experts around the world who may have built similar projects and who are willing to get involved in the project. This is essential for identifying problems and measuring your progress. It must be kept in mind that problems do not disappear with time and if they are not corrected, costs will continue to increase.

### Case Study: Megaproject In The South American Region: The Bogotá Metro

A particular project from which lessons can be drawn is the Bogotá Metro, which has the following characteristics:

- 24 km viaduct
- 16 stations, 11 of them integrated with a Bus rapid transit system (Transmilenio)
- 60 trains x 1800 pax (30 trains at the beginning)
- Theoretical capacity: 72,000 per hour per direction
- Capex: \$4.2 billion
- Modality: Concession under the construction-possession-operate-maintenance-transfer (BOOMT) contract modality 7-year work + 20 years of operation
- Recruitment: 2019
- Work Progress by 2023: 18 percent

The total budget for the work, which reached \$4 billion, was distributed in the contract, which represents approximately 85 percent and 15 percent, which is the acquisition of the land necessary to execute the project, the transfer of service networks public of the pedestrian bridges that interfere with the development of the work and the PMO service that corresponds to the project management. This distribution is important because it reflects a different risk allocation position and strategy, which is new to Colombia from many past experiences in port and highway construction.

Eighty-five percent of the contract is divided between approximately 65 percent of which is financed by the State, and the rest that is financed by the concessionaire itself, but which will be recovered during the execution of the work, on the day of the inauguration through a bonus, and a minimum part that will be recovered during the operation of the train depending on the number of kilometers travelled.

Regarding what the State finances, 70 percent comes from multilateral banks and 30 percent from local banks and financing. The private sector, due to the rules of the contest, has to contribute a significant capital of \$300 million.

The 15 percent that corresponds to the properties, contains a very important part of the risk management of this type of project in Colombia and Latin America, and is required in this case

particularly for the workshop patio, which is that large area where they arrive all trains at the end of the day to be checked and repaired.

The distribution of risks, which is implicit in the administration of this project, is as follows:

**Table 2: Distribution of Risks for the Bogota Metro Megaproject**

Riesgo	Público	Privado
Tarifas	100%	Su remuneración no depende de la tarifa al usuario. Si Captura de valor
Riesgo de Demanda	Compartido Mayoritario	Compartido / Control de Evasión
Riesgo cambiario	Compartido Rangos	Compartido Rangos
Ambiental	Parcial (sobrecostos compartidos)	Parcial (sobrecostos compartidos + licencias)
Predial	Público	No
Diseño y construcción	No	100%
Cambio tributario	Compartido	Compartido
Financiación	Fija	Variable

Source: Presentation by Andrés Escobar.

a) Part of the risk corresponding to the exploitation of complementary services was assigned to the private sector, such as the rental of premises, advertising in screens inside trains and so on. These sources are shared between the State and the private sector with a 40 percent and 60 percent ratio, respectively.

b) Demand risk has typically been managed jointly but mostly by the State. This is a subject on which there is a lot of debate in Colombia and isolates many international participants when the demand project is assigned to the private sector, understanding that the private sector cannot manage the demand beyond doing its job well and offering a good service. That would be a way to encourage more users. Therefore, the part of the risk that the private sector manages is to control evasion.

c) The exchange risk in Latin America constitutes a disincentive to invest in concessions. This risk will be shared, but the private sector has a risk until it exceeds some deviation bands according to an official projection of the exchange rate that exists in Colombia, which goes hand in hand with the fiscal rule that is projected annually. Beyond this, the State assumes the entire exchange readjustment.

d) The environmental risk has been assigned in a shared manner. A first part of the responsibility is to

manage the environmental licenses, which implies a great technical challenge considering all the requirements of the environmental authorities. The other part involves the costs resulting from the project for environmental mitigation. This is a risk that is difficult to tabulate and budget for when making a proposal in a tender because these risks arise from social interactions, community requirements and legal demands. Therefore, this risk is mainly borne by the public sector.

e) Property risk has been considered 100 percent public, and that was a total change for the Colombian tradition up to that moment. This management involves a lot the communities and the relationship with the neighborhood leaders, but also because it is an activity in which it is necessary to resort to expropriation. The purchase of land has a particular duration. The vast majority of the properties, 95 percent, can be bought in around two years in the Colombian case, but the problem is the 5 percent where expropriation has to be entered into, which is conflictive from the social and judicial point of view.

f) The risk in the design and construction has been conceived as 100 percent private and corresponds to the final design of the detail in the construction of the work, but not to the structural design, which was provided by the State in the terms of reference for bid. The binding and enforceable rule of the contractor are the minimum specifications of the contract that must be fully met.

g) The tax change is shared between public and private sectors and corresponds to the additional costs for changes in the tax rates established by the competent governing body during the life of the project.

h) The financing risk is fixed for the State and variable for the private sector. This is because public policy in Colombia determines that, for mass transportation projects from a certain amount, the State must contribute up to 70 percent of the cost of the project, but the actor responsible for the execution that are the municipalities should finance 30 percent. This has had an unsuspected benefit in the continuity of the projects, because in the case of Colombia the changes of mayor and president do not occur at the same time, which means that by the time a new president takes office after 2 years, there is an empowered mayor, promoting a mature project and with a collection account of 70 percent, which corresponds to be incorporated into the General State Budget.

### Lessons Learned from the Colombian Experience in the Metro Project

1. The distribution of public - private risks determines success in terms of:
  - Attraction of private capital to public infrastructure;
  - Plurality of participants in the tender (competition, price reduction);
  - Fluidity and execution of the contract; and
  - Political validation of private investment.

There must be a good distribution of risks so that there is concurrence, competition and lower prices. In

addition, the fluidity in the execution of the contract has depended to a large extent on the elimination of various risks for the contractor because he has a clear field of work to concentrate on the execution of the work itself.

2. Each country and sector have a different optimal distribution of risks, but good practices can be adapted.

This can be seen in the example of the Bogotá Metro, and it is being promoted as a management model in other projects.

3. In urban projects, property management and service networks weigh more than in projects in rural areas.
4. Project cycles are longer than government times (four years in Colombia), which makes it important to reduce initiation periods.
5. Pros and cons of accelerating the initiation of projects is a milestone of no return.

Today, the issue of accelerating project management is very important, but it does not mean that it is an absolute objective. Many times, if the objective of planning the project is to speed up the initiation, it can incur other types of very different risks that later hatch during the execution of the work.

6. The dilemma of nation/municipality priorities.

The execution capacity is at the national level and there are many deficiencies at the subnational and local level that regularly occur in our countries, which must be considered.

7. A 30/70 co-financing model.

This model is giving good results in Colombia, because it allows sectional governments to do their part and put pressure on the State to finance large-scale projects on solid pre-investment bases.

### Infrastructure Financing by Multilateral Development Banks

#### 1. Long-term impact of infrastructure

The long-term impact of investing in infrastructure must always be considered. The effect of positive externalities is a large economic effect that many governments do not consider when evaluating the benefits versus costs of an infrastructure investment.

First, increased trade will bring new manufacturing industries and farmers will be able to sell their

products from their own land to the cities. Second, increased economic activity will increase tax revenue for the government. Some of the Finance Ministries of Latin American countries have financed these infrastructure investments, but getting budget allocations for them becomes challenging if there is no ability to recognize how much this investment will contribute to future tax revenues, which are not measured usually in numbers.

But there is a way to estimate the positive externality effect using the production function, and it is through GDP or the production function that is made up of capital and labor K and L.

### Measurement of Positive Externality

$$(GDP) Y = F (K_p, L, K_g),$$

Where: L= Labor

K<sub>p</sub> = Private Capital

K<sub>g</sub> = Infrastructure

**Source:** Yoshino, Abidhadjaev and Nakahigashi (2019).

Capital (K) has been divided into two components, private capital infrastructure and government capital.

To explain this exercise, suppose that the government invests in railways, which causes new companies to arrive in the region.

Small businesses start their operations, which will increase KP's private capital and create employment. There are three effects per infrastructure. One is the direct effect of the infrastructure that increases in the region. Second, the infrastructure will bring private business. Third, it will generate employment, which corresponds to the indirect effects. In the Japanese case, the indirect effects are about one-third of total GDP, which in other words, means that the indirect effects become greater than the direct effect.

In addition, the inhabitants of a region have access to new service options to be able to start their own businesses, so banks will start to lend money and merchants will use transport services to sell. Financing for them is important. Without accompanying financing, residents would not be able to establish their own shops, businesses and local investment trust funds. In other words, this must be accompanied by crowdfunding campaigns.

Infrastructure is very important, but at the same time, entrepreneurs must have their own businesses along with this infrastructure. That would increase the speed of the effects and future tax revenues for the Ministry of Finance.

The effect observed in the railway infrastructure can also be extrapolated to other types of infrastructure investments. In recent years, digital infrastructure is making a significant impact in Asia. This is the case with both e-commerce and online education, which has a great effect on the development of human capital.

## 2. Past Failures of Public Private Partnerships

PPP has failed many times in both Asia and Latin America. The reasons for this come from excessive user charges. Users will always prefer low fees, and private investors will always prefer high rates of return. From the beginning, this creates a conflict between users and private investors. Revenue must be sought, not just from user charges, but from other sources as well. They can come from development banks and the Treasury itself. Some of that tax revenue can be returned to investors and infrastructure operators, which can keep fees low for users and a rate of return high for investors. This is where the role of multilateral development banks becomes key in linking the need for present resources with the recovery of future resources obtained from positive externalities.

To do this, it will first be necessary to estimate the speed of the impact of the externality on tax revenue and measure the incremental tax revenue from each investment.

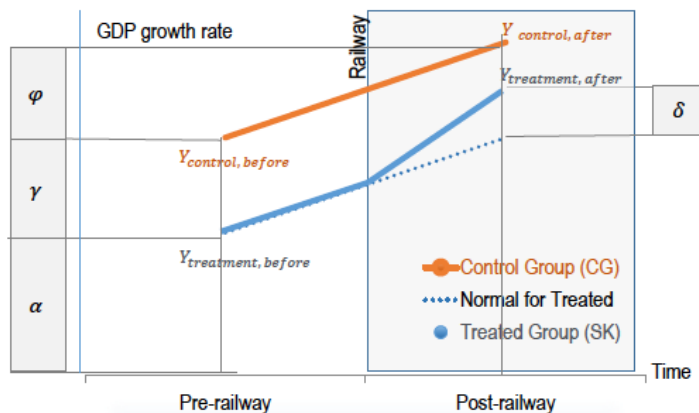
Additionally, in the experience of Asia, it has been observed that the interaction of the multilateral development banks has curbed corruption, since the projects financed by the multilateral banks are managed more neatly, generating more balanced negotiations between politicians and the infrastructure companies.

## 3. Empirical estimates of indirect tax revenue

Figure 2: Effect of the Positive Externality Before and After the Railroad

### Assumption: Common Trend

(Yoshino and Abidhadjaev, Chapter 1)



Source: Yoshino, Abidhadjaev and Nakahigashi (2019).



Below, you can see the empirical estimates of the impact of infrastructure using the case of Uzbekistan.

In Uzbekistan, the impact of the railway lines can be measured by comparing the orange and blue line, see in Figure 2. The orange line is the region where there is no railway, where the economy grew the same as before. On the other hand, the blue line, which represents the region where there is railway, indicates that the economy grew at a higher rate, and the incremental slope could be measured using the trans-log production function.

Investment in railways in Uzbekistan had a significant impact on the agricultural sector because farmers were able to sell their products to larger cities, thus increasing their income. In the industrial sector, factories could be built along the railway line and their products could also be marketed in other markets. And thirdly, the food, shops and department stores sector also had a positive impact.

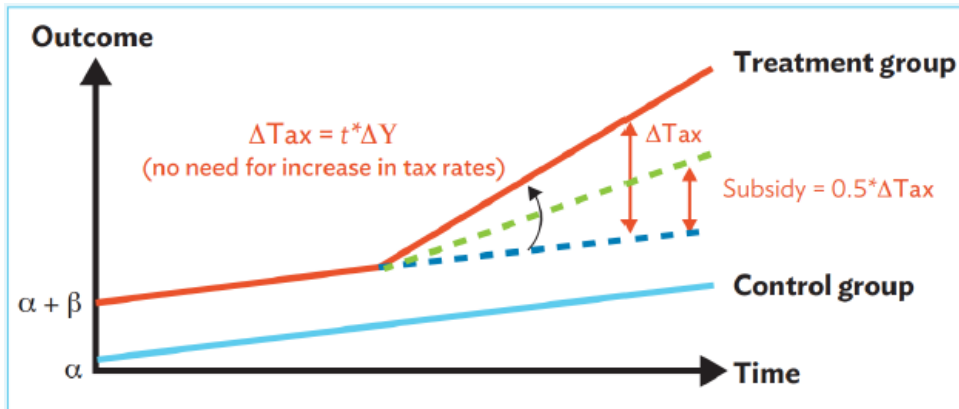
**Table 3. Numerical estimate of the coefficient of difference in differences using regional data for Uzbekistan (2005-08 and 2009-12)**

Region group	Outcome	Pre-railway period	Post-railway period	Difference
Non-affected group	Average GDP growth rate (%)	8.3	8.5	0.2
Affected group	Average GDP growth rate (%)	7.2	9.4	2.2
	Difference			2.0

**Source:** Yoshino, Abidhadjaev, and Nakahigashi (2017)

Observing the GDP of this region under the effect of the railway (2.2 percent) and the GDP of the region without the presence of this railway (0.2 percent), it can be argued that this railway had a significant impact of 2 percent of the GDP, which contributed to future tax revenue. That means that the government can provide the initial subsidies because the government is not losing money, but rather increasing its tax revenue due to investment in infrastructure.

Figure 3: Diagram of the Positive Externality Effect on Tax Revenues



Source: Yoshino, Abidhadjaev, and Nakahigashi (2019)

In this case, the Minister of Finance in Japan was presented with a viable option to invest in infrastructure without having to increase taxes on citizens. To do this, part of this tax revenue should be distributed each year to infrastructure companies that will invest with their own money in the infrastructure. For example, the red line is the total increase in tax revenue. The green dotted line is the part where infrastructure operators, investors can receive 50 percent of the tax revenue and the government the other 50 percent of the tax revenue.

#### 4. Land Acquisition (Land Trust)

Japan had a huge land acquisition problem. Many people argued that the land comes from their ancestors, and therefore, they did not want to sell it, and it was very difficult to find a solution for the project. Viable alternatives were ultimately identified people who attached sentimental value to their property. A land lease trust was created where the owners could continue to own the land forever, but at the same time, they could lease the land to the construction company. They would then receive a portion of the dividends from those infrastructure or commercial buildings. This has been a very efficient solution to create good roads in a straight line and thus also improve construction times.

#### 5. Transparency of the Land Transaction Role of Multilateral Development Banks

Land price transparency is related to land use. In many countries the price of land is not managed transparently. So a fair negotiation by the Ministry of Public Works or Ministry of Housing with the land owners is very important. Japan started to have a public information website by the Ministry of Construction and Land to transparently publish what was the price per square meter of land in each region. Those negotiations then became very easy to manage because the average transaction price is officially announced every year, which has prevented corruption and other conflicts of interest.

## Lessons Learned and a Path Forward

The deliberations carried out in the workshop allow certain conclusions to be drawn about how to overcome the infrastructure deficit in South America and the role that development banks, especially the Development Bank of Latin America (CAF), can play in this.

In this sense, the Chilean experience in PPPs and public works concessions, which has been key in generating \$30 billion dollars in investment in infrastructure in the last 30 years and put Chile in first place in the region regarding the quality of its infrastructure, it is worth rescuing. It is also worth noting the considerable advances of Colombia, already in the fifth generation in this area. The sophisticated model used in the concession contract for the Bogotá Metro (a project still underway), with innovative mechanisms to balance the distribution of risks and incentives between the Treasury and the private concessionaire, is a good example of this. In turn, the experience of the United States with megaprojects, such as the so-called "Big Dig" in Boston, carried out over thirty years under seven state governors, is clear proof of the importance of the continuity of public policies. In the matter, whose absence in South America is a no less obstacle. That said, it should be noted that in the United States carrying out megaprojects has become increasingly difficult, highlighted by the bogged-down rail project to link Los Angeles with San Francisco in California. From a conceptual point of view, however, perhaps the most significant contribution came from the experience of East Asia in this area, which, as is known, is the region that spends the most on infrastructure (8 percent of the total GDP) and which is also the most dynamic and fastest growing.

One of the main obstacles to greater investment in infrastructure in South America is the Finance Ministries. Their highest priority is to spend as little as possible and projections aren't made to assess the future benefits of these investments, including social benefits and increases in tax revenue that they would generate. As the case of Uzbekistan reveals, investments of this type can lead to increases of up to 2 percent of GDP. Bearing this reality in mind, the approach of the Ministries of Finance in this matter could be very different.

In this framework, some conclusions and policy recommendations emerging from the deliberations of the workshop include the following:

**CAF as Latin American Development Bank:** The multilateral development bank today is a key ally and financier of the large South American infrastructure projects, in which private banks do not dare to invest. And there are problems in carrying out the project, these do not necessarily have to do with financing, but with its structure, design and execution. In South America, one of the biggest problems has been in their execution. In recent years, the multilateral banks have made available to the countries several options to strengthen the institutional governance of these projects, and thus facilitate their execution. Governments have been accompanied with financing and technical teams to generate good governance practices.

One of the most widely used instruments for this has been technical cooperation, an initiative generated from the profits obtained and to which the member countries are entitled. Along with this, CAF has redesigned its strategy, and at the request of its board of directors it aims to become the Green Bank of Latin America. The Bank intends to reach 40 percent of the portfolio investment aimed at reducing emissions and economic reactivation. After the pandemic, it is urgent that the region have a bank specialized in it.

CAF's perspective for the next four years is to increase the financing portfolio and accompany its partners in developing and structuring better institutions that can ensure adequate project structuring, good execution of them, and strengthening their institutional framework.

**Extrapolate the Chilean experience:** The good execution of projects requires coordination, trust and adjustment between public and private actors. Chile's experience in infrastructure investment has evolved to become one of the most recognized in the region. If most of these good practices were implemented in the rest of the South American countries, there would be a solid model to facilitate the intervention of development banks in the placement of finite investment resources.

**Optimize structure and project management:** Multilateral banks can improve the structuring and management of projects through: a) requiring mechanisms that ensure the continuity of investment plans by the governments in power regardless of their political persuasion, b) guaranteeing the good governance of its members by creating a project plan and technical cooperation mechanisms and c) speeding up the preparation of public consultations and environmental licenses. Thus, when the window of opportunities opens, the projects would be ready to move forward quickly.

Likewise, a mechanism can be created that facilitates the transfer of projects to the private sector with a higher degree of maturity, in such a way that the additional resources invested during the first phases are recovered against investment spending. There is no reason why a bidder cannot be charged for delivering finished information, ready for implementation.

**Link the public and private sectors by creating new financing channels:** Collaboration with the private sector has an enormous space for joint work, and in this the multilateral banks play a key role. On the one hand, it can support the State in some development investments, and on the other, generate the conditions for private financing in such a way as to be able to balance the role that both parties play.

**Select appropriate projects:** In the multilateral world, resources are finite and must be handled strategically. If the wrong project is selected there will be no success, and the first obstacle to selecting it is to verify the strategic alignment of the project with the mission of the sponsors. Second, the project must be financially viable, establishing a large enough margin for unforeseen contingencies. Third, the business model must work, recognizing the possibility that the project may not be feasible because of private investors who do not align with the goals of the project. Finally, the project must be aligned with

the social interests of the final beneficiaries.

**Create standardized processes and contracts:** Based on the experience of the fourth generation of concessions in Colombia, there was a successful model where efficiencies were achieved thanks to the standardization of contracts. The contract was based on two or three economic formulas, depending on whether it was a public initiative, a private initiative and had a component that was a technical annex that defines other conditions. Nonetheless, it was essentially the same standard. The government learned to speed up execution and the public sector could respond more quickly to those opportunities. As a result, one of the large concessionaires would appear and could review five or six project proposals at the same time, each for \$300 million to 500 million dollars, because it was exactly the same type of contract.

Obviously, there are also cases of projects that deviate from the norm, such as the Colombia Metro, which will require certain particularities that will make it slower and more specific. But if it is possible to create a model that allows a repetition that is good enough for the market and the government to improve the efficiency of processing it, efficiencies will also be achieved in the rest of the process.

**Show pre-investment as a sign of commitment:** It cannot be only the multilateral banks that invest in pre-investment, which is between 1-2 percent of each project. Pre-investment should be a critical consideration for most Latin American legislations. Today, pre-investment is not seen as an item, paradoxically, of investment or eligibility. This means generating changes in public policy, understanding that a good project can be created with little, and putting the priority of pre-investment on the table from now on.

**Build governance trust and credibility:** This is achieved through the connection between financing actors for the different lines of infrastructure or for the different lines of investment in the country, which allows the capital to arrive in the end and makes them feel safe to invest.

**Invest in regional cooperation:** If there is an issue that can unite Latin America, it is infrastructure. Integration through infrastructure, and especially CAF, can play a very important role in supporting the different institutions for regional governance from the point of view of CELAC, or eventually a new Unasur or Mercosur.

**Innovate financial products and public policies:** The innovation of financial products has been a topic on the table for internal credit and risk committees as well as groups of different banks in creating financial products that allow transforming or mitigating risks in a more efficient way. This innovation must also be generated in public policy. For example, recently, on May 7, 2023, the National Congress of Colombia approved Article 233 of the National Development Plan of Colombia, so that all banks can carry out operations in local currency, eliminating the risk of mismatch.

**Value transparency, including distribution of risks and fair benefits:** To build trust, there must be a transparent process with a fair distribution of risks and rewards. CAF can promote management models that involve a better distribution of risks so that there is concurrence, competition and lower prices of concessions.

**Develop anti-corruption controls:** Development banks have a lot to contribute to counter this evil, because they are the ones who have the money and set the requirements to deliver it, and there are many methodologies that can be implemented to manage corruption.

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