PUBLIC-PRIVATE PARTNERSHIP IN LATIN AMERICA:

Learning from experience

CAF DEVELOPMENT BANK OF LATIN AMERICA

Title: Public-Private Partnership in Latin America. Learning from experience

Legal deposit: lf74320153002086
ISBN: 978-980-422-009-8
Editor: CAF

Vice Presidency of Infrastructure
Antonio Juan Sosa, Corporate Vice President
Sandra Conde, Director of Analysis and Sectorial Programming
Mónica López, CEO

Author: José Manuel Vassallo Magro

Collaborators:
Ana Alises Pérez
Paola Bueno Cadena
Javier Ferrer García
Alejandro Ortega

Graphic design and printing: Gatos Gemelos Comunicación Bogota, Colombia - July 2015

The digital version of this book is available at: scioteca.caf.com

PRESENTATION

In recent decades, many Latin American countries have launched public-private partnership models for the construction, maintenance and operation of public infrastructure. At the beginning, these models were based on public work concessions for highway construction; however, over the years, they have been perfected and their use extended to other infrastructures and public services, such as railroads, ports, airports, mass transport systems, hospitals, prisons and public buildings.

The application of these models has both met success and failure. The experience of their implementation has given rise, at the same time, to continuous legislative reforms and changes in the contracts, which have contributed to an improvement of PPP schemes over the years. Proof of this is that, today, Latin America is one of the regions in the world with the highest level of activity in processes of public-private partnerships.

Given that Latin America has already sufficient experience and history in PPP development, this book has been written with the intention of compiling a set of case studies in order to derive recommendations and lessons learned for general application.

This publication, of an academic-practical character, discusses the development of five projects implemented under a public-private partnership model. The document also examines the evolution of Latin America in terms of infrastructure investment through a global vision and describes the future challenges facing the region for the implementation of the model.

The book aims to foster the exchange of experiences in the region and the dissemination of knowledge in the field of public-private partnerships as another tool to be used for the development of infrastructure and public services.

At the same time, it allows CAF –Development Bank of Latin America– to continue to support the region's countries and give continuity to the process begun in 2010 with the introduction of the first book on the subject, entitled *Public infrastructure and private participation: concepts and experiences in America and Spain*.

L. Enrique García
Executive President of CAF

CONTENTS

1. Introduction

2. PPP in Latin America: a global vision

2.1 Infrastructure development in Latin America

2.1.1 Economic expansion in the face of the infrastructure gap
2.1.2 The role of private investment in the infrastructure development of Latin America
2.1.3 The figure of PPPs in infrastructure investment
2.1.4 State of PPP development and experiences in the countries of Latin America
2.1.5 Future challenges for Latin America

2.2 Characteristics of the PPP model in Latin America

2.2.1 Legislative framework
2.2.2 Institutional framework for PPP projects
2.2.3 Project eligibility
2.2.4 Private initiatives
2.2.5 Tender mechanisms
2.2.6 Risk sharing
2.2.7 Sources of financing

3. Transport interchange hub in Moncloa, Madrid (Spain)

3.1 Introduction

3.2 Madrid's transport interchange hub plan

3.2.1 Regional demographics
3.2.2 Transportation system: a functional analysis
3.2.3 Madrid's transport interchange hub plan

3.3 Legislative and institutional framework

3.3.1 Reference legislation
3.3.2 Institutional and project management level

3.4 Project features

3.4.1 The BUS-VAO reversible lane
3.4.2 The Moncloa transport interchange hub

3.5 Current contract framework and the decision to use the Public-Private Partnership model

3.6 Tender process and contract award

3.6.1 Pre-tender studies
3.6.2 Mechanism for awarding and evaluating bids

3.7 Contract design and risk allocation

3.7.1 Characteristics of the economic and financial plan
3.7.2 Risk allocation and mitigation mechanisms
3.7.3 Service standards and quality incentives

3.8 Contract management and economic balance

3.8.1 Ex-post monitoring of compliance with the concession contract
3.8.2 Economic balance and contract renegotiation

3.9 The concessionaire company and project financing
3.9.1 Evolution of the shareholders' interest in the concessionaire company
3.9.2 Project financing
3.10 Project balance
3.10.1 Results versus initial projections
3.10.2 Economic, social and environmental benefits derived from the project
3.11 Lessons learned

4. San Jose-San Ramon and San Jose-Caldera highways in Costa Rica
4.1 Introduction
4.2 Costa Rica's transport system
4.3 Experiences with public works concessions in two road infrastructure projects in Costa Rica
4.3.1 San Jose-Caldera highway
4.3.2 San Jose-San Ramon corridor
4.4 Legal and institutional frameworks
4.4.1 The road to public works concessions
4.5 Contract bidding and awarding
4.5.1 Preliminary studies
4.5.2 Bidder pre-qualification and access to the tender process
4.5.3 Award mechanism
4.5.4 Assessment of bids and contract awarding
4.6 Conception, contract monitoring and risk allocation
4.6.1 The path to the definitive concession contract for the San Jose-Caldera highway: five addenda and a supplementary agreement
4.6.2 Risk allocation and changes in mitigation mechanisms
4.6.3 Execution framework of the San Jose-San Ramon highway concession contract
4.7 Economic-financial rebalance of highway concessions in Costa Rica
4.7.1 Renegotiation of the San Jose-San Ramon concession contract and its consequences
4.8 Project financing
4.9 Conclusions and lessons learned

5. Airport Terminal El Dorado in Bogota (Colombia)
5.1 Introduction
5.1.1 Demographic and economic context of the region
5.1.2 The airport sector in Colombia
5.2 Legislative and institutional framework
5.2.1 Reference legislation
5.2.2 Institutional framework
5.3 The existing procurement framework and the decision to use the PPP model
5.3.1 Background and studies prior to tender
5.3.2 Alternatives for bringing in private capital

5.4 Tender and award of contract
5.4.1 Studies prior to tender
5.4.2 Award mechanisms and evaluation of bids
5.5 Contractual design and risk allocation
5.5.1 Income sources
5.5.2 Risk allocation and mitigation mechanisms
5.5.3 Standards of service and quality incentives
5.6 Contract management and economic balance
5.6.1 *Ex-post* supervision of the performance of the concession contract
5.6.2 Change in the initial contract conditions
5.7 The concessionaire and project financing
5.7.1 Evolution of shareholder concessionaire structure
5.7.2 Project financing
5.8 Conclusions: the project's outcome

6. Administrative center in Tlajomulco de Zúñiga (Mexico)
6.1 Introduction
6.2 The demographic evolution and administrative needs of Tlajomulco
6.2.1 The socioeconomic context of the municipality and its administrative needs
6.2.2 Public finances in the municipality
6.2.3 The budgetary feasibility of the project
6.3 Legislative and institutional framework
6.3.1 Evolution of Mexico's legislation for PPP
6.3.2 Service provision projects (PPS)
6.3.3 Contract legislation
6.4 Characteristics of the project
6.4.1 Project goals
6.4.2 Technical description of the project
6.5 The decision to use the PPP model
6.5.1 Project feasibility. The value-for-money analysis
6.6 Award mechanisms and bids evaluation
6.7 Contract design and risk sharing
6.7.1 Legal-financial structure of the project
6.7.2 Fee composition
6.7.3 Characterization and allocation of risks
6.7.4 Guarantees scheme
6.7.5 Quality and standards of service
6.8 Project financing
6.8.1 Financing structure
6.8.2 Constitution and structure of the trust
6.8.3 Private developers
6.9 Lessons learned

7. Concession of Chilean prison facilities

7.1 Introduction

7.2 Penitentiary Infrastructure Concession Program

7.3 Legislative and institutional framework: the experience of concessions in Chile

7.3.1 Legal framework for group 1 concessions

7.3.2 Current legal framework

7.3.3 Key features of the implemented concession system

7.4 Description of the Rancagua prison case study

7.5 Tender process and contract award

7.5.1 Documentation required from bidders

7.5.2 Award system

7.6 Contract design and risk allocation

7.6.1 Contract milestones

7.6.2 Concessionaire's revenue

7.6.3 Services under concession

7.6.4 Risk allocation

7.7 Contract management and economic balance

7.7.1 Contract governance

7.7.2 Economic balance

7.7.3 Impact on public opinion

7.8 Project financing by private funders

7.9 Conclusions and lessons learned

8. Lessons learned and future challenges for Latin America

8.1 Introduction

8.2 Lessons from experience

8.2.1 Do PPPs improve the quality of the services rendered?

8.2.2 Are PPPs more expensive?

8.2.3 What does a government need to implement a PPP successfully?

8.2.4 How can the uncertainty in forecasts be addressed?

8.2.5 How to generate real competition in the bidding process?

8.2.6 How can cost overrun claims be avoided in the construction process?

8.2.7 What is the best way to manage renegotiations?

8.2.8 How to overcome the problems of social acceptance?

8.2.9 How can the risks be distributed in a balanced manner?

8.2.10 How to manage the financial closing?

8.3 The 12 challenges in Latin America

9. References

1

Introduction

In 2010, CAF-Development Bank of Latin America presented the book *Public infrastructure and private participation: concepts and experiences in America and Spain*. This first publication analyzed the role of public infrastructure as a key element for the promotion of competitiveness in Latin America from three perspectives: macroeconomic, financial and regional integration. At the same time, the report highlighted the importance of promoting different public-private partnership models that offer the possibility of opting for alternative sources of financing to bridge the infrastructure gap suffered by the region.

The publication was a great success and provided different stakeholders—governments, private companies, and multilateral and private banking institutions—with a source of knowledge about the fundamental concepts of public-private partnerships (PPP), as well as their evolution and the current scenario in Latin America and Spain.

In recent years, economic growth in Latin America has led to increased investment opportunities for the private sector, while legal transformation, regulatory and institutional processes have promoted and facilitated the implementation of new development projects.

As a follow-up to the first book and in light of the reality the region is facing in terms of infrastructure development, the opportunity to develop a new book focused on proposing recommendations based on different experiences seemed timely.

With this impetus, this new publication was drafted with the objective of conducting an analysis of the structuring and management process of PPP infrastructure projects, which makes it possible to generate conclusions and recommendations of interest for Latin American institutions involved in the execution of investments using this financing mechanism.

Five case studies were selected based on several criteria, including geographical coverage, project type and uniqueness. The cases chosen are an urban public transport interchange hub in Madrid, two highway concessions in Costa Rica, an airport in Colombia, a municipal administrative center in Mexico and a prison program in Chile. The cases chosen for the book are diverse and innovative, with dynamic background stories that make it possible to extract the lessons learned.

In the process of documenting the cases, trips were planned to the different countries for the purposes of performing interviews with the individuals responsible for the project planning and design in the public sector, along with individuals in the private sector currently managing the project and, in some cases, with the entities that financed them.

It is worth mentioning that the work carried out is not intended to be an audit of the projects analyzed. The objective of this publication is to understand the reasons behind the successes and failures of the case studies, recognize aspects for improvement and highlight the wise decisions.

This is possible by examining the different contexts the projects were developed in and the decision-making process deployed.

After this brief introduction, the book is organized as follows: Chapter 2 provides an overview of the development and evolution of PPPs in Latin America, with a comparative analysis between the main aspects that characterize these projects in each country of the region. Chapters 3, 4, 5, 6 and 7 each deal with one of the case studies above. Each case study has been developed from the following points of view: the general context of each country, the legislation in effect pertaining to PPP, the institutional framework, the awarding and management mechanisms of the projects, the allocation of risks and the financing scheme.

After carrying out this analysis, the final chapter highlights the main lessons learned by national, regional and local governments to be implemented and to improve the initiatives they are currently working on.

In closing, this book would not have been possible without the support of the people who met with us in the different countries and shared with us the documentation we needed to be able to move forward in the right direction with each case of study, and to whom we are very grateful for kindly making the time for us.

PPP in Latin America: a global vision

Infrastructure development in Latin America

- Economic expansion in the face of the infrastructure gap
- The role of private investment in the infrastructure development of Latin America
- The figure of PPPs in infrastructure investment
- State of PPP development and experiences in the countries of Latin America
- Future challenges for Latin America

Characteristics of the PPP model in Latin America

- Legislative framework
- Institutional framework for PPP projects
- Project eligibility
- Private initiatives
- Tender mechanisms
- Risk sharing
- Sources of financing

2.1. Infrastructure development in Latin America

Over the last 20 years, Latin America has experienced very different phases of growth. After the stagnation experienced in the early 1980s as a result of the impact of the foreign debt crisis, in the period comprised from 1990 to 1997, the region recovered, growing 3.2% per year. This trend continued until an economic depression hit Latin American countries, as a consequence of the contagion of the Asian crisis in 1998 and 1999, which subjected emerging economies, like Brazil and Argentina, to volatile markets with devaluation pressure on their currencies. In this period, the most affected country was Brazil; even the Chilean economy, which until that moment had shown remarkable solidity, was affected, entering into a depression slump.

Starting in 2003, the region began to show signs of economic improvement, largely driven by a beneficial international context. Specifically, favorable external financing conditions and the rise in commodity prices contributed to an acceleration of economic growth, reaching a 5.4% increase in annual GDP on average. However, the external situation underwent a 180-degree turn starting in 2008 with the arrival of the financial crisis and, although Latin America barely suffered the effects that year, the region did suffer a fairly significant production loss in 2009. In the most recent period, from 2010 and until today, GDP in Latin America has shown positive growth rates again, demonstrating the region's potential.

While it is true that infrastructure investment does not guarantee on its own economic and regional growth, the efficient provision of infrastructure services is one of the most important and necessary aspects of development policies. It has been shown empirically that progress in infrastructure produces a very important momentum in economies, promoting productivity improvements, international competitiveness and social well-being. On the other hand, infrastructure networks are the backbone of the economic structure of countries and their markets.

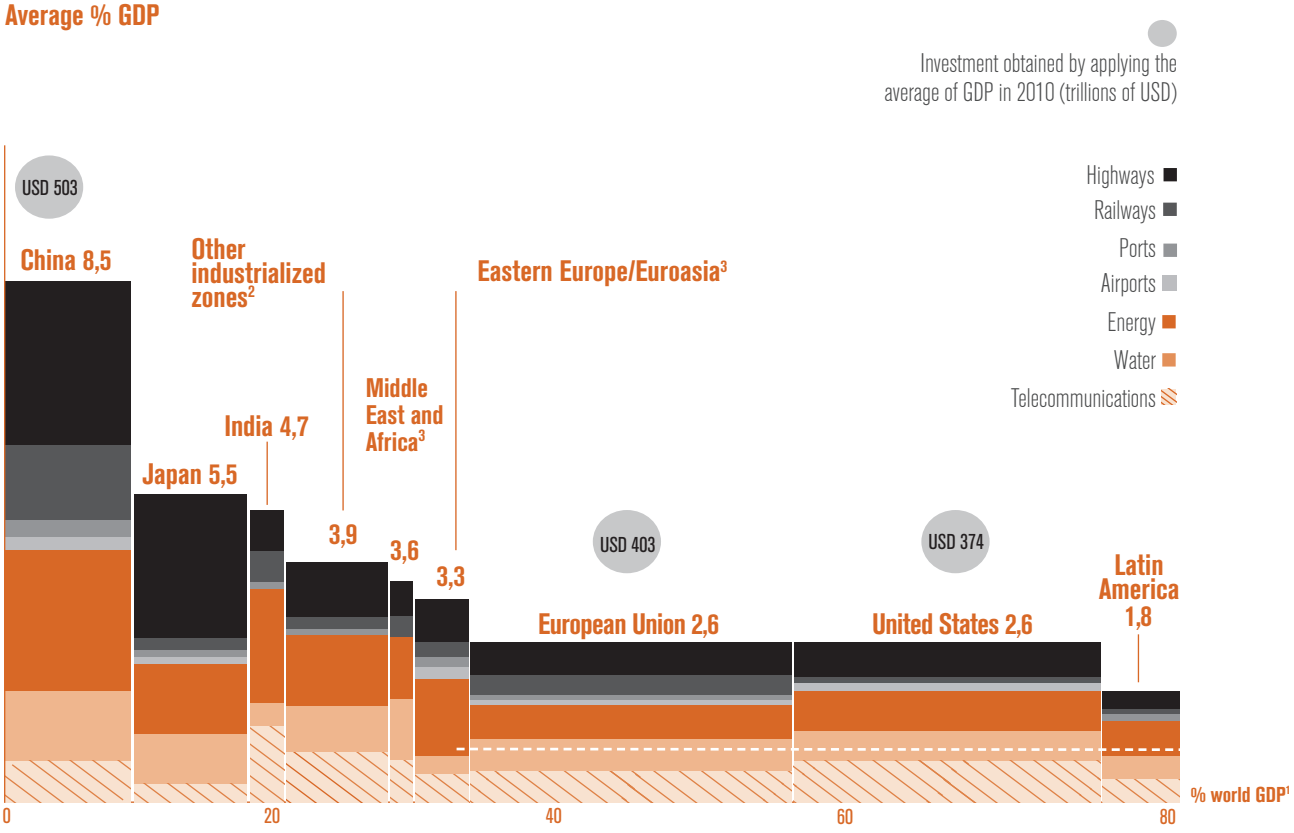
This reality has meant that in Latin America special attention has been paid to the contribution that infrastructure has made to the region's economic growth in recent years and, as a result, there has been great interest in promoting its development in many countries. The expansion periods described above have been accompanied by higher investment levels and an increase in infrastructure use. However, in 2013, on average, the region has remained well below the global investment trend in this area. In Latin America, investment levels in infrastructure have oscillated between 1% and 2% of GDP in recent years, a far cry from the 8%-10% some countries in East Asia are investing.

2.1.1 Economic expansion in the face of the infrastructure gap

As explained above, Latin America has experienced different cycles of economic expansion in recent years, generated largely by increases in productivity and its capital factor, obtaining productive goods and services, which have served as the basis for generating social wealth and improvements in quality of life in the region. Everything indicates that there are structural elements that can contribute to extend this trend, but all the same, there are known limitations that may hinder growth, for example, the case of the gap in infrastructure that characterizes the region.

In this regard, the Economic Commission for Latin America of the United Nations estimates that Latin American countries would require investment volumes above 7% of annual GDP to achieve the same level of infrastructure growth as developed economies in East Asia, thereby covering the region's current needs. As can be seen in the following figure, given the current panorama, the region is lagging behind many other areas of the world.

Chart 2.1 **% of GDP invested in infrastructure 1992-2011**



1 Percentage of GDP in 2010, obtained for a total of 86 countries.

2 Australia, Canada, Croatia, Iceland, Liechtenstein, New Zealand, Norway, Singapore, South Korea, Switzerland, Taiwan (Taipei) and United Arab Emirates.

3 Excluding unusual data pertaining to ports and railroads in Nigeria. Including these the average is 5.7.

Source: adapted from the McKinsey Institute (2013).

This situation goes back several years, although it can be said that it has deepened since the 1980s as a result of the crisis and the fiscal adjustments that had to be implemented, which greatly diminished public investment in the region. In the first part of this decade, governments maintained investment levels at around 3% of GDP, raising them to 4.5% in recent years. During the 1990s, the new role assigned to the market and the new role that the state had to assume as a result led to a considerable contraction of public investment, with the share destined to infrastructure especially affected, which came to represent 0.8% of GDP by mid-decade.

Measures like privatization of state-owned enterprises, the modification or creation of new regulatory frameworks or subsequent fiscal policies and major provisions of monetary liquidity and exchange rate policies, helped offset this decrease, in part, through foreign and domestic private investment. Despite this, at the time of the writing of this book, previous levels of investment once reached had not been recovered and, as a result, the infrastructure gap remains uncovered in the region.

2.1.2 The role of private investment in the infrastructure development of Latin America

Although the first important impetus of private investment in infrastructure was verified at the end of the 1980s, it wasn't until the 1990s when the sector adopted a leading role in this field, favoring Brazil and Mexico and, to a lesser extent, countries like Argentina, Chile, Colombia and Peru.

Private investment reached 1.4% of GDP between 1996 and 2001, after representing only 0.6% of GDP at the beginning of the previous decade. This increase occurred in almost all of the countries in the region because the participation of private capital was restricted in most areas of infrastructure until the structural reforms were implemented in Latin America.

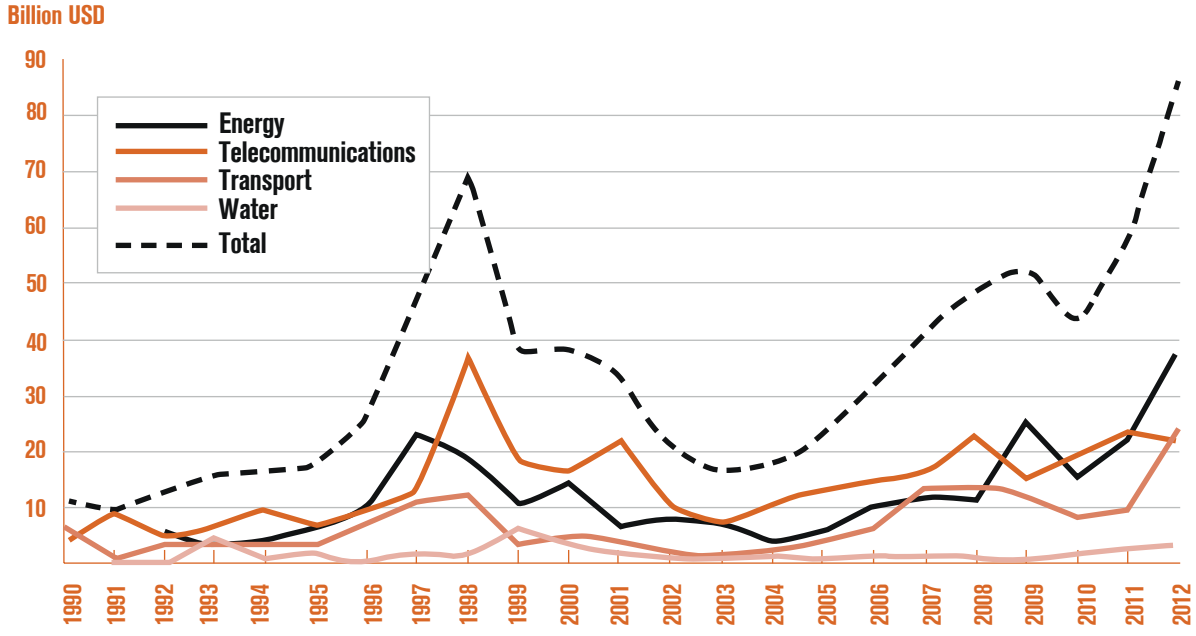
This investment process brought significant benefits to the region, such as the opening of infrastructure service markets and the sale of state-owned enterprises. This opened the doors to foreign companies, carriers of new production techniques, technologies and modalities of business organization that promoted the modernization of infrastructure and locally produced services. Notably, although the magnitudes of private investment did not fully offset the contraction recorded in the public sector a decade earlier, some sectors like telecommunications and to a lesser extent energy performed well during this period, as shown in the figure below.

The highest aggregate investment figures in these two industries were recorded from 1997 to 1998, generated mainly by the sale of the telecommunications and electricity companies in Brazil, the takeover of the Chilean group Enersis by Empresa Nacional de Electricidad S.A. (ENDESA) in Spain and the development of road concessions in several countries in the region (Argentina, Chile, Colombia and Mexico).

From 2002 to 2004, private investment recorded a significant decline over the previous period, due largely to the effects of the crisis in Asia. Its share fell to 0.9% of GDP. After that, from 2005 to 2009, a rising trend of investment held steady and private investment reached 1.3% of GDP, thanks to energy projects carried out in Brazil and the expansion of the Panama Canal, which made it possible in large part to mitigate the effect of the global crisis unleashed by the US real-estate market.

On the other hand, it may be noted that, within this period, in 2007 and 2008, investments in transport gained significant momentum, with the sector increasing its share of private investment in infrastructure. However, as shown in Chart 2.2, starting in late 2008, investment contracted as a result of the change that the financial crisis generated in private agents' perception of risk, despite the fact that the region was not affected to the same extent as other areas in the world. This resulted in a drop in foreign direct investment and a contraction in net transfers from abroad in several Latin American countries. Finally, in more recent years, from 2010 to today, private investment in infrastructure has increased substantially, mainly in the energy and transport sectors, given that demand continues to grow along with the use of services linked to those sectors, accompanying the region's economic growth.

Chart 2.2 **% of GDP invested in infrastructure 1992-2011**



Source: Authors based on data from the World Bank. PPI Project Database.

2.1.3 The figure of PPPs in infrastructure investment

As shown, private investment has played a fundamental role in the financing of different types of infrastructure throughout the last decades. By 1990, several Latin America countries had understood the need to be able to open their doors to private investors when they saw the difficulties that the public sector was having in trying to cover all of the region's needs. To do this, they began to deploy a series of structural and regulatory reforms that promoted the introduction of new models of collaboration between both sectors. The objective sought was to properly combine the two sources of funding. In this regard, many countries saw the Public-Private Partnership (PPP) model as an opportunity to further promote the development of infrastructure in the region.

Public-private partnership schemes represent one of the greatest innovations in the infrastructure sector in Latin America in recent years, with prior experiences of other countries, like Spain and England, serving as a foundation for the development of this type of collaborative effort in the region.

This scheme ensures an efficient allocation of risks shared by the private sector and the government through contracts that establish participation criteria and responsibilities for all parties involved in the development of projects that make use of public assets. In these partnerships, which last several years, the private sector plays a fundamental role in the maintenance and operation of infrastructure, or the development of a service, participating, in one way or another, in the project's financing.

The range of applications of PPPs include energy and transport infrastructure, as well as the provision of safe drinking water, sanitation, education and health care services. More recently, projects have been submitted in administrative areas like records and billing.

According to the information gathered in the publication *La Infraestructura en el Desarrollo Integral de América Latina*. Financiamiento. Metas y oportunidades [Infrastructure for the Integral Development of Latin America. Financing. Goals and opportunities.], edited by CAF in 2012, in general terms, the schemes of public-private partnership can be established through service or management contracts, leases or concessions.

- Service contracts enable the private sector to perform specific tasks, for example billing or maintenance, while the public sector is responsible for the coordination. Generally associated with long periods of time, these contracts have as their main advantage the possibility of reaping the benefits of the private sector's experience in technical tasks, opening up these activities to the competition.
- A management contract is an agreement whereby private companies are responsible for the development of services traditionally provided by the state, contracted on behalf of a public entity.

- In a lease agreement, the private sector manages infrastructure in line with decisions made by the sector public. The private sector, for its part, does not receive any fee from the government. On the contrary, their profits depend directly on the benefits of the company's management, fully assuming all operational risks. The investment responsibility falls to the government, which assumes the investment risk.
- Finally, under a concession, the private sector is assigned all responsibility not only for the operation and maintenance of the assets of a public services company but also for the investment. However, as will be seen later, most of the time the public sector grants a series of guarantees or subsidies so the private sector can conceive the project as profitable despite the risks. At the end of the partnership, the government maintains full ownership of all assets. You will see, throughout the development of this book, that the concession contract has been the most developed PPP formula in Latin America.

2.1.4 State of PPP development and experiences in the countries of Latin America

Implementation of the PPP mechanisms in Latin America has followed different trends in different countries. The first countries to employ this model to finance infrastructure at the end of the 1980s were Mexico and Argentina. Next, Chile launched its first PPP project in 1991, along with Colombia, where the first concessions also date from early 1990s. Brazil and, later, Peru and Costa Rica, began to implement this system years later.

Chile has served as an example for many Latin American countries, especially its development of PPPs within the scope of transport infrastructure. In recent years, almost half of the public investment has been canalized through an exemplary concession program.

In other countries, like Mexico, PPP projects have experienced different stages characterized by greater or lesser success. In spite of the problems that faced the concessions granted at the beginning of the 1990s, within the framework of the National Program of Freeways, the use of PPP in Mexico has evolved in a positive manner in recent years; it is currently one of the most active countries in the region. Mexico's ability to introduce private initiatives in the supply of infrastructure, whether in terms of concessions or other PPP models, remains exemplary.

Brazil and Peru, despite having started later than other countries, have shown in recent years a decided willingness to promote such projects. Brazil, as the largest economy in Latin America, faces great infrastructure needs, which has resulted in the country's continuous search for improvements in the field of investment and institutional framework. However, the shortage of financial facilities and limited technical capacity continue to hinder PPP

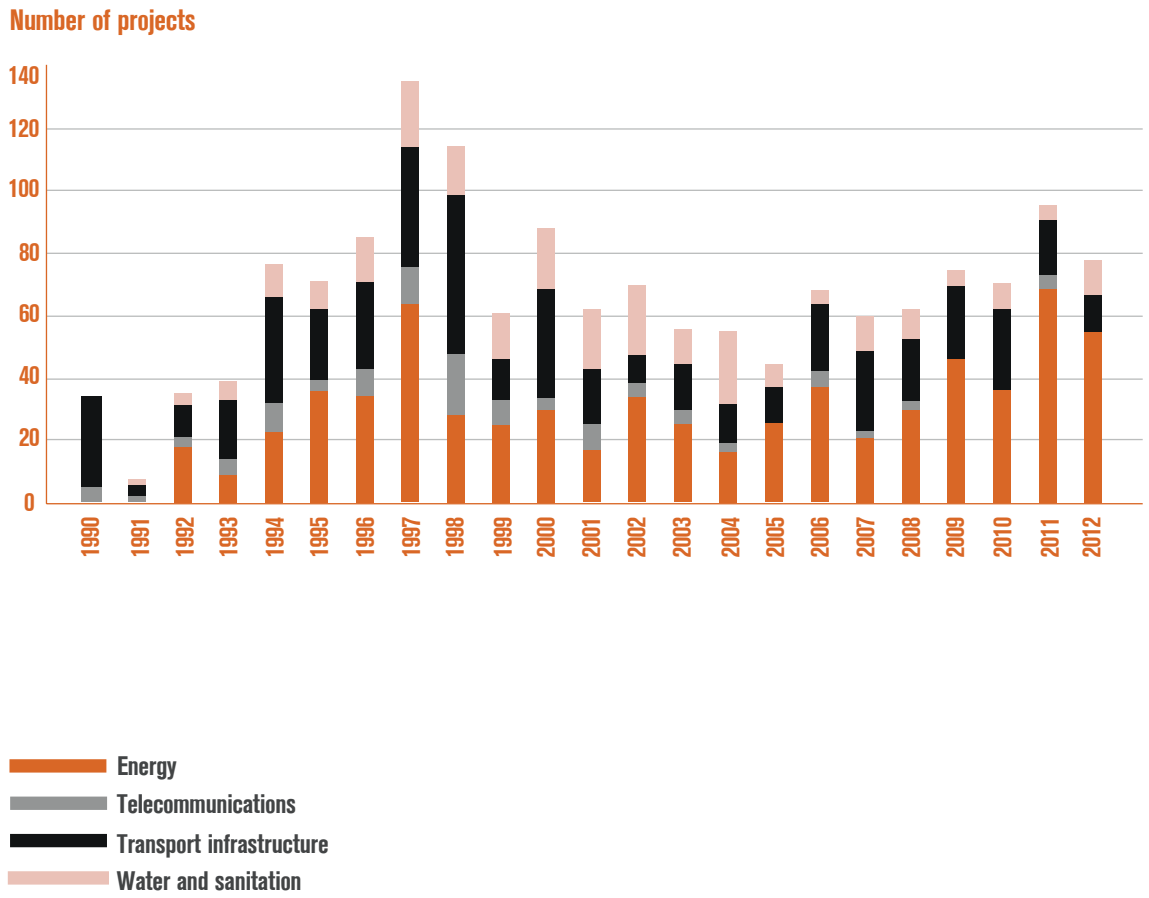
growth in Brazil. Peru, on the other hand, has achieved a performance similar to that of the best countries in the region in terms of its regulatory and institutional framework, as well as having achieved impressive improvements in its investment climate. However, some social conflicts and environmental protests have created political difficulties in the development of some key projects for the country.

The level of maturity of the PPP model's implementation varies from one country to another in the region, but they do have in common the current increase in units and agencies specialized in the promotion and management of PPPs, justified by the region's growing demand for infrastructure. An emerging group of countries have improved their capacity and willingness to investing in this type of partnership as a result of these initiatives, in addition to the improvements produced in the aforementioned cases. This group is led by Colombia, Uruguay, Guatemala, Costa Rica and El Salvador, where significant efforts have been made to promote regulatory changes and create capacity and openness for PPP investments. Also in recent years in other countries like Panama, the government has shown a decisive will to incorporate private investment in building infrastructure, which has been delayed in part due to the lack of uniform legislation applied to all sectors.

As of 2013, despite regional efforts to promote these collaborative models, countries like Dominican Republic, Venezuela, Ecuador and Argentina have continued to demonstrate limited progress in the development of these partnerships over the last few years. In Ecuador, the new 2008 Constitution put a brake on the momentum that PPPs had recorded up until the previous year, although it is worth noting that the government has recently tried to define in detail the constitutional limits of private partnerships in order to permit the entrance of the sector into strategic areas of the country's economy. In Argentina, despite the fact that private investment in infrastructure was conferred great importance in the past and the country has the necessary institutional and normative framework to implement PPP, the governments in power have not committed fully to this system to promote new projects.

The experience in Latin America with PPP projects has been varied, distributed between different types of infrastructure over the years. The amount of investment dedicated to transport and energy projects using this type of contract in the region has resulted in a far greater number of projects in these sectors than in other areas, such as water and sanitation, and telecommunications, as can be seen in Chart 2.3.

Chart 2.3 **Evolution of the number of projects in different sectors developed under the PPP model in Latin America**



Source: Authors based on data from the World Bank. *PPI Project Database.*

In the field of transport, PPP schemes have been employed mainly to finance road infrastructure. Chile, Colombia and Peru have also used this model for airports, while Brazil and Chile have used it for the promotion of Metropolitan public transport infrastructure, for example, the subway in São Paulo or public transport interchange hubs in Santiago. Peru and Colombia have also used this modality for railways for cargo freight and for the development of some ports.

Due to the adopted trends, the infrastructure gap in Latin America has become more visible in certain fields like ports and sanitation. However, recently, some of these areas have begun to see improvements. Through PPPs, several water supply and sanitation projects have been developed in countries like Brazil, Chile, Colombia and Mexico, making Latin America the second most active region in PPP implementation in this sector. The lion's share of these projects are water supply and wastewater treatment plant concessions.

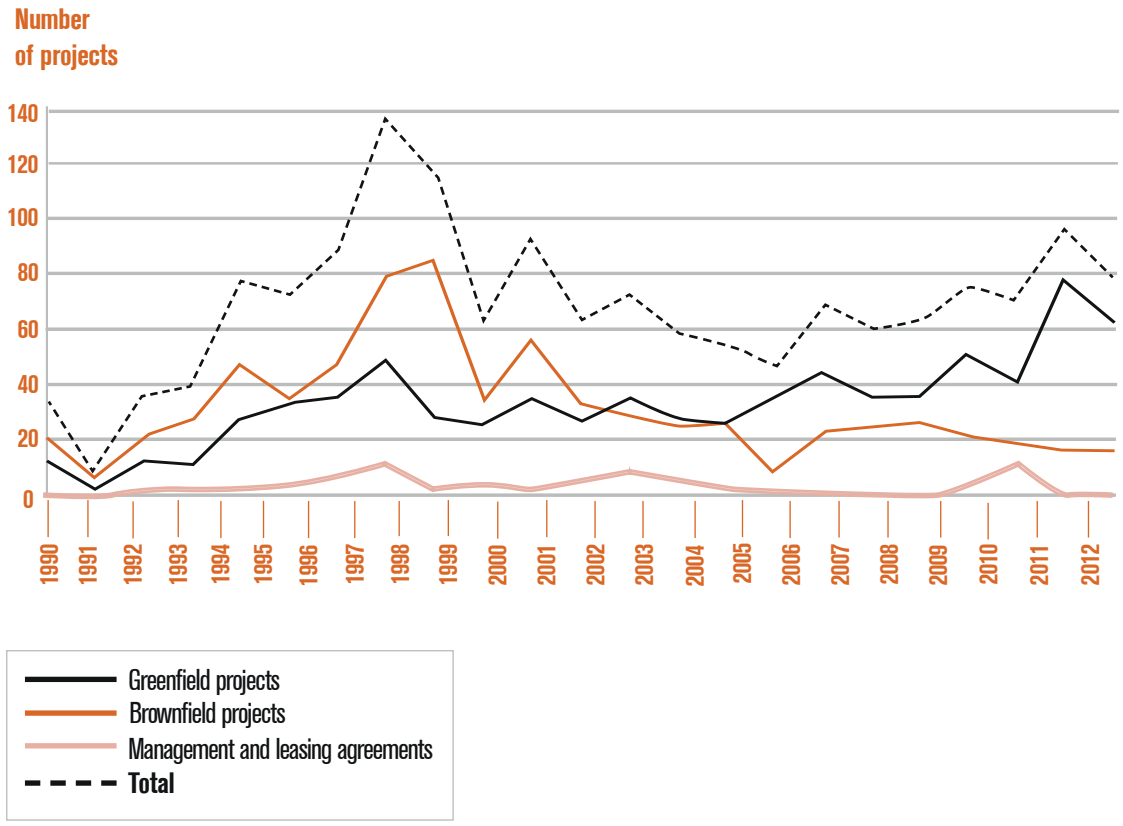
Today, the use of the PPP model is increasingly seen in fields related to the provision of services such as health, education and penitentiaries. The model is also seen in several projects related to "green industries" like renewable energy.

As an example, in the field of health care, the National Ministry of Health in Mexico identified the need to develop a network of Regional Advanced Specialty Hospitals (HRAE) using PPP contracts. Each HRAE is equipped to treat low-incidence and high-complexity conditions and illnesses. This PPP is a 25-year concession that involves the financing, construction, equipment and management of non-clinical hospital services for a population of 2.5 million people. On the other hand, Chile has initiated projects under the PPP modality, such as the hospital complex Salvador Infante, and those in Maipu and La Florida.

In education, PPPs have been used to promote new buildings and the private sector has been commissioned for their construction and maintenance; building maintenance contracts of existing buildings have also been awarded. One example worth mentioning is the project of the Polytechnic University of San Luis Potosí in Mexico. This PPP is a 20-year concession that includes the financing, construction, maintenance and management of non-clinical services for approximately 5,000 students. In the prison sector, Chile's Program for the Concession of Prison Facilities launched in 2000 already has the following complexes up and running: Huachalalume in Region IV, Alto Hospicio in Region I, Rancagua in Region VI, Concepcion in Region VIII, Santiago 1 in the Metropolitan Region, Puerto Montt in Region X and Valdivia in Region XIV. In addition, the penitentiary complex in Antofagasta in Region II is basically finished and will soon be opened. Lastly, the Geological, Mining and Metalworking Institute (INGEMMET) in Peru is developing a Geothermal Plan in the field of renewable energies.

As to the kinds of PPP projects undertaken in Latin America, as can be seen in Chart 2.4, during the first decade, the bulk of contracts were concessions for *brownfield projects*. These contracts covered maintenance and operation, or the construction of some extension of existing infrastructure, most of which were related to transport infrastructure. However, some exceptions stand out, mainly in Mexico, where various *greenfield projects* were undertaken. This last modality, associated with new infrastructure, began to acquire more relevance in recent years due to the increased number of energy projects developed in the region, associated in large part with new construction. Other types of contracts, like management/administration and leasing agreements, have experienced less development over the years.

Chart 2.4 **Evolution of the number of projects developed under different modalities of PPP contracts in Latin America**



Source: Authors based on data from the World Bank. *PPI Project Database.*

Of all PPP initiatives undertaken in the region, there are projects that represent an example of how to implement this model, given their important level of innovation, their vision for development, the possibility of their replication and their social impact. Among these initiatives, projects worth highlighting include: Line 4 of the subway system in Sao Paulo, the Atotonilco de Tula wastewater treatment plant in Mexico, and the IIRSA Norte highway in Peru. These projects, along with other remarkable PPP projects—Porto Maravilha (Brazil), hospitals in Toluca and Tlalnepantla (Mexico), the Hospital do Subúrbio (Brazil), the Bond Portfolio to Finance Health Services (Peru), Pacífico SEZ (Panama), Ciudad Victoria Hospital (Mexico) and the Ribeirão das Neves penitentiary complex (Brazil)—illustrate good practices that should be consolidated and used for implementing new infrastructure projects.

Along with these successes, the development of some projects, over the more than 20-year period of PPP implementation in Latin America, reflects the main problems and shortcomings faced by granting authorities: lack of knowledge of the tender process, the breach of contracts or a lack of a transparent legal and legislative framework in various countries and time periods. The result of this lack of definition in the implanted systems has brought consequences, like the renegotiation of the airport concession in Honduras, the termination of a road concession contract in Argentina or the suspension of several concession processes as a result of the change of government in Ecuador. Other signs of this are the negative response to increased toll fees for a road concession in Peru, the suspension of a tender procedure for a concession in Uruguay, a petition to renegotiate road concessions in Panama and the bailout of several road concessions in Mexico.

Leaders in different countries of Latin American have faced and continue to face the challenge of eliminating the shortcomings of PPP models seen during the implementation of various projects. Some of these countries, including Brazil, Chile and Mexico, have been able to develop different skills and a regulatory framework that facilitated the financing of various infrastructure initiatives. The road paved by these countries should be followed by the rest. In this regard, inter-institutional cooperation mechanisms and multilateral development institutions like CAF play a fundamental role in the acceleration of the dissemination and support of the financial and legal system for the promotion of infrastructure in the region.

From 2000 to 2010, CAF has provided strong support to the development of infrastructure in Latin America, positioning itself as the main source of multilateral financing in this area. Its efforts have been dedicated to offer its cooperation to governments and the private sector alike, and support, not only in financing numerous projects, but also in the settlement of the foundation for sustainable development in the region. On the other hand, FOMIN (Spanish acronym for Multilateral Investment Fund), which has belonged to the IDB Group since 2008, has mobilized the necessary financing to carry out different projects in Latin America, promoting the development of PPPs through

intervention programs at national and sub-national levels. These institutions have been strong supporters of private-sector involvement in the infrastructure sector as a key element in the development of Latin American countries.

The institutional support of these multilateral organizations has been of special relevance to boost infrastructure integration in the South American region. This process, which began after its approval was granted by the presidents of 12 countries in Latin America—Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay and Venezuela—in the Brasilia Communiqué in 2000, included projects like the Integration Initiative of Regional infrastructure of South America (IIRSA), with the collaboration of CAF, the IDB and the Financial Fund for the Development of the Río de la Plata Basin (FONPLATA). Its objective was to expand and modernize the Trans-South American Transport Infrastructure Network to improve Latin America's physical integration, overcome geographical barriers and build ties between markets to promote new economic opportunities.

2.1.5. Future challenges for Latin America

The urgent need to continue with the economic growth in Latin America has led a number of governments in the region to promote ambitious infrastructure development plans.

In this context, Brazil, Mexico, Colombia, Peru, Ecuador and Chile are currently undertaking various investment plans. These governments perceive PPP contracts as the only possible channel to access the necessary financing and resources for their development.

- In Brazil, an investment of USD 882.12 billion has been earmarked for the continuation of the Growth Acceleration Program (PAC) which began in 2007. This program was presented as the national government's largest infrastructure development initiative, and was designed to improve and modernize the country's infrastructure over the course of 25 years. The first initiatives proposed under the new PAC-2 program, which covers the period 2012-2016, include actions like the construction of 7,500 km of motorway; 25,000 km of new railway lines, including a high-speed train between Rio de Janeiro and São Paulo; and the construction and improvement of ports and airports. In addition, the program covered the construction of infrastructure for the 2014 World Cup of Soccer.
- Under Mexico's Transport and Communications Infrastructure Investment Program 2013-2018, a commitment was made to modernize and build 5,410 km of roadways and highways, for example the Siglo XXI highway, currently out to tender, which will connect the Gulf of Mexico with the Pacific Ocean; highways Tuxtla-Villaflores, Tuxpan-Tampico, Cardel-Poza Rica and Atizapán-Atlacomulc or the highway Pachuca-Huejutla and Comitán

at the border. The portfolio of projects includes three new passenger trains—Mexico-Queretaro, Mexico-Toluca and the Transpeninsular train Merida-Mayan Riviera—and two urban mass transportation lines—the No.3 line of the Monterrey Metro and the Guadalajara light rail system. Also, covered by this program are the development of port systems in the Gulf of Mexico and the Pacific coast, along with the ports of Veracruz, Altamira, Manzanillo and Lazaro Cardenas; and, finally, the modernization of several airports: Chetumal, Hermosillo, Hidalgo, Nuevo Laredo, Puerto Vallarta and Toluca. The program also aims to improve the telecommunications network in the State of Mexico, with a planned total investment of USD 305 billion.

Figure 2.1. **Future investments planned in engineering and infrastructure in Latin America**

Source: Authors

- In Colombia, the portfolio of infrastructure projects, which the government presented in 2011, totaled more than USD 55 billion in investment, of which, over the next five years, approximately USD 25 billion correspond to concessions. The main actions include: the construction and improvement of about 5,200 kilometers of roadways; the completion of the runway at the San Luis de Ipiales Airport, as well as studies and design of a waterway mega-project (Acuapista) and the Encano-Santiago bypass; the improvement of the rail system, including the repair and maintenance of 876.6 km along the Bogota-Belencito sections and La Dorada-Chiriguaná, affected by the 2010-2011 cold spell; the construction of new rail corridors to ports in the Caribbean and the Pacific; the expansion of some ports (including Cartagena) and the construction of other new ones; the enlargement and refurbishment of 23 airports and, also, the recovery of several waterways to improve their navigability. The portfolio also includes housing and urban projects, such as urban transport, as well as initiatives in the mining and energy sector. One of the projects that stands out, without a doubt, is the challenging initiative of the new Bogota Metro; preliminary studies were begun and construction was to commence in 2015.
- Peru planned an investment of approximately USD 20 billion for the period 2013-2016, aimed at reducing the national infrastructure gap. The main actions under this plan are the construction and commissioning of Line 2 of the Lima Metro (which has recently been awarded), the construction of Chinchero airport in Cuzco, and the improvement of the road and railway network.
- Ecuador has set up the National Strategic Plan for Mobility and Transport (PEM). Spanish company INECO was awarded a contract for the development of a proposal for an overhaul of all transport modes throughout the entire country. Its implementation is planned over a five-year period (2013-2017) with an investment of USD 118 billion, which the Ecuadorian government hopes to cover with public-private partnership programs. The sectors with the greatest investment needs are highways, urban and metropolitan transport systems, and the maritime and river transport. Some of the actions that can be highlighted in this plan include the conversion of the section of Route E-25 between Río Siete and the "Y" of Tillales in the province of El Oro in the southwest of the country into a highway, the construction of new ports in the Gulf of Guayaquil Manta, the expansion of the port of Esmeraldas and Puerto Bolívar, and increasing the capacity of the Quito airport.
- Chile defined a new infrastructure master plan with a total of 756 projects to be develop from 2010 to 2025, requiring a total investment of USD 29.9 billion. This plan includes measures such as upgrades to dual carriageways and changes in road project standards, connectivity to isolated areas, integration of territories, urban access to ports for growth of the country's foreign trade, development of tourist routes and roadway measures as well as the construction of new water infrastructure. Among the projects flagged

as a priority is the Costanera Central expressway, the Américo Vespucio Oriente highway, the Santiago airport road and the second program of hospital infrastructure, which includes the construction of five new facilities for a value of USD 1.75 billion.

- In Costa Rica, in response to the large backlog that exists in the sector of transport infrastructure, a National Transport Plan (PNT) was announced for the period 2011-2035, with a planned total investment of approximately USD 60 billion, distributed among various sectors. Of the total investment planned, over 30% is expected to come from non-public financing sources, which means that the option to turn to alternative pathways such as private investment represents a major milestone for the development of this plan. Planned actions include the restructuring of the road network, the overhaul of the public transport system, the expansion of the port in Moín, the design of the expansion of the port of Caldera, the design of an emblematic airport and a new railway network.
- Panama launched an ambitious infrastructure plan with investments totaling up to USD 9.6 billion, to be carried out from 2010 to 2014. These include the expansion works of the Panama Canal, the construction of a fourth great bridge in the western part of the country and the construction of the Panama City Metro. The plan focuses on the two major cities in the country: Panama City and Colon, to provide them with the infrastructure needed to accommodate the growing population and turn them into the centers of country's growth, improving communication between the two cities. In addition, 40% of the infrastructure investment has been committed to social programs such as the construction of schools, hospitals, social housing, sewers and other projects aimed at modernizing the country, especially Panama City. The projects undertaken in the capital city to build Line 2 and Line 3 of the Panama City Metro are also noteworthy. Line 2 had already been tendered by the time Line 1 was inaugurated in April 2014 and the feasibility studies for Line 3 are underway. It is expected that both lines will be operational in 2018.

As can be seen, the public sector in Latin American countries is committed to promoting national growth in the upcoming years through the construction and development of different infrastructure and related services. South American countries have learned their lesson regarding infrastructure as one of the necessary conditions toward building a more sustainable society, as a support to the local economy and market development, and as a vehicle for regional integration. In face of this scenario, the policies adopted in those countries play a fundamental role in assuring that they undertake the plans described above, as well as the rest of the projects needed in the region. In order to achieve this, it is necessary to reform the systems currently in place in order to encourage greater private participation in the implementation and financing of infrastructure projects and to seek out resources from domestic and foreign markets as well as international capital markets.

2.2 Characteristics of the PPP model in Latin America

2.2.1. Legislative framework

Throughout its experience with PPP projects, Latin America has been characterized by a great divergence among legal frameworks that have guided the development of these projects in each country. While it is true that some countries have a clear regulatory and legislative framework in place for the private sector's participation in the construction and operation of infrastructure, there are others that do not.

Most of the large countries with a history of PPP development for the execution of large infrastructure projects fall into the first category. These countries have general works procurement laws in place, as well as specific PPP legislation, most of which was passed in the mid-1990s. These laws have been used as an appropriate legal framework for the implementation of large concession projects.

Since Chile passed the Decree Law DFL 164, "Base Law," in 1991, which established the first PPP regulation until the concession law for public works was enacted (*Ley de Concesiones de Obras Públicas*) (DS MOP No. 900) in 1996 in the country, the legislation for PPP development has been characterized by constant evolution. Although the Chilean legislative framework has been one of the most successful and best in across Latin America, it has recently introduced certain improvements and reforms to the 1996 law, intended to eliminate the possible obstacles to financing projects and modify some tax laws. In 2010, Chile has approved a new Law No. 20410 amending the previous one, regulating compensations for concessionaires and limiting the provisions that conferred the Ministry of Public Works certain discretionary powers.

Meanwhile, Brazil also has a series of laws designed to develop projects through of PPP. The first law, which was passed in 1995, only regulated concessions financed only through user rates. Law 11079 approved in 2004 opened the doors to financing with public contributions as a way to make certain projects possible. As a country with a federal structure, states, the Federal District and municipalities can approve specific legislation. Thus, each of the seven states that form Brazil has its own legislation on the matter, but they comply with the condition of not contravening the national law.

Argentina, despite not having experienced ample development of PPP initiatives, has a public works concession law that dates from 1967, which has been modified and adapted over the years. In 2001, in turn, a legislative decree was proposed for the promotion of private participation in infrastructure development.

Since 2010, several countries have revised their regulatory framework. Some of them, such as Peru, Dominican Republic and Mexico, have had general public procurement legislation in place since the 1990s which has

been applied to the infrastructure sector and, in some cases, specifically to concessions. The new laws in force in Mexico, Peru and Colombia focus on fine-tuning the definition and scope of PPPs, provide new tools for their implementation and correct defects in the existing framework. Recently in Mexico, the government created a new type of long-term contract for the private development of public infrastructure services. In Peru, reforms were passed to allow greater participation of the private sector.

Before 2012, Colombia did not have any specific set of norms to regulate PPP public works contracts, but the figure was applied to a framework composed of the Statute of Public Procurement (Law No. 80 of 1993), the Transport Act (Law No. 105 of 1993) and the Debt Law (Law No. 185 of 1995). As a result, there was an overwhelming lack of definition in many fundamental points of PPP contracts, which led to different generations of road concessions affected by renegotiations, delays, large payments for traffic guarantees and construction cost overruns. Given this scenario, Colombia's new PPP law passed in 2012 improved the general terms for these types of contracts, standardizing PPP processes and establishing more objective awarding criteria; it also limited the possibilities of renegotiation.

Since 1994, Venezuela has also had a concessions law for public works and public services, but the overall framework of public procurement in the country has made it possible to bypass applicable law on several occasions, justifying the use of the direct award in tenders. This can harm the development of PPPs and stop fostering the competitiveness in processes leading up to the development of the projects.

It should be noted, moreover, that some countries with little experience in PPP are seeking to promote private investment in infrastructure projects through the implementation of new regulatory frameworks.

Costa Rica and Panama already have a stable and defined legal framework, specifically for the development of concession models, based on which some infrastructure projects have been developed. Panama, in its turn, sent a new bill to Congress, which had to be withdrawn due to opposition from workers in the public sector. In Jamaica, new privatization and PPP guidelines were drafted, and, finally, a new law was passed in 2012, much like in El Salvador, where a bill designed by the legislature was approved in 2013, which establishes the rights and obligations for the private sector. Likewise, in October 2013, Paraguay approved a new PPP law (Law No. 5102), recognizing the vehicle of public private partnerships (PPP) to channel a greater number of private investments into the infrastructure sector.

In the majority of Latin American countries, the public-private partnership model has adopted a series of guidelines linked to specific subjects that are key to the development of this type of agreement, such as the duration periods or the criteria for compliance oversight and monitoring.

On the one hand, most PPP regulations set a maximum contract term. In Chile, law DS MOP No. 900 passed in 1996 established a maximum period of 50 years, although most concessions have been awarded for 20 to 30 years. In Mexico, PPPs are tendered for a maximum legal term of 30 years. Even so, the first road

concessions were awarded for less than 12 years. On the other hand, the law in Brazil sets a maximum period of 35 years, but PPP contracts have been signed for periods of 20 to 30 years, depending on the time in which the project was tendered and if the grantor was a federal or state entity. In Colombia, the new legislation established a maximum duration period of 30 years for PPP contracts, whereas in Peru the maximum period allowed is 60 years, although contracts are generally tendered for shorter periods. Panamanian law defines a maximum period of 50 years. In Argentina, projects with the highest investment levels have been awarded for periods greater than 20 years. Meanwhile, PPP maintenance contracts have been awarded for periods ranging from five to 12 years.

Given that PPP agreements, in general, are linked to long periods that span several years of private sector involvement in project development, it has been necessary to include different control mechanisms that ensure the proper fulfillment of contracts. One of the measures adopted to achieve this goal has been the introduction of quality criteria aimed at delivering better service to the end user; although its use in Latin America has been limited, they have indeed been taken into account in the design of some PPP projects.

For example, in recent years, Argentina has considered this factor in some public facilities concessions. Mexico has started to incorporate the premise of evaluation and verification of the availability of the works in service provision projects.

The Ministry of Public Works oversees the works and is authorized to levy fines or sanctions on the concessionaire, as established in the bidding terms and conditions, in the event that the service levels agreed upon in the contract are not met.

On the other hand, the law in Chile, like Colombia's new law, specifies that the PPP project should reflect the levels of service required for the stage of exploitation, their respective indicators and any sanctions. In addition, Chile established a reward for road safety as part of the country's road concessions and is implementing a modality of remuneration based on the level of service in public facilities projects.

2.2.2 Institutional framework for PPP projects

The institutional framework for PPP projects available in each country is orientated toward facilitating the development of infrastructure through the execution of a series of tasks—planning, design, promotion, tender, supervision, regulation—carried out by different institutions—infrastructure and finance ministries, planning departments, local governments, specific agencies, regulatory entities, among others—based on the powers that they have been granted. An appropriate institutional framework is key to ensure the proper functioning of the provision of infrastructure and public services model.

For the management of PPP projects, governments often create specific units with specialized personnel, who cover an important part of

the infrastructure management requirements. In some countries, such as Chile, the PPP units depend on ministries that oversee public works. In others, they depend on ministries responsible for finance, economic development or planning. The competencies assigned to these units vary from one country to another. In some countries, the implementing entity manages the entire project cycle; in others, they handle only some tasks such as promotion, financial structuring and tendering, leaving the technical and economic supervision in the hands of other entities.

In Latin America, however, it is common that PPP units are present, to a greater or lesser extent, in all project phases, especially during the tender process and the financial structuring. They also tend to collaborate in technical and economic monitoring of the contract, although sometimes this task is transferred to other entities, mainly the state infrastructure promotion entity.

Even so, every country has its own way of assigning responsibilities. In Chile, the contracts are signed by the Ministry of Public Works, the Finance Ministry and the Office of the President, while accounts are overseen by the Comptroller General of the Republic. Chilean contracts include the possibility of settling disputes through an *ad hoc* arbitration committee for each contract, composed of three representatives appointed by the Ministry of Public Works, and the concession awardee, mutually agreed upon. This ensures fairness in the resolution of various disputes.

In the case of Mexico, the Secretariat of Communications and Transport (SCT) structures and tenders PPP projects, while other economic, social and environmental organizations participate, along with the secretariat, in the design of the general infrastructure policy and the monitoring of the different projects.

In other cases, the control regarding the fulfillment of the contract in respect to the public works and the rest of the necessary actions for the implementation of PPP contracts are performed indirectly by the state through decentralized entities. This is true for example in Peru, where PPP development is framed within an institutional framework that involves many entities, making it more complex than in other countries.

The reason for involving multiple institutions was to ensure an appropriate allocation of responsibilities and a necessary independence among them. However, what initially was intended to expedite the development of these contracts has produced very complex results in some cases, which has led to a loss of the system's effectiveness, due to the lack of definition of the work of each of the parties involved.

Unlike in the rest of Latin America, in Peru, the infrastructure owner—which rests with the corresponding Ministry—does not carry out project promotion activities. This task is assigned to the private investment promotion agency PROINVERSION. Other participants include SNIP, the national system of public investment created to optimize the use of public funds earmarked for investment; an administrative entity, which is an awarding entity that is usually one of the ministries with a seat on PROINVERSION's Board of Directors; and regulators like OSINERG (supervisory body for investment in energy and mining), OSIPITEL (supervisory entity of private investment in

telecommunications) and OSITRAN (supervisory entity of private investment in public transport infrastructure) depending on the type of project.

In Colombia, there are bodies that support the transport policy. The government has a Planning Department (DNP) and a National Council of Economic and Social Planning (CONPES), responsible for designing general infrastructure policy, coordinating the different sectors and making recommendations to the agencies in charge of concession contracts. In the transport sector, contract promotion and supervision used to be the responsibility of the National Institute of Concessions (INCO) when it came to road, railway and port infrastructure; in the case of air infrastructure, it fell to AEROCIVIL, the special administrative civil aviation unit. Both entities were assigned to the Ministry of Transport.

With the aim of strengthening the framework of contracts for the development of infrastructure in the country from an institutional point of view, the Vice Ministry of Infrastructure (decrees 087-088 of 2011) and the National Agency of Infrastructure (ANI) were created, the latter reporting to the Ministry of Transport (according to Decree 4165 of November 2011). These two agencies have replaced the aforementioned institutions. For its part, the Ministry of Finance and Public Credit oversees public contributions for project development.

In other countries where PPPs are more recent, like Guatemala and Honduras, new PPP implementation and supervision agencies have been established, whereas in Uruguay, a unit specialized in PPP was created under the Ministry of Economy and Finance, which has granted the National Corporation for Development new responsibilities as advisory entity to the executive branch for this type of project. The government initially appointed the Corporation to lead the development of PPPs in the country.

2.2.3 Project eligibility

The main objective for the public sector when developing projects under the PPP model is to derive greater benefits than if these were implemented simply as public works projects. Therefore, once a project's social convenience has been established, it should be analyzed to determine the best alternative for its implementation.

Like in other countries around the world, such as United Kingdom, in many Latin America nations with experience in PPP development, the procedure most frequently used for this kind of analysis is value for money. Generally, *the value for money* analysis includes, from a quantitative point of view, every factor that can be evaluated in monetary terms. It is based on comparing the costs and risks that a government must assume when implementing a project under the PPP model, with another scenario known as Public Sector Comparator (PSC), which represents what it would cost a government to run the project in a conventional manner, without private intervention. The optimal *value for money* represents the best combination of all the costs and benefits generated over the life of a project.

This analysis has been applied to several projects that form part of Chile's concessions program requiring a significant percentage of resources from

fiscal budgets, such as the public building for the Courts in Santiago, projects for the penitentiary system and hospitals, as well as hydraulic infrastructure like the Convento Viejo dam. Similarly, in Mexico, this methodology has been used to define the best way to develop projects for the provision of services. Brazil also relies on a *value for money* analysis to assess the feasibility of PPP projects, while countries like Colombia and Peru already have different methodologies for calculating the PSC as an indicator of a project's eligibility for development under this partnership model.

2.2.4. Private initiatives

Several years ago, some Latin American countries became aware of the fact that the private sector can contribute with useful ideas to cover a country's needs and improve the well-being of society. Within this context, countries like Chile, Colombia and Peru began to promote private initiatives within the scope of PPPs, always within the framework of planning of the public sector. This scheme is based on stimulating the private sector to develop projects that can be executed using a PPP model, in exchange for a reward for the contributed idea.

The regulation of public works concessions in Chile outlines the procedure to follow in tenders involving the private sector, dividing the process in several stages. Initially, the idea is presented; during this first phase, the private proponent submits a project to the MOP so that it can decide whether the proposal is of public interest or not. If it is, the final phase—the proposition phase—is begun, at which point the proponent presents the studies required by the public sector for the project's approval.

At this point, the MOP commits to undertake the tender within one year and to reimburse the proponent any costs incurred in the development of the studies—either by the Ministry, in the event that the concession is not tendered or deserted, or by the final awardee of the concession, if it is someone other than the proponent. At the end of this process, the idea belongs to the public sector in exchange for a reward ranging from 3% to 8%, depending on the project investment. From 1996 to 2012, the promotion of this mechanism has resulted in the presentation of more than 300 initiatives in Chile, and 25% of infrastructure projects granted in concession were driven by ideas from the private sector.

Colombia introduced this model to public-private partnership law passed in January 2012. The law differentiates between self-financing projects and those that require public funds, as long as they do not exceed 20% of the project costs. Where private initiative projects do not require public funds, the tender process is fast tracked, consisting of publishing a notice to present statements of interest from third parties. If there are other stakeholders, a bidding process takes place in which the proponent of the idea always has the right to beat the most competitive offer. This procedure is very favorable for the proponent of the idea.

If the private initiative requires funds to be provided by the Colombian government, the project is awarded through a public tender. In this process, the proponent is entitled to a reward ranging from 3% to 10%, depending on the estimated project investment.

In Colombia, the procedure includes an initial prefeasibility stage, which analyzes the general framework of factors that affect the project, after which the government decides if it is of public interest. If it is, a feasibility stage is launched. The proponent must submit the required studies and develop a detailed financial model of the project.

The government has six months to study the initiative and define the conditions for accepting it and stating its viability before continuing with the bidding process. In the event that the proponent is not the final awardee of the tender, all costs incurred throughout the process will be refunded.

As of May 2013, of a total of 28 private initiative projects presented in Colombia, 10 had been rejected and 18 were pending, comprising 11 roads, five railway lines and two airports.

Peru introduced the mechanism of private initiatives in its PPP law through Decree 4533 of 2008. Initially, its application was valid only for projects that would not require any state funding; then, in 2013, co-financed projects were admitted. These projects are evaluated by a special committee that analyzes if they are economically and socially profitable. The initiatives are classified as confidential and proprietary until they are declared of interest by the government. The proponent may present a bid at the tender and all third parties have 90 days to submit their statement of interest, accompanied by the required documentation along with a bid bond, which the proponent of the idea must also present. In the case of a public tender, the proponent has the right to match the best offer and if, in the end, the contract is awarded to a different bidder, the successful tenderer shall reimburse the proponent for the cost of the studies carried out.

According to PROINVERSIÓN's figures, in 2013, a total of 61 private initiatives have been submitted for processing in Peru, with 77% corresponding to real estate, sanitation and agriculture.

2.2.5 Tender mechanisms

In the lion's share of cases, the model for the award of PPP projects in Latin America is characterized by an open procedure, i.e., the awarding body values which alternative presented by the bidders is the most suitable, depending on certain established criteria. Normally, for the evaluation of the proposals, there are certain financial solvency requirements, as well as a minimum amount of experience in the construction and/or exploitation of works similar to the tendered project.

This system is characterized by its faster procedure, lower costs and greater objectivity compared to the negotiated procedure. However, contracts that are signed after the project is awarded tend to be less complete and specific

in certain aspects—for example, they do not demand a financial closing—which leads, on numerous occasions, to renegotiations of contract conditions throughout the life of the project.

In most Latin America countries, although the first concession projects were awarded based on technical and economic criteria, today, in most cases, the final award is decided based on an economic variable.

In the case of Chile, the tendering system consists of two phases. First, the technical proposals submitted by the bidders are evaluated and they are scored based on their quality. In the second phase, the bidder's ability to present an efficient economic bid is assessed. To do this, the main economic variables employed in the awarding of PPPs in that country have been the maximum initial payment made to the state, the lowest value of the fee charged to end users and, in more recent cases, the present value of revenues (PVR). With this latter system, the concession is awarded to the tenderer that offers the minimum PVR to be received over the life of the PPP, discounted at an interest rate established in the contract. The concession term ends when the PVR requested by the winner of the proposal is reached, thereby diminishing the risk of traffic of the project.

On the other hand, in Brazil, the bidding process is carried out by the awarding entity based on one of the following criteria: lowest tariff presented rate, higher payment to the awarding entity, a combination of the two above criteria, best technical proposal with fixed economic conditions, best combination of the minimum user rate and technical proposal, best combination of highest payment to the awarding entity and technical bid, and the highest payment to the awarding entity following the scoring of the technical bid. In those cases that include a technical assessment, the criteria to be taken into account are defined for each specific project.

Colombia, in the beginning, used a scheme that combined technical and economic criteria, but gradually it has been leaning increasingly more on economic variables for the awarding of a tender. For some years now, it has used a tendering mechanism based on projected revenue, whereby tenderers bid the cumulative total revenue that they need to receive over the life of the concession. The term finalizes when the specified amount is obtained.

Another tender mechanism used in Latin America has been the minimum concession term, usually accompanied by the establishment of a maximum rate by the administration. This system, which has proven to be inefficient, was applied in some highway concessions in Mexico within the national highway program that ended up facing subsequent renegotiations.

As of 2013, Mexico had established the criterion of granting the concession to the party who requested the least financial support from the government. In addition, the country is beginning to promote a new award procedure known as competitive dialogue for large or complex projects. This procedure, which is contemplated in Spain's PPP law, establishes that the contracting authority will develop–-with selected candidates—a dialogue whose purpose will be to determine and define the appropriate means for satisfying the candidates' needs.

2.2.6 Risk sharing

The allocation of risk in PPP projects is a key aspect to achieving their successful development; usually it is carried out in line with a premise of classical theory that risks should be borne by the agents that can best control them. The risk-sharing mechanism is based on the concept that the private sector must manage those risks that the market can assume and diversify, and those that are in no way controllable are transferred to the public sector. However, in the face of the limited financial profitability of some projects and high financial, technical, environmental and political risks, the private sector has not had enough confidence to address this type of financing, which has led to some PPP initiatives needing public financial backing through guarantees or subsidies that reduce some of the risk.

Within this context, in Latin America there are different risk-sharing mechanisms, especially in terms of the risk of traffic or demand, which usually requires certain warranties or commitments from the government, even though they are generally transferred to the private sector.

Brazil and Mexico, in their first PPP contracts developed during their national highway programs, upheld all of the traffic risk allocated to the concessionaire, which has led to renegotiation issues in the case of some concessions. Given this outcome, Chile and Colombia implemented risk mitigation mechanisms in their PPP models, for example, guarantees of minimum revenue (GMR) and variable-term concessions based on accumulated updated or not updated revenue. Like in the case of some concessions in Colombia in 2001, Mexico, in more advanced stages, established a liquidity mechanism, with which the Government granted guarantees to facilitate the concessionaire's repayment of loans established in the financial contract—debt service liquidity guarantees (DSLG). The country called this mechanism *Compromiso de Aportación Subordinada* (CAS) and, in recent years, it has implemented in some road concessions, just as Peru did, a payment for the availability of the infrastructure, so the concessionaire relies less on traffic volumes to get its revenue.

Moreover, in Peru, the risk of traffic in many projects, especially road concessions, is assumed entirely by the public sector. For example, in the cases of the IIRSA North concession and concessions that compose the inter-oceanic highway, the state secured the concessionaire's commitment to pay for a level of demand established in the contract. In other projects, like in the case of the No.6 Network, the state promised the concessionaire a minimum income in the early years to mitigate the risk of demand.

In Peru, the public sector has excelled over the years by offering numerous guarantees to the private sector for the development of PPP.

In some projects, unlike the model adopted by other Latin American countries, the Peruvian government has also assumed the construction risk. This occurred, for example, in the four concessions that make up the project of the inter-oceanic highway.

In order to illustrate the variety of approaches used to allocate the risk of traffic in Latin America, Table 2.1 contains the scheme adopted by some of the concessions in Chile, Mexico, Brazil, Colombia and Peru, from 1992 to 2010. This highlights if the risk has been assumed by the government, the user—in the event that the terms of the concession are variable—or by the private sector.

Table 2.1. **Traffic risk allocation models (1992-2010)**

Risk assumed by	Contract mechanism	Concessions
Public sector	Guarantees of minimum revenue (GMR)	Chile: 32 concessions (1992-2009) Colombia: 11 concessions (1994-1997) Peru: 5 concessions (2003-2010)
	Debt service liquidity guarantees (DSLG)	Colombia: 10 concessions (2001-2007) Mexico: 12 concessions (2003-2008)
	Availability payments	Mexico: 7 concessions (2005-2010) Peru: 9 concessions (2005-2009)
Users	Accumulated income (not updated)	Colombia: 10 concessions (2001-2007)
	Accumulated income (updated)	Colombia: 4 concessions (2010)
	Commitment from the government to extend concession term if traffic is lower than expected	Mexico: 30 concessions (1989-1994)
Private sector		Mexico: 18 concessions (2003-2010) Brazil: 7 federal concessions (2007-2010) Brazil: 10 concessions in São Paulo State (1994-1997) Brazil: 6 concessions in Parana State (1997-2000) Brazil: 8 concessions in Rio Grande do Sul State (1997-2000)

Source: adapted from Carpintero et al. (2013). Data from Peru's Transport Infrastructure Regulation Authority (OSITRAN), Coordination of Public Works Concessions in the Ministry of Public Works (Chile), National Concessions Institute (INCO, Colombia), General Board for Road Development (Mexico) and the National Land Transport Agency (ANTT, Brazil).

2.2.7 Sources of financing

Although infrastructure development in Latin America in recent decades has been linked to significant involvement from the private sector, public sector financing has continued, and will continue to have a key role in this area. Financing has included loans by public banks and nonrefundable subsidies.

Some Latin American countries' governments have institutions such as development banks—comprised of financial institutions involving state participation—to finance the investment portion of infrastructure projects that the private sector does not pick up.

Historically speaking, financing from development banks in the region has been very important for carrying out infrastructure projects. For example, in Brazil, most of road infrastructure projects and the construction of sports infrastructure for the World Cup were financed by a USD 2.9 billion fund from the National Development Bank (BNDES). On the other hand, in Mexico, the National Bank of Public Works and Services (BANOBRAS), in addition to its significant investment contributions for the development of different infrastructure works over the years, grants loan guarantees on a recurrent basis for private participation projects.

Many of the PPP projects developed in Peru have been co-financed, i.e., the state has committed public resources, mainly funded through domestic banks, to make the investment more attractive to the private sector. This trend is also seen in Colombia, where local financing sources have gained particular significance.

In Chile, the most widely used financing scheme has been the *project finance* model. The first infrastructure concessions were financed through domestic banks, but the forecasted large volume of investment needed in the country for infrastructure development led the Ministry of Public Works (MOP) to seek alternative sources. As a result, several years ago, financing from foreign banks, mainly Spaniards, became increasingly common, always in exchange for an assurance of currency risk.

Multilateral banks have also been active in the financing of infrastructure in Chile. The International Finance Corporation (IFC) and the Multilateral Investment Guarantee Agency, both linked to the World Bank, the Inter-American Development Bank (IDB), the European Bank for Reconstruction and Development (EBRD) and the Asian Development Bank (ADB) stand out.

On the other hand, the issuance of securities in the capital market has acquired particular significance in the financing of Chilean infrastructure in recent years. The first bonds were issued in 1998 for the Talca-Chillan highway and since that experience the market has continued to grow. In 2008, infrastructure bonds—purchased mainly by pension fund managers (AFPs) and insurance companies— already represented 20% of the fixed income market in Chile. The success of this channel of financing is due to the fact that the majority of the bond issuances had a financial guarantee from monoline organizations, which lent their AAA credit rating to the loans in exchange for a premium for raising the issue's rating. However, the onset

of the economic crisis led to the bankruptcy of many of these companies; since then, bank loans have re-emerged as a key source of financing for infrastructure development.

In the case of the financing scheme used in Mexico, there are three distinct stages. Initially, the first PPPs were financed with public and private capital contributions through loans from local banks. Later, under the National Highway Program, concessionaires stopped receiving aid from the government and the funding came entirely from the private sector, through capital contributions and bank loans. However, in the case of more recent PPPs set up under this program, the government granted partial investment subsidies in cases where highway projects did not offer sufficient profitability to capture the private sector's interest. This program led to big financial problems, especially in those concessions with loans from international banks. As a result, the government had to rescue 23 of the 52 highway projects that had been awarded. This resulted in significant losses of capital and the injection of nonrefundable funds by the national government, which had to assume the projects' bank debt. This debt was rolled into a trust created to support the rescue of roads under concession (FARAC), with a government guarantee.

Mexico's central and subnational governments, which have been engaged in a continuous search for new sources of infrastructure financing, have turned to other channels such as debt issuing and brokering structured loans. Today, the country is promoting infrastructure financing through private equity funds by issuing development capital certificates (CKD), with the aim of attracting resources from pension funds and insurers. The CKDs are trust securities used to finance one or more projects. In order to ensure their success in the market, the idea is that infrastructure funds provide venture capital for the development of all types of infrastructure, combined with a rigorous project analysis to capture pension fund liquidity.

On the other hand, important pension system reform carried out by some countries in the region over the past twenty years has led to significant increases in domestic savings. For example, in Chile, the first country to carry out such reforms, pension savings currently stand at 70% of GDP. In Mexico and Brazil, mandatory pension funds represent 10%-20% of GDP.

Pension fund savings constitute an important potential source of infrastructure financing, as seen in the case of Chile, where the total investment assets of these funds in the infrastructure sector today represent 6.5% of GDP mainly through financial assets, stocks and bonds related to infrastructure companies.

While Chile has been a reference in Latin America for this type of investment, Colombia and Peru have also begun to register success with these types of investment products. In 2011, in Peru, the participation of pension funds in infrastructure and related investments amounted to 11.1% of the total portfolio: mainly in energy (60%) and to a lesser extent, transport (21%) and telecommunications. The main form of investment has been indirect, via stocks

and bonds of companies related to infrastructure as well as investment funds for the sector. In the case of Colombia, pension funds are actively contributing to economic development by channeling resources directly into key productive sectors. Infrastructure projects have received financing, albeit indirectly, i.e., as in Peru, through investment in bonds and company shares, representing 18.7% of the value of the pension funds. There, the sector with the highest participation has been electricity-energy, accounting for about 84% of the investment of pension funds in infrastructure.

As shown, throughout the history of the implementation of PPPs in Latin America, in most countries in the region, local banks have played a key role in financing projects. Over time, some countries, such as Chile or Mexico, have spearheaded a search for funds through the capital market. Until 2005 most investments were financed through bonds and loans. In 2008, following the crisis, projects started to receive more financing through capital contributions. The overall capital-investment ratio rose from 18% of total investment prior to the crisis to 28% post crisis; over the same period, financing through loans and bonds fell from 79% to 64%. This involved a significant reduction in highly leveraged investments.

Maintaining economic growth in Latin America requires continued investment in infrastructure through the promotion of the development of PPPs. As a result, it is necessary to continue to have access to funding sources that provide the required capital. Experts in the field say that the capital market plays a key role in this connection, stressing the particular importance of pension funds. These funds allow a horizon of long-term financing and can help reduce currency risk, if sources denominated in local currency can be established. At present, pension fund investments in Latin American infrastructure projects range between 6% and 19% of their total portfolios and from 4% to 1% of GDP. Overall, we can say that there is gradual progress being made in regulations that facilitate the role of the private sector in infrastructure. The experience of pension funds' involvement in infrastructure development is relatively recent in the region, but has slowly advanced in different countries at different levels depending on the degree of development of economies, financial markets and the institutional and regulatory framework in each one. More intense experiences such as Chile and, to a different degree, Peru, Colombia and Mexico, where progress has been more moderate, are examples worth highlighting in this regard. However, it is also important to note that a clear comprehensive framework to facilitate PPP development fueled by these funds is lacking to date, which points to the needed ongoing work to promote the necessary reforms to stimulate high volumes of investment for infrastructure development in the region.


Transport interchange hub
in Moncloa, Madrid (Spain)

Introduction

Madrid's transport interchange hub plan
- Regional demographics
- Transportation system: a functional analysis
- Madrid's transport interchange hub plan

Legislative and institutional framework
- Reference legislation
- Institutional and project management level

Project features
- The BUS-VAO reversible lane
- The Moncloa transport interchange hub

Current contract framework and the decision to use the public-private partnership model

Tender process and contract award
- Pre-tender studies
- Mechanism for awarding and evaluating bids

Contract design and risk allocation
- Characteristics of the economic and financial plan
- Risk allocation and mitigation mechanisms
- Service standards and quality incentives

Contract management and economic balance
- Ex-post monitoring of compliance with the concession contract
- Economic balance and contract renegotiation

The concessionaire company and project financing
- Evolution of the shareholders' interest in the concessionaire company
- Project financing

Project balance
- Results versus initial projections
- Economic, social and environmental benefits derived from the project

Lessons learned

3.1. Introduction

As in many other countries with a long-standing tradition of infrastructure construction, Spain has often used different models to finance and build public works, driven by the strong need to gather resources for country development. Among the variety of schemes applied in Spain, the concession model has been typically the preferred option. Because of this, the country may be regarded as a paradigm of concession models in modern times.

Spain has extensive experience in highway concessions. That said, projects like Baix Llobregat and Besos Trams in Barcelona, awarded in 2000 and 2003, or the Seville Metro, awarded in 2004, show that tenders of concession contracts in other areas, like urban infrastructure, have been increasingly used in the past decade.

Of all the cities in Spain engaging in these types of initiatives, Madrid seems to be the most active one in terms of awarding urban transport projects under concession. Through the Regional Consortium of Transportation for Madrid (CRTM), the community of Madrid has awarded several concessions in recent years, including the light rail tram systems in Parla, Pozuelo-Boadilla and Sanchinarro-Las Tablas, or the expansion works for Madrid Metro line 8 up to the new Terminal 4 at Barajas Airport. In addition, in this scenario the financing of the development of a public transport interchange hub plan in the city also falls under the scope of public works concessions.

Transport interchange hubs are nodes designed for the intermodal articulation of urban and intercity transportation. These strategic sites facilitate the integration of different transport modes, reducing the impact of riders transferring from one transport mean to another. The layout of air-conditioning waiting areas, the shops and the provision of additional services result in a more enjoyable and comfortable user experience.

Transport interchange hubs are underground constructions composed of several levels and exclusive bus traffic access tunnels that are directly connected to bus bays. The infrastructure layout offers an optimum transport mode transfer, from regional and interregional buses or railway services nearby to the metro and urban bus networks. Signs and user information are available to guide passenger flows through the different levels, thus optimizing transfer times and eliminating the feeling of an interrupted route.

Another potential benefit offered by this type of infrastructure, as Madrid has clearly illustrated in recent years, lies in its ability to generate a steady cash flow while in operation, which means that the end users finance a large part of the long-term investment. As previously stated, this has motivated Madrid's public administration to resort to a concession model for the construction and management of these key facilities for the city transportation system.

This chapter will analyze in depth one of the projects awarded under concession: the Moncloa transport interchange hub in the city of Madrid.

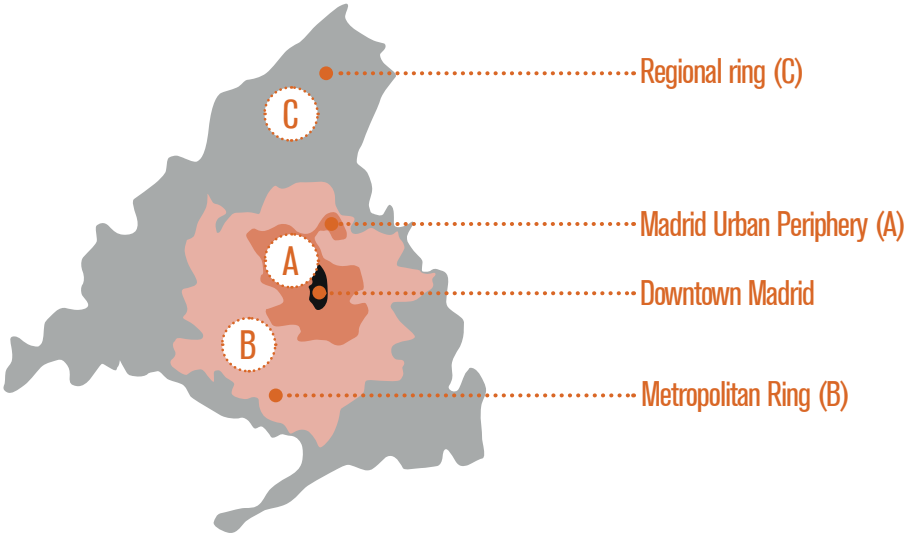
The analysis below is intended to provide the reader with an integral perspective about the development of this infrastructure, as well as the synergies that resulted from the different parties concurring in the construction, start-up and operation of a public works concession project that has extended until the present day.

3.2 Madrid's transport interchange hub plan

3.2.1 Regional demographics

The Madrid Metropolitan Area is inhabited by about six million people, distributed across slightly more than 8,000 square kilometers. The area comprises four sectors: downtown, the periphery, an inner metropolitan ring, and an outer metropolitan ring. The city of Madrid covers the first two sectors (downtown and periphery). The metropolitan rings are made up by 50 municipalities, 23 of which are located in the inner ring, with 27 in the outer ring.

Image 3.1. **Madrid Metropolitan Area**



Source: Transport sustainability and environmental impact in large cities. The case of Madrid (2012).

According to data provided by the Autonomous Community of Madrid's Institute for Statistics, the city of Madrid has the largest number of inhabitants, the downtown area being the most densely populated. However, important population nodes are also located in the metropolitan rings, particularly south and east of the community.

Table 3.1. **Number of workers broken down by their place of work and place of residence**

		Place of residence				
		City of Madrid	Metropolitan Northern Area	Metropolitan Eastern Area	Metropolitan Southern Area	Metropolitan Western Area
Place of work	City of Madrid	1,126,236	65,889	119,437	251,956	97,546
	Metropolitan Northern Area	72,044	63,681	12,126	18,673	8,594
	Metropolitan Eastern Area	44,821	4,321	118,986	13,773	3,295
	Metropolitan Southern Area	64,479	3,332	8,542	231,033	11,491
	Metropolitan Western Area	54,104	3,868	5,490	21,826	70,953
	Metropolitan Area Outskirts	11,984	2,532	8,890	12,166	4,663

Source: Madrid Institute for Statistics (2009)

Table 3.1 shows the number of workers broken down by their place of work and place of residence in the Community of Madrid. According to these figures, the vast majority of the workforce resides and works in the city of Madrid. However, the data also reveals how a significant number of them are employed in their own area of residence, despite the fact that the majority of the workers who reside in the metropolitan area commute to the city for their jobs.

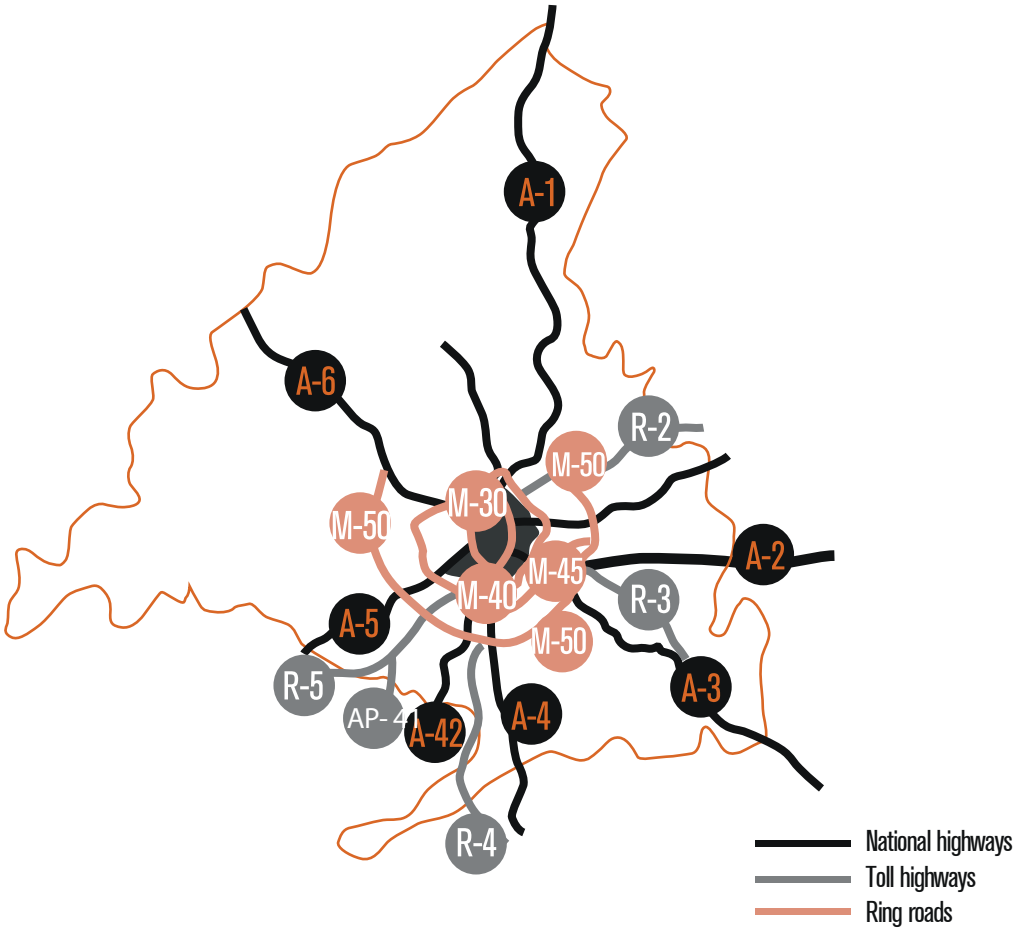
This layout of population and jobs translates into a heavy transfer flow within the area comprised by downtown and the periphery and, to a lesser degree, from the eastern and southern metropolitan areas to the city of Madrid.

3.2.2 Transportation system: a functional analysis

The Metropolitan Area of Madrid boasts a broad high-capacity highway network. Three ring roads (M-30, M-40 and M-50) are currently operational, as well as a highway bypass between M-40 and M-50 known as M-45. Entry points to Madrid, in addition to the conventional highways (A-1, A-2, A-3, A-4, A-5, A-6, A-42 and M-607), include four radial tollways (R-2, R-3, R-4 and R-5), which stem from M-40, except for R-4, departing from M-50.

The metropolitan area runs along a total of 144 kilometers of toll traffic network and 836 kilometers of toll-free highways, according to annual statistics provided by the Community of Madrid in 2012.

Image 3.2. **Road infrastructure in the Community of Madrid**



Source: Madrid, a world reference. CRTM (2010)

An analysis of the Community of Madrid's public transportation system shows six toll areas that can be identified based on the distance to the city of Madrid. Figure 3.3 illustrates this point, with the A main area almost overlapping the city of Madrid; three B metropolitan areas, B1, B2 and B3, with 8, 14 and 28 population centers, respectively; two C areas, C1 and C2, that complete the administrative border of the Community of Madrid and include 129 municipalities; and two outer E1 and E2 areas, entering the autonomous community of Castilla la Mancha.

The public transport system in the Metropolitan Area of Madrid is characterized by its extension and multimodality. There are five modes of mass public transport currently operational in four of the differentiated areas within the metropolitan ring (A, B1, B2 and B3). On one hand, the fleet of 2,104 urban buses operated by Empresa Municipal de Transportes de Madrid (EMT) offers services along 216 different lines across area A. In addition, the Madrid's Metro runs along 287 line kilometers, having 291 stations between areas A and B1, connected by the four light rail lines. Moreover, 1,777 intercity buses offer services by means of 349 lines distributed across all these areas, including the outer ones. Finally, commuter services make up a railway system that operates in the entire metropolitan area, providing passengers with access to 94 different stops along the network's close to 400 kilometers.

Image 3.3. **Fare zones**

Source: Annual Report by CRTM (2011).

All of the above services fall under the direct responsibility of CRTM, the sole authority in matters of regular mass passenger transportation, not only in the metropolitan area but also in the Community of Madrid and other municipalities willingly participating.

Since its establishment in 1985, among several activities that fall under its scope of action, the CRTM aims primarily to integrate different modes of public transport. Among the many actions encouraged in view of this integration, multimodal interchange hubs appear as the best physical materialization of this goal.

3.2.3 Madrid's transport interchange hub plan

As a starting point to understand the motivation behind the Madrid's transport interchange hub plan, it seems useful to comment on the operational framework of the community's passenger regular public transport. Table 3.2 shows a summary of the public and private companies participating in transport management in a variety of ways.

Table 3.2. **Public transport system in the Community of Madrid**

ROAD PASSENGER TRANSPORT	
Empresa Municipal de Transportes de Madrid, S.A.	Madrid City Council's public company
Intercity bus companies	21 private companies awarded 31 public service management contracts
Urban bus companies	Urban transport services are offered in 12 municipalities by means of concessions or direct management.

RAILROAD PASSENGER TRANSPORT	
Metro de Madrid, S.A.	Public company owned by Madrid City Council (75%) and the Community of Madrid (25%)
Renfe-Cercanías (Spanish National Railway Network - Commuter)	Company under the state's administration
Private metro operators	2 concessions: an extension of line 8 (T4, Barajas Airport) and line 9 (Puerta de Arganda - Arganda del Rey, operated by TMF)
Private light rail and tram operators	3 public work concessions for metro light rail lines ML1, ML2, ML3, and the Parla tram.

MODAL INTERCHANGE HUB STATION OPERATORS	
Public works concessions for the construction of the following interchange hubs:	Avenida de América
	Plaza de Castilla
	Plaza Elíptica
	Moncloa
	Príncipe Pío

Source: Annual Report by the CRTM (2011)

Given its large capacity and the key role it plays in decompressing surface transit, the metro network is a critical transport mode in the city of Madrid. Due to its extension and capillarity, it acts as a channeling network for urban mobility. The urban bus network also constitutes a fundamental means of transport that addresses the mobility needs of peripheral neighborhoods that have no access to the metro network; therefore, the urban bus network serves as a supplement to the metro network in the main areas of the city. Furthermore, metropolitan mobility is covered by commuter railway services and intercity bus lines.

The concept of transport interchange hub arose from the need to integrate both urban and metropolitan mobility. It can now be said that intermodal interchange hub stations have become a benchmark for sustainable growth in the city of Madrid, earning outstanding global recognition. However, it should be emphasized that the present-day scenario is the result of a constantly evolving process that has been taking place since 1985, when the term 'interchange hub' was first coined within the context of Madrid's General Urban Land-Use Plan.

The first interventions to this line happened from 1985 to 1993. Aimed at restructuring land use to make way for the confluence of different urban bus lines, the intervention sought to reduce the interchange distances existing at the time among all transport modes. This was the case of Aluche and Plaza de Castilla stations and, to a lesser extent, Oporto, Conde Casal and Moncloa stations. At the time, there was no global operation management action in place yet.

In the second stage, from 1994 to 1997, the option for intermodality became even stronger. Bus stations that were built underground could be larger than if built above ground, which accelerated interchanges with the metro network. The most representative example in this period was the Moncloa interchange hub.

The interchange hub in Avenida de América was inaugurated in 2000, an event that meant a step into the third generation of interchange hubs. The underground station was much larger than the previously referred to locations, and featured exclusive access tunnels that were directly connected with the intercity bus bays. This layout reduced travel times by avoiding traffic congestions at access roads into the capital city.

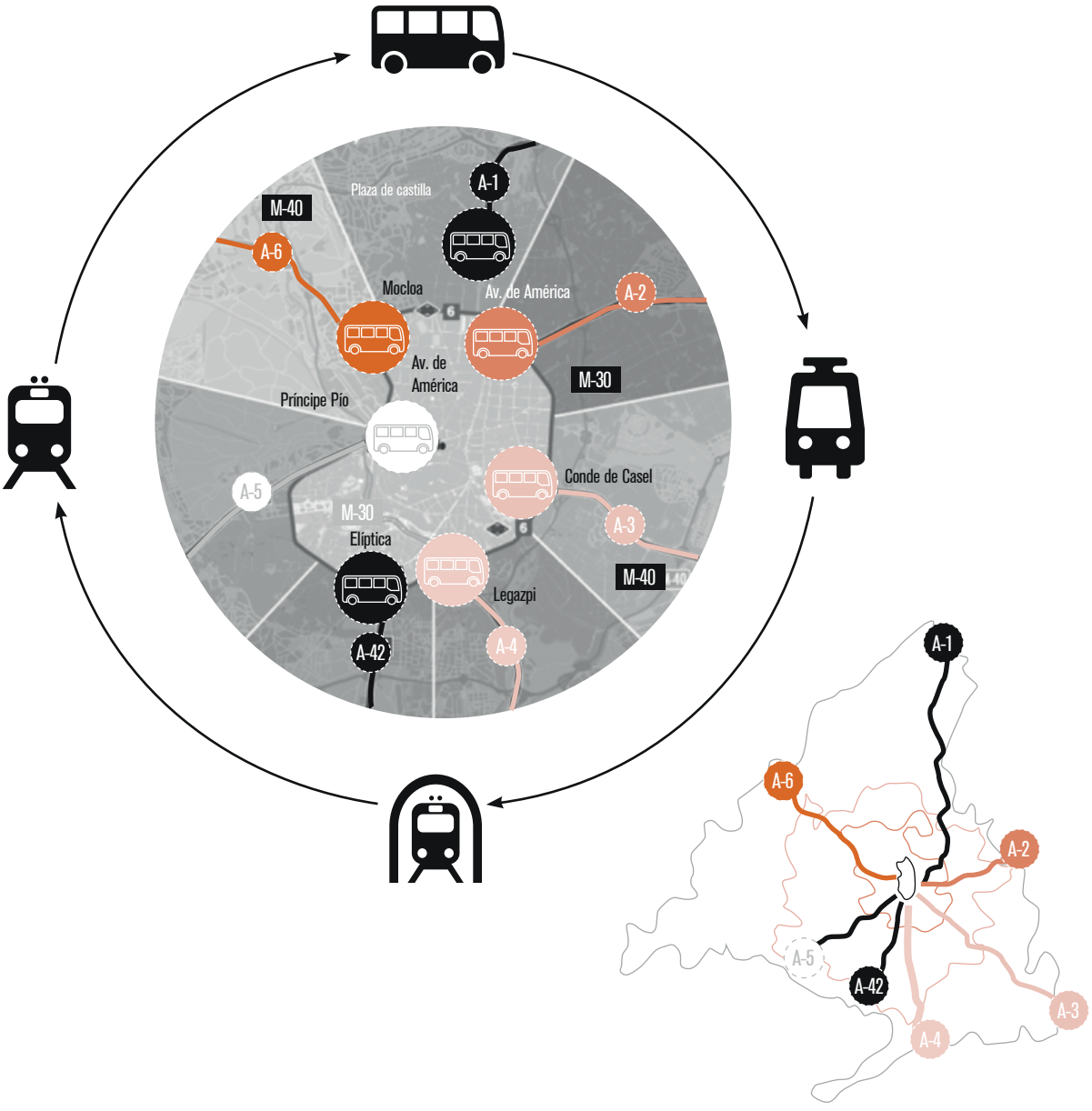
For the first time, the granting authority decided to resort to private financing to develop a project of this magnitude. CRTM, therefore, proposed a public works concession contract for the construction, maintenance and operation of an interchange hub. The concession was awarded to a consortium integrated by intercity bus operators, construction companies and, with a more limited stake, the bank that financed the operation and the technical office acting as the engineering consulting agency.

The latest generation of interchange hubs was developed from 2004 to 2007. In addition to enhancing the previous functional standards, this facility aimed to create a more attractive architectural space, with a stronger business presence. This stage is best illustrated by the interchange hub projects of

Plaza Elíptica, Plaza de Castilla, Príncipe Pío and the extension works carried out in Moncloa.

As it can be seen in Image 3.4, the goal of the successive interchange hub plans developed since 1985 have been to unify the location of the terminal stations of all intercity bus lines reaching Madrid via the available access corridors. In addition, the connection with the metro circular line has translated into an optimized operation and modal integration of the city's mass transport system.

Image 3.4. **Transport interchange hub system using access corridors reaching Madrid**



Source: Interchange Hub Plan. CRTM (2011).

The interchange hub points are located at the junction between the downtown area and the seven large highway corridors, which serve as channels for all bus traffic starting from the metropolitan ring.

Below is a summary of the most significant features and parameters of the transport interchange hubs located in Avenida de América, Príncipe Pío, Plaza de Castilla, Plaza Elíptica and Moncloa. In order to finance and manage these hubs, the granting authority has firmly decided to deploy a concession model.

Table 3.3. **Fundamental impact of transport interchange hubs operated under a concession program**

	Total	Avenida de América (*)	Príncipe Pío	Plaza de Castilla	Plaza Elíptica	Moncloa
Investment (million EUR) (**)	356.22	25.36	58.00	118.32	41.76	112.78
No. of levels	20	5	3	4	4	4
Area (m^2)	218,000	40,000	28,300	74,000	29,700	46,000
Tunnels (m)	4,800	800	400	2,000	600	1,000
Traffic demand (passengers/day) (***)	782,696	139,537	155,071	204,912	70,506	212,670
EMT urban lines	62	11	2	19	10	20
Intercity lines	150	14	27	40	14	55
Long-distance lines	22	19	2	2	1	1
Bus bays	163	36	30	43	20	34
Parking space	1,065	665	-	400	-	-
Metro lines	14	4	3	3	2	2
Commuter lines	2	-	2	-	-	-

(*) Restructuring works intended to adapt the interchange hub in Avenida de América to the new standards concluded in September 2014. Total investment amounted to EUR 45 million http://www.abc.es/madrid/20140916/abci-intercambiador-avenida-america-vuelve-201409161414.html. The new investment will total EUR 45 million.

(**) These investment amounts were presented in the successful bid and do not reflect further adjustments. They are inclusive of VAT.

(***) In all cases, demand data was collected in 2012.

Source: Authors based on CRTM data.

3.3 Legislative and institutional framework

With an understanding of the region's population characteristics and the transport system required, this section will examine the legislative and institutional framework that supported the application of concession contracts in the case of Madrid's transport interchange hubs.

3.3.1 Reference legislation

As has already been mentioned in this chapter, Spain has made use of several systems to finance infrastructure. Concession-based models are, however, some of the most developed programs in the country. Their development has been accompanied and strengthened by a very marked legislative evolution in terms of concessions. This dates back as far as 1877, when the concession system was first regulated to develop road projects.

After the laws passed in 1953 and 1960, the scattered legal fragments governing the many highway concessions became homogeneous with the creation of Law No. 8/1972 on the construction, maintenance and operation of highways under concession. Amendments to this law, introduced in 1974 and 1988, remained in force until a new law was passed: Law No. 13/2003 on the regulation of public works concession agreements. This law merged all amendments that had been introduced since 1996, and intended to promote private initiatives to improve the financial situation at the time. Spain's goal was to be accepted into the Economic and Monetary Union of the European Union as a full-right member.

As these amendments took place in the country, in 1997 the Community of Madrid's government entrusted the CRTM with the drafting of the tender conditions and the concession contract clauses for the construction, maintenance and operation of the transport interchange hub in Avenida de América.

At the time, Madrid's public transport authority did not have much experience with concessions for this type of infrastructure, so, although the concession model had a long-standing tradition in Spain, this drafting request entailed a big challenge.

The experienced gained after putting this first project into operation was used as a starting point to build the latest generation of interchange hubs in the city of Madrid as from 2004. Furthermore, this initiative benefited from the concession boost encouraged by the laws in force at the time. Since 2003, the laws have broadened the concession model spectrum that had been successfully applied to tollways to embrace all types of public infrastructure, thus offering the stability and legal protection much sought by private investors.

Regulation of public works concession agreements, included under Law No. 13/2003, had a horizontal or backbone nature, that is, it served mostly as basic legislation and, as such, it was mandatory both for the central administration and for local self-governing administrations, its provisions

then acting as complementary legislation. This served the purpose of making concession legislation consistent across the national territory, while local and self-governing entities could only contribute non-essential regulatory aspects.

In its preamble, the law described the four basic concepts that would characterize a concession: "public works" as the basis of the concession, "concessional risk," "economic balance of the concession" and "financing diversification". On one hand, this highlighted the importance given to transferring all construction, maintenance and operational risks to the concessionaire. On the other, it emphasized the need to moderate risk limitations wisely so that the agreement should not become a random business venture that would hinder private sector participation in this type of investments.

As per the legislation above, the assumption of risk in "a substantial proportion" by the concessionaire was crucial for the concession agreement to be regarded as such. The law thus incorporated the legal doctrine and conclusions by the European Commission as reflected in its Interpretative Communication No. 2000/c 121/02.

With respect to the principle of the concession's economic balance, this law emphasized the bidirectional nature of concessions, as opposed to the traditional interpretation favorable to concessionaires in former regulations. Along these lines, an increase in the corporation tax would entail an adjustment of the economic-financial plan in favor of the concessionaire, while a reduced corporate tax would benefit the administration.

As for "financing diversification," the aim was to make the concession more appealing to private investors, streamlining the interaction between the concessionaire and capital markets. Thus, novelty financial options were introduced, such as the securitization of credit claims linked to works operation.

Another key element in the Spanish model introduced by this law was the financing of infrastructure through the business activities that could be developed in these facilities. Different experiences worldwide have indeed shown that certain types of buildings, especially when passengers have to spend long waiting times, hold the potential of becoming important shopping centers that can generate self-financing resources for the infrastructure. The law now made this possibility explicit.

The number of premises introduced by this law, which have been briefly described in the paragraphs above, make up the legal framework that paved the way for Madrid's latest generation of transport interchange hubs.

This reference legal framework was actually reflected in the document including the special administrative clauses of the concession that set forth all the aspects covered by the law. In addition, the terms of the tender referred to the General Regulations on Public Procurement of the Community of Madrid and Law No. 3/2001 on the community of Madrid's heritage, aimed at protecting, conserving and enhancing the region's historical heritage.

Law No. 13/2003 on the regulation of public works concessions has then been critical as it was the reference legislative framework for the development of the interchange hub project in Moncloa. Despite the approval of Law No. 30/2007 on public sector contracts in 2007, currently in force

in Spain, Law No. 13/2003 absorbed almost to the letter the contents and principles of the concession law before it, all the same introducing novelties regarding public procurement, but this analysis goes beyond the scope of this chapter.

3.3.2 Institutional and project management level

The development of transport interchange hub projects in Madrid and, in particular, the interchange hub project in Moncloa, have been framed within the institutional sphere dealing with public transport operations in the Community of Madrid.

After the Community of Madrid adopted the Statute of Autonomy under Organic Law No. 3/1983, defining its exclusive jurisdiction in different transport areas, CRTM was established in 1985. This consortium was the entity intended to absorb a significant part of transport responsibilities.

This consortium currently operates as an autonomous body responsible for all matters related to regular public passenger transport in the Community of Madrid as well as for the participating city councils in the region. The consortium receives financing from its own revenue and from allocations from the general budgets of its member administrations: the state administration, the Community of Madrid, Madrid's City Council and other city councils in the region.

CRTM's functions include, among others, drafting of the overall plan for regular passenger transport infrastructure, defining and coordinating operation programs for all public transport modes, establishing an integrated fare program for the entire system, conducting control and follow-up activities on operators' economic management, implementing a stable financial framework, and creating a global image of the system.

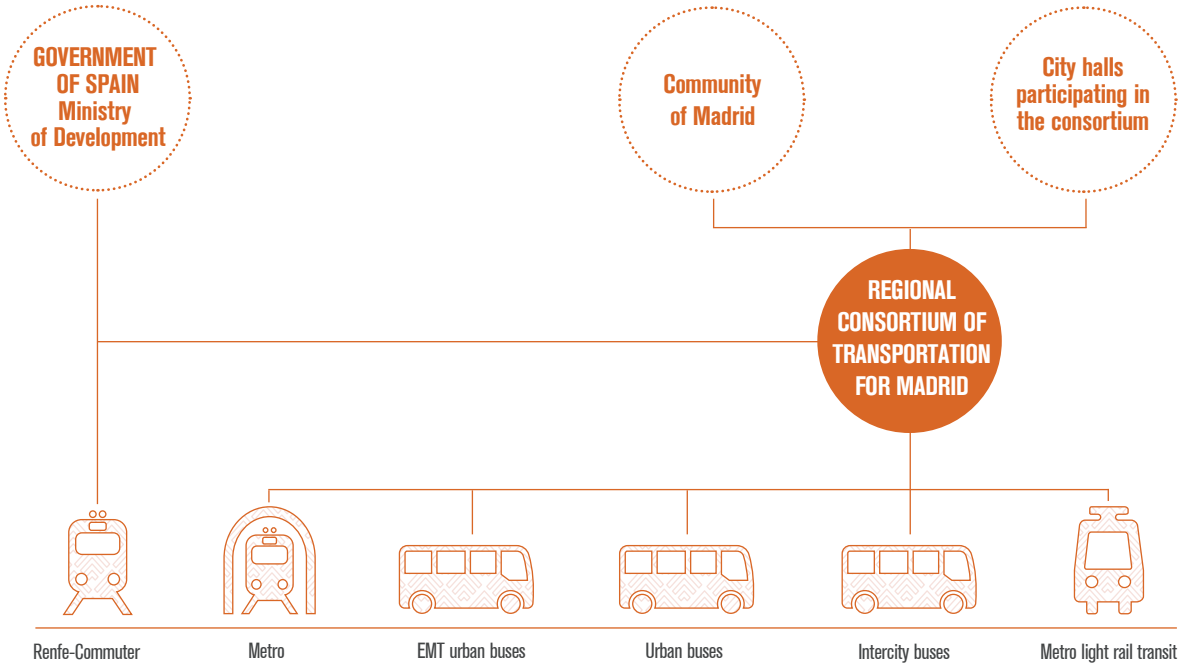
In this area, different public and private companies with their own legal personality and management autonomy, offer a variety of transport services. On one hand, the urban bus system is run by the two large public operators owned by the region and the city council, Madrid's Metro and Empresa Municipal de Transportes de Madrid (EMT). Both companies are governed by annual agreements, based on an equilibrium fare per passenger, subject to the fulfilment of certain service quality goals. On the other hand, the business public entity RENFE, the main Spanish railway operator, is governed by the Ministry of Development (Ministerio de Fomento) and acts in line with an agreement entered into with the CRTM that regulates the use of multimodal ownership and the compensations derived therefrom.

The private companies that have been awarded the concession to operate the lines of the intercity road passenger public transport are subject to a system of incentives and penalties that is contingent upon the achievement of the goals stated in the Quality Plan established by the CRTM. Under this type of indirect management system, the CRTM pays operators the monies resulting from the difference between the negotiated technical fare and the actual fare paid by passengers.

On the other hand, intermodal connection services in the transport interchange hubs are provided by private companies awarded the concessions for the construction, maintenance and operation of the interchange infrastructure. As will be described throughout this chapter, concessionaire companies collect a rate for every passenger riding on the regular lines that have access to the interchange hub facilities, in addition to all business and advertisement revenues derived from the commercial use of this property.

As it may be inferred from the organizational chart presented in Figure 3.5, implementing an integral transport policy has been one of the critical elements of public transport operations in the metropolitan area of Madrid. This integration is reflected across different levels. The first one, achieved through the creation of the CRTM, is at the institutional level.

Figure 3.5. **Madrid's regional institutional and operational public transport framework**



Source: CRTM's Annual Report (2011)

The second level comprises the structure of fare zones and the possibility of using multimodal transport passes and tickets across the entire network. Fare integration is rooted in the idea of merging all transport services into a single multi-zone, inter-operational ticket, which would translate into easier use for passengers. Finally, the third level involves the physical integration of the different networks, which would reduce the feeling of travel interruption despite the transfers. This connection is carried out under the umbrella of a common information and marketing network that improves user experience and drives demand.

3.4 Project features

The transport interchange hub in Moncloa and the A-6 highway access to this hub have been undergoing significant development until the present day. Starting with the inauguration of high-occupancy reversible lanes (BUS-VAO),[1] a series of mobility milestones have taken place that, as the links to a chain, have shaped the infrastructure that currently connects a large portion of Madrid's public transport in the northwest area. The interchange hub concentrates the stations of Madrid's Metro lines 3 and 6, along with the underground bus stations for urban and intercity lines.

As will be described later in this chapter, the state-funded construction works for the interchange hub began in 1995, an event that had a definite impact on transport commuting patterns. However, the expansion works that followed, with the assistance of the private sector, have successfully adapted the hub to very ambitious standards in terms of functionality, aesthetics and urban space quality.

1. BUS-VAO lanes, regulated under Section 35 in the General Regulations on Traffic Lanes in Spain, are lanes intended exclusively for passenger transportation in high-occupancy vehicles.

3.4.1 The BUS-VAO reversible lane

A key element in the success of the Moncloa interchange hub and for the mobility along the A-6 highway corridor, the BUS-VAO high-occupancy reversible lane was inaugurated in December 1994.

Given the constant traffic congestions to reach Madrid using this highway, the project received authorization in 1989. The goal was to build a main road made up of two reversible lanes that would be separated by concrete walls from the already existing three one-way lanes on each side.

The north-west highway in Madrid presented several specific characteristics. Madrid, a city with a high motorization rate, ample residential developments of medium-to-low density, and in the downtown contributed to the scenario by becoming very similar to American suburbs, where the

development of infrastructure intended solely for high-occupancy vehicles had already been initiated. The given scenario opened the possibility of turning the projected reversible lane into a BUS-VAO lane in 1991. The decision to opt for the BUS-VAO lane was also motivated by the poor articulation of the railway network with residential areas, the high environmental value of the area's natural spaces, and inadequate space to further expand highway A-6 in the future or to build alternative high-capacity lanes.

The project pursued two goals: on one hand, to improve the infrastructure service level and, on the other, to mitigate the seemingly unavoidable externalities caused by traffic congestion. This meant increasing average occupancy in private vehicles, which was below 1.3 at the time, while offering a modal transfer option for mass transport by improving operating conditions across bus lines.

The BUS-VAO system unfolds between Las Rozas and the transport interchange hub in Moncloa, thus extending along 16 kilometers that are divided into two sections. The lane for buses and vehicles with two or more passengers runs for 12 kilometers and is connected to the second section, which is solely used by buses and has direct underground access to the interchange hub bays. The system runs to downtown Madrid in the morning, and in the opposite direction in the afternoon.

The data collected shows that BUS-VAO lane users save between six and 15 minutes with respect to passengers using conventional lanes in the morning rush hour. The differences become wider around 8 a.m., when traffic congestion is more pronounced.

3.4.2 The Moncloa transport interchange hub

The first interventions in the area currently occupied by the transport interchange hub in Moncloa took place from 1985 to 1993, after adapting the surface area required to make room for the junction of all intercity bus lines.

During the second stage, from 1994 to 1995, the need to promote intermodality in order to boost public transport eventually led to building a larger underground bus station, whose functional distribution would speed up interchanges with the metro network.

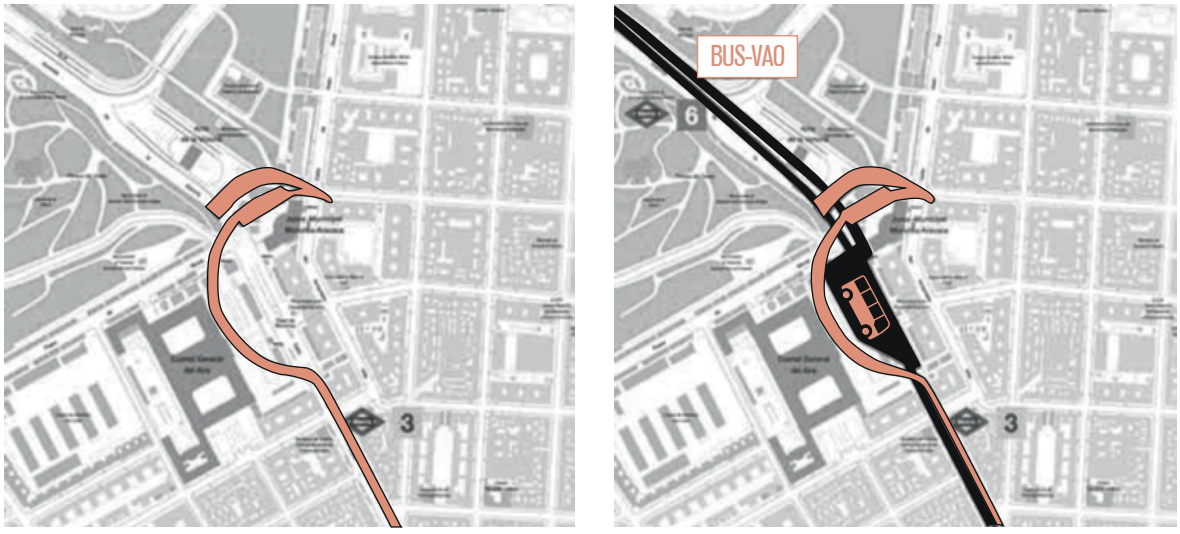
The Moncloa interchange hub in 1995

The intermodal interchange hub station in Moncloa was inaugurated in June 1995 and it was an immediate success, along with the rest of the measures implemented at the time. Launching the reversible BUS-VAO lanes resulted in remarkable reduced travel times, which encouraged a modal shift from private vehicles to buses. Furthermore, the launch of metro line 6 turned Moncloa into the station with the highest ridership rate in the network.

At the time, a budget financing model was adopted for the interchange, which translated into a noticeably tight investment. Project results proved very positive from the perspective of demand growth while reducing both surface bus traffic and travel times, both for users and transport operating companies.

Metro line 6 was closed during the first stage, and an underground bus station was built with direct access from the BUS-VAO lane.

Image 3.6. **Moncloa station in 1990 and in 1995, before and after the interchange hub construction**



Source: Transport Interchange Hub Plan by CMRT (2009)

Public transport demand along this corridor increased by 30% from 1995 to 2000. Combined with the growing population in the northwest metropolitan area, this fact caused the interchange hub to operate at nearly rush-hour congestion levels, which resulted into traffic difficulties on access roads to Madrid, delays in planned travel times, and excessive pollution levels. Furthermore, urban plans that were under development or that were about to be approved predicted a dramatic growth in mobility demand for the coming years. This emphasized the need to renovate and expand the existing facilities.

Renovation and expansion works in 2008

Renovation works conducted from 2005 to 2008 were aligned with the earlier project. First, the aim was to promote a modal transfer to mass transportation as the only viable solution seemed to be a reduction of both traffic congestion on access roads to Madrid and ensuing environmental problems. This required improving the passengers' perception of public transport by minimizing travel times and distances for the flow of passengers using the interchange hub, as well as improving signaling, the quality of facilities, and user overall comfort. This intervention also intended to improve the station's integration into its urban surroundings and the city as a whole, creating an architecturally appealing space, and keeping the thousands of daily buses from circulating on the surface.

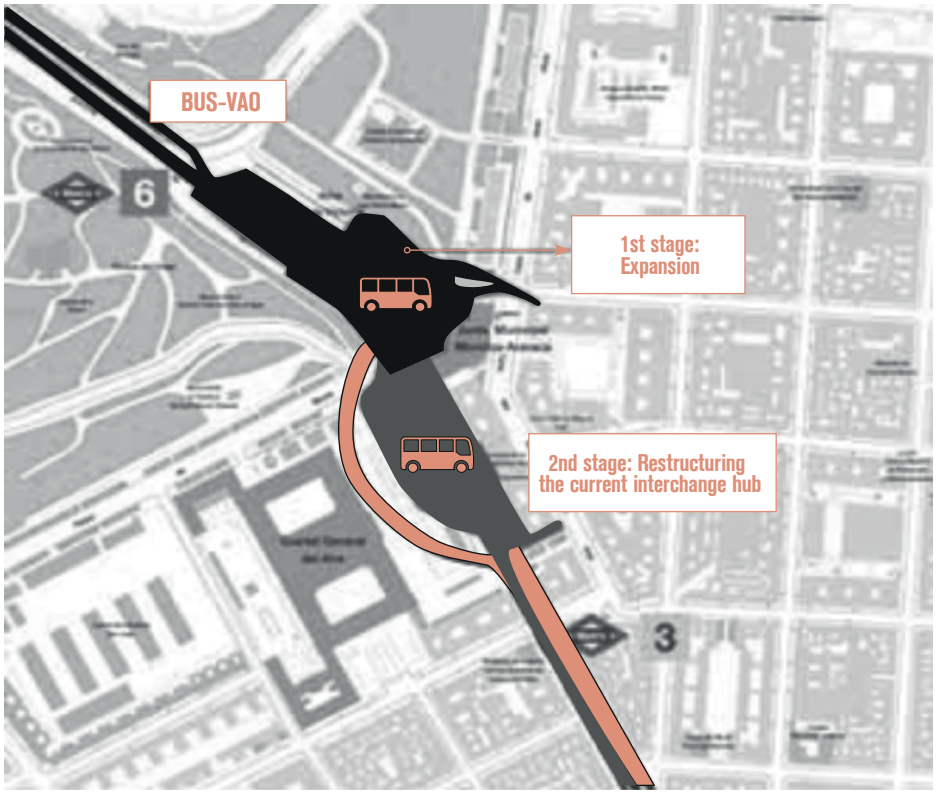
The growth in public transport demand combined with the higher number of users of the North-western highway called for a large increase in the capacity of some facilities, such as the number of bus bays, and the dimensions of metro platforms, access points or indoor areas. In addition, as part of the strategy to attract a larger number of users, renovation works included setting up retail stores that would create a more integral experience for all users of the interchange hub.

In summary, the actions comprised by the project can be narrowed down to the following:

- Relocate the parking lot for metro line 3 (for which Moncloa is the terminal station) to accommodate the expansion module of the underground bus station.
- Relocate metro line 3 station platforms to the same level as line 6 platforms to improve transfers between these two lines. This action also sought to enhance integration with the new underground bus station.
- Renovate works on points of access to the interchange hub from the BUS-VAO lane and the regular A-6 lanes.
- Improve walking access and pedestrian areas, enlarge retail store sectors and customize gas extraction removal and fire protection facilities.
- Provide air conditioning in waiting sectors around the bus bays to improve passenger comfort and keep away fumes and noise.

The need to establish such massive infrastructure and facilities in a very well-consolidated urban area meant that all works had to be conducted underground. This also meant that the existing physical elements actually set the limits that defined the geometrical layout of the area. The elements in question included, among others, the Moncloa District Board building, the gardens of the Rectorate building of Complutense University of Madrid, the lower exit gate for A-6, Parque del Oeste and Arco de la Victoria.

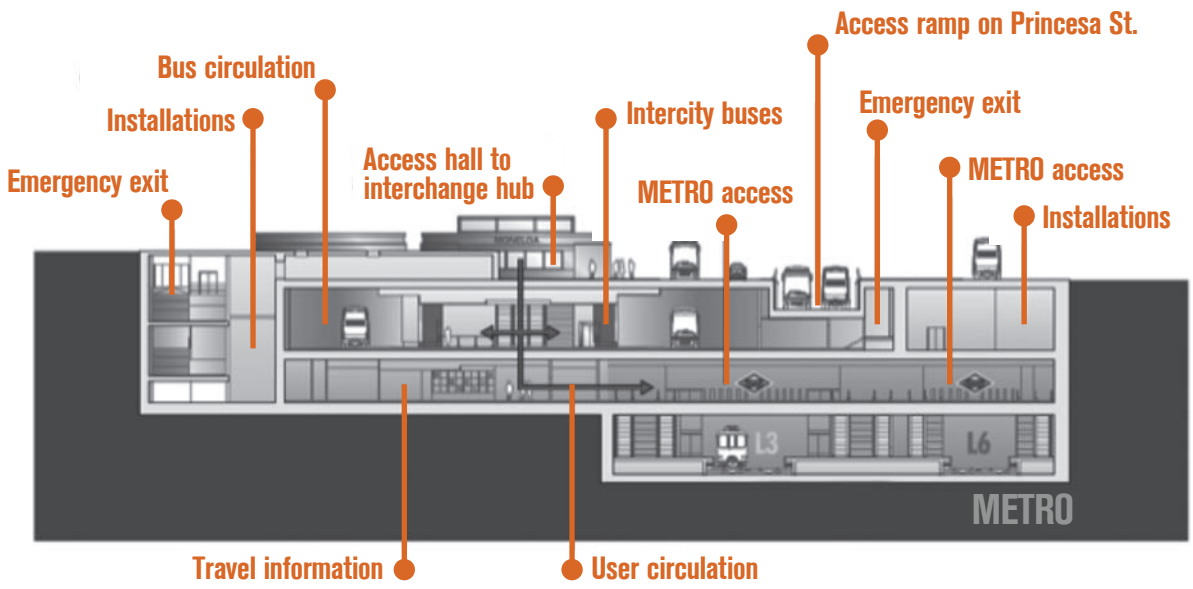
Image 3.7. **Renovation and expansion works at the Moncloa interchange hub in 2008**



Source: Transport Interchange Hub Plan by CMRT (2009)

These actions organized the Moncloa station into four different levels. Level 0 had all access entrances located at ground level. Level -1 featured the bus station, while level -2 had the metro-bus connecting hall and the retail area. Finally, the platforms for the two metro lines were located on level -3.

Figure 3.8. **Front elevation plan of Moncloa interchange hub in 2008**



Source: Transport Interchange Hub Plan by CMRT (2009)

Once the works were completed, the investment in facilities covering more than 46,000 square meters, 34 bays, and 1,000 linear meters of tunnels peaked to EUR 113 million. The Moncloa interchange hub joins 20 EMT urban bus lines, 55 intercity bus lines and a long-distance line. After restructuring works, the supply has jumped from 1,600 daily bus trips in 1995 to more than 4,100 trips today. Similarly, the figures for metro users at Moncloa station have leaped from 44,000 in 1995 to 110,000 in 2011.

3.5 Current contract framework and the decision to use the public-private partnership model

In the case of Spain, the strict limitations to deficit and the public debt derived from the Euro convergence criteria and the Stability and Growth Pact signed by the EU member states in 1997 met with the demand for budget balance or surplus as established under Law No. 18/2001 on budgetary stability.

Consequently, the Ministry of Finance was reluctant to authorize public works entailing such an investment that would impact domestic economy by exceeding the admissible thresholds of deficit and public debt.

Against this scenario, the need to continue investments and development in Madrid prompted the community, City Council and CRTM to attempt to overcome the crisis derived from the traditional budgetary model, which had been in place since the early XX century. With this purpose in mind, private companies were encouraged to fund and manage transport interchange hubs, as it had been the case until then with other types of infrastructure.

Back in 1995, there had been attempts to articulate an extra-budgetary funding mechanism to build the Moncloa interchange hub. However, lack of experience in the field, both on the domestic and global scale, created uncertainty as to the profitability of a concessional model for this type of infrastructure. At that time, reluctance to risk averted potential private investors from an opportunity, and so interchange funding was implemented with public funds.

Two years later, the concession for an interchange hub in Avenida de América was put out to tender. The Regional Government of Madrid played a leading role in the process, identifying, in the first place, the public stakeholders. Thus, Madrid City Council, CRTM and the regional government entered into an agreement where project roles and responsibilities were specified. At the time, there was only one bid, which was actually awarded the project. This first experience, however, proved key to pave the way to a new model for the provision of transport interchange hubs and to stimulate investment in the field by the private sector.

In 2000, the transport interchange hub in Avenida de América was inaugurated for the A-2 access highway to the city. A milestone in this type of initiatives, the project had been funded by and built with private capital under a concession agreement. The experience resulted in the granting authority acquiring enough know-how to face other similar concession agreements. It also translated into construction companies having the possibility of investing in a new productive sector. Years later, these public-private partnership models continued to materialize in the construction works of interchanges in Príncipe Pío, Plaza de Castilla and Plaza Elíptica, as well as the renovation works for the Moncloa interchange hub.

In August 2005, with an already maturing model, CRTM issued an open call for tenders to award a public works concession contract for the construction, maintenance and operation of the Moncloa transport interchange hub. EUR 100 million were earmarked for this project. The deadline for construction was 36 months. The renovated infrastructure was inaugurated in February 2008.

In this regard, a triple objective had been achieved: first, improve regional and urban mobility by putting into operation very much needed infrastructure, featuring functional and quality standards well above those achieved in 1995. Second, avoid additional burdens on the budget and an increased administration deficit. Finally, it brought the efficiency of the private sector to infrastructure management.

3.6 Tender process and contract award

Once the works inspections were completed, the official inauguration was held on February 15, 2008, two and a half years after announcing the call for tender. Over that period, a series of important events took place that left an imprint on the new infrastructure.

3.6.1 Pre-tender studies

Among the documentation provided in the tender process, a study was conducted in 2005 to assess the capacity limit for the Moncloa interchange hub's intercity lines. A concession feasibility study and the construction and operations draft project were also provided as part of the supporting documentation. These studies provided sufficient information to ensure fair and proper tender conditions.

Demand studies

The study regarding the passenger limit capacity and the survey conducted on the intercity lines of the interchange hub in Moncloa offered the necessary data to familiarize bidders with the infrastructure available at the time of the tender and, consequently, with the existing needs for restructuring and expansion works. The studies described transport demand, rush hours, services offered and average occupation levels. The information was broken down into means and lines of transport. The data confirmed the need for a new structure and expansion of the existing one. The figures also helped estimate the capacity required to offer services tailored to the actual demand at the time, as well as the latent demand expected over the course of the infrastructure's service life.

The report indicated that 112,000 passengers boarded or descended from intercity buses every day. In the case of EMT urban buses, the number was 66,000. Madrid Metro lines recorded 167,000 daily passenger movements. This meant a total of 345,000 daily trips made by more than 200,000 people using the interchange hub in Moncloa and its surroundings.

Pursuant to the specifications, the concessionaire collected a tariff fee for every passenger getting on or off urban and intercity buses at the interchange hub operated by CRTM. Initially, urban buses were not allowed entrance. Today only 20 lines have access with the rest restricted to the above-ground level. In order to calculate the revenue derived from passenger traffic, the figure of 112,000 daily movements generated by intercity lines was conclusive. On a yearly basis, this number escalated to 41 million movements a year.

Based on the data, demand estimates calculated more than 48 million users would pay the fare established in 2008, a figure that was included in the concessionaire's tender.

An increase in passenger levels was expected, reaching 98 million by the year that the infrastructure was to be returned to the government. The annual growth estimate was initially 2.2%, progressively stabilizing around 1.5% in the final years of the concession. However, the early economic crisis curbed the growth levels first seen after reopening the facilities. Traffic levels at the interchange hub in Moncloa continued to reflect the general trend in public transport in the region. In 2012, growth had reverted to levels recorded in 2000, representing a 13.8% decline from its peak in 2007.

Because the demand estimates described in the concessionaire's economic-financial plan had been made at an expansive moment in the economy, they proved to be too optimistic in practice. Consequently, they failed to articulate with the current scenario, even when the starting situation was known in some detail.

Feasibility study and construction and operation draft

Spain's concession law for public works (Law No. 13/2003) requires a feasibility study be conducted and delivered as part of the tender documentation prior to bidding. Before making any decision regarding public works construction and maintenance under a concession program, the granting authority must conduct a study explaining the purpose and motivation behind the works, outlining the essential features, the effect on demand and socioeconomic aspects, as well as an analysis of the concession's profitability. The study must include an assessment of the operational and technological risks involved in the construction and maintenance works, the required investment and indicate a financing model. The study must address urban or land-use planning, including an environmental impact study with a suitable corrective and protective measures. Finally, the document is submitted for public consultation and later redrafted based on the feedback gathered.

Pursuant to the steps described above, project development takes place once the feasibility study is approved and the granting authority approves the construction and operation draft. This document contains a report with details on the current needs and the social, technical, economic, environmental and administrative factors considered to fulfill the intended purpose, as well as a justification of the suggested solution. In the case of the Moncloa interchange hub, documentation included basic estimates, the necessary plans to specify works, and a budget for material execution that rose to EUR 100 million (VAT not included), which were all annexed to the tender.

Moncloa's study encompassed data regarding the regulations on use and operation of public works, establishing its funding mechanism and the maximum fare schedule that was to be enforced in the concession, analyzing the potential impact of the commercial area. After a new round of public consultation, which included the specifications of the environmental impact statement, the draft project was approved and awarded recognition as a public utility to the effects established under the concept of eminent domain.

The specific administrative provisions authorized the tenderer to incorporate amendments to the draft. After completing the appropriate assessments on

environmental impact, accessibility and elimination of architectural barriers, among others, the final construction draft project delivered by the consortium was accepted and incorporated into the text of the concession agreement.

3.6.2 Mechanism for awarding and evaluating bids

Legislation pertaining to contracts entered into with the granting authority and the specific administrative specifications sheet establish the mechanism for awarding a concession and the weighing of the evaluation criteria to be used.

Contract awarding procedure

Spain's concessions law states that the award be conducted either by open or restricted proceedings, always by means of a tender, or by negotiated proceedings.

Among the cases of tender application, the law states that, subject to contracting entity's approval, the project approved by the granting authority may undergo further technical improvements based on suggestion received from the bidders. This procedure is also allowed in particularly complex projects.

In the tender process, the contract award goes to the bidder with the most beneficial proposal, taking into account the criteria established in the bidding conditions, not just the lowest economic bid. On August 2, 2005, the call for tender for the construction, maintenance and operation of works for the transport interchange hub in Moncloa was announced.

Key data from submitted bids

The technical report on the submitted bids prioritized fare and term reductions as well as further improvements submitted by each of the participating consortiums.

Minimum bidding requirements were available in the specific administrative and technical specifications, as well as in the CRTM's Comprehensive Operation and Maintenance Plan for Transport Interchange Hubs. The basic project delivered by the granting authority entailed an estimated investment of EUR 100 million, excluding VAT. The maximum construction period was set at 36 months with a concession term of 35 years. The maximum fare per passenger, getting on or off the bus lines under the CRTM was set at EUR 0.18, including VAT.

Three groups submitted bids. Table 3.4 illustrates the specific organization and equity composition of each one of them. Table 3.5 summarizes the most significant parameters of the submitted bids, including budget, fares, concession term and speed to open the project to the public.

Table 3.4. **Structure of the consortiums participating in the tender of the interchange in Moncloa**

BID 1

Companies	Interest held
Itinere Infraestructuras	60.00%
Sacyr	20.00%
Castromil	10.00%
Transportes La Union	10.00%
Total	100%

BID 2

Companies	Interest held
Acciona	96.07%
Larrea	1.92%
Llorente Bus	1.05%
A. Herranz	0.96%
Total	100%

BID 3

Companies	Interest held
Ferrovial	50.00%
Grupo Enatcar	17.50%
Continental Auto	17.50%
Interurbana Autobuses	5.00%
J. de Castro	3.34%
F. Larrea	3.33%
Auto Periferia	3.33%
Total	100%

Source: Authors based on data by the CRTM.

Table 3.5. **Key bid data**

	Bidding base	Bid 1	Bid 2	Bid 3
Budget excl. VAT (in millions EUR)	100	97.223	88.446	98.300
Fare incl. VAT (EUR)	0.1800	0.1476	0.1800	0.1680
Concession term (years)	35	35	35	32
Construction period (months)				
Interchange expansion construction works	24	19	24	16
Current interchange renovation works	12	9	12	11

Source: Authors based on data by the CRTM.

Assessing the award criteria

The specific administrative specifications sheet established the criteria breakdown to be applied to the submitted bids. A summary of the criteria and the scores awarded is available in Table 3.6.

The financial bid and the economic-financial plan comprised half the total score. As for the criteria weighed to evaluate the economic-financial plan's strength, priority is given to the equity capital structure, the justification of investment analysis ratios, and the justification of estimates for all included revenue and expenditures.

The weight on job stability and employment quality accounted for 20 points from the total score. Improvements to the overall operation and maintenance plan were given 16 points, and the last 14 points were left for improvements to the construction project suggested by the bidder.

Bid evaluation and award results

The lowest bid fare was 18% lower than the tender base. It was proposed by a consortium led by Itínere Infraestructuras. The second bid did not contemplate any reduction for this item, while the bid by the Ferrovial group put forth a 6.66% reduction. Annual fare adjustments would be implemented pursuant to Consumer Price Index (CPI) over the term of the concession.

The group led by Ferrovial was the only one to bid a lower concession term of 32 years.

Table 3.6. **Award criteria**

AWARD CRITERIA	SCORE
Financial bid and economic-financial plan	**50 points**
Fare bid for riders of bus lines under the CRTM	25 points
Financial plan strength	20 points
Concession term	5 points
Employment quality and stability	**20 points**
Personnel stability	10 points
Percentage of company employees under indefinite contracts	10 points
Improvements to Comprehensive Service Operation and Maintenance Plan	**16 points**
Improvements to service operation plan	2 points
Improvements to maintenance, preservation and cleaning plan	2 points
Improvements to self-protection and service operation safety plan	2 points
Improvements to traffic management system	2 points
Improvements to installations' centralized technical management system	2 points
Improvements to service and environment quality control system	2 points
Improvements in follow-up plan	2 points
Improvements to PCL and PSCTM allocation and characteristics	2 points
Improvements to Project Implementation	**14 points**
Improvements to material quality in project implementation	5 points
Improvements to facilities' quality and features	5 points
Improvements in terms of traffic impact while conducting works	2 points
Construction period	2 points
Total	**100 points**

Source: Authors based on data by the CRTM

Among the investment analysis ratios contained in the financial plans delivered by the different groups, the project's Internal Rate of Return (IRR) after tax was 5.89% in the first bid, 5.62% in the second one, and 4.89% in the third one. The ratio between own and external resources across the bids were 19/81, 22/78 and 15/85, respectively.

It is worth pointing out that, in all cases, the CRTM deemed the revenue and expenditure structure coherent but poorly justified. The statement is further supported by its evaluation of the demand studies as "poor" for all three bids.

Evaluation of the remaining criteria and a score summary are reflected in Table 3.7.

Table 3. 7. **Score broken down by sections and bids**

	Maximum	Bid 1	Bid 2	Bid 3
Financial bid and economic-financial plan	50	37.00	11.00	24.26
Employment quality and stability	20	14.90	16.63	17.23
Improvements to the Comprehensive Operation and Maintenance Plan	16	12.00	6.50	10.00
Improvements to Project Implementation	14	13.80	1.00	7.55
Total	100	77.70	35.13	59.04

Source: Authors based on data by the CRTM

Finally, taking into consideration the aspects described above, the public works concession was awarded to the consortium composed of Itinere Infraestructuras, Sacyr, Castromil and Transportes la Unión, which together comprised the concessionaire for all purposes connected with the Moncloa transport interchange hub. The agreement between CRTM and the new concessionaire came into effect on March 1, 2006, marking the completion of the bidding process begun in August 2005. The most relevant milestones in the process are shown in Table 3.8.

Table 3.8. **Summary of milestones in the bidding process**

	DATE
Approval of specifications	July 2005
Invitation to open tender proceedings	August 2005
Provision on concession agreement award	January 2006
Public works concession agreement	March 2006

Source: CRTM

3.7 Contract design and risk allocation

In this item, it is worth focusing on how to adapt the concession model to transport interchange hubs. Firstly, to this effect, the economic-financial plan submitted by the winning consortium is analyzed, looking into the sources of revenue and expenditure, as well as other relevant parameters of the plan. Secondly, the distribution of risks between the parties is analyzed, going deeply into the mitigation mechanisms implemented in order to deal with the assessment of service standards and quality incentives provided by the agreement.

3.7.1 Characteristics of the economic and financial plan

The successful bidder's economic-financial plan justifies the fare and concession term tendered based on the estimated investment amount, the annual revenue projection, and the regular and special expenditure scenarios during the concession term.

The estimated budget for the construction is EUR 112.78 million, including 16% VAT with 31-month completion timeframe. The concessionaire's investments included not only the civil works and basic installations, but also all the communication systems, passenger information, traffic management, and centralized technical management.

The fare offered per passenger of the regular bus lines under the CRTM was set at EUR 0.1476, VAT included. The fare would be revised on an annual basis in line with the inflation statistics published by the National Statistical Institute.

The standard concession term, without possible extensions or reductions, is 35 years. It can vary between 30 and 40 years, depending on the actual achievements by the concessionaire during operation.

Based on an analysis of the estimated cash flows, the project's IRR after tax was set at 5.89%, in light of a baseline scenario in which the Consumer Price Index is stable at 2.95% during the entire project's life.

According to the forecast of the financial statement, the profit and loss account, and the analysis of the cash flows, the investment would be recovered in the concession term offered at a nominal interest rate lower than the Euribor type plus 200 basis points, as required by the specification set forth in specific administrative clauses.

Sources of revenue

The concepts that can be used as sources of revenue included in the economic-financial plan were: passenger traffic along regular bus lines, rental of spaces for complementary use, office rental, vending, placement of ATMs, and advertising.

In the financial model, the revenue from renting commercial areas was not part of the equation for calculating the profitability ratios and investment recovery.

The specific administrative specifications sheet required that this line item act as a buffer against uncertainty that may affect other concepts. In the case that revenue and expenditure expectations were met, this additional payment would be used to reduce the concession term.

The demand forecasts issued by independent traffic consultants were mainly based on urban developments in the north-west of the city and from the baseline valuation provided by the Consortium. These studies were classified as insufficient during the assessment of the bids and have been progressively separated from the actual evolution of the demand. This situation has been aggravated due to the protracted economic crisis.

Moreover, there are other important opportunities for the development of other business activities at the transport interchange hubs, including office space, ticket windows, passenger service, vending machines, ATMs, advertising, and other complementary services, such as mobile phone coverage. In many circumstances, and owing to high passenger flows, economic exploitations above EUR 50 per square meter per month are possible at these facilities.

The forecast included in the economic-financial plan regarding distribution by chapters of the revenue during the concession term is shown in Table 3.9:

Table 3. 9. **Expected distribution of revenue (in constant 2006 EUR, VAT not included)**

Type of revenue	2009 (thousands of EUR)	(%)	2040 (thousands of EUR)	(%)
Bus line traffic	6,593	84.0	12,426	90.8
Office rent	80	1.0	80	0.6
Advertising	900	11.5	900	6.6
Vending	150	1.9	150	1.1
ATMs	24	0.3	24	0.2
Telephone service	100	1.3	100	0.7
Total	7,847	100	13,680	100

Source: Authors based on the information in the concession economic-financial plan.

The revenue share from the traffic of bus lines was estimated to gradually increase during the concession term until it reaches 91%, when the infrastructure is transferred back to the granting authority.

Another relevant source of revenue in some concessions of transport interchange hubs comes from resident and non-resident parking lots. The foregoing is not applicable to Moncloa's case since the parking lots belong to the city hall, and therefore cannot be used for the concessionaire's profit. The advantage of resident parking lots is that they can be sold easily before the construction is finished. This can offer a significant source of funding, reducing the need for debt. Moreover, non-resident parking lots are a recurrent source of revenue, since they are useful for the segment of the population living in the metropolitan area. These people drive to the metro, park their vehicles there, and take the metro downtown in order to avoid city traffic. Non-resident parking lots are also essential when there is significant traffic along the long-distance bus lines.

Finally, it is important to highlight how different the fares provided by concessionaires are across the different transport interchange hubs. CRTM establishes a baseline fare for the tender, over which the lowest fare offered by the successful bidder is applied. This baseline fare varies from hub to hub, mainly due to the different investment volume and to the possibilities for market management that each one offers.

Table 3.10. **Fares obtained by the concessionaires during the first year of operation**

Transport interchange hub	First year of opera-tion	Investment (thousands of EUR)	Concession term (years)	Price per passengers in city buses	Price per passengers in intercity buses	Price per passengers in long-distance buses
Avenida América	2000	25.36	25	0.0600	0.0600	7.210
Píncipe Pío	2007	58.00	33	0.1500	0.1700	15.000
Plaza de Castilla	2008	118.32	33	0.0775	0.1600	13.230
Plaza Elíptica	2007	41.76	35	0.1404	0.1404	11.600
Moncloa	2008	112.78	35	0.1476	0.1476	(*)

(*) During the first year of operation there were no long-distance lines in Moncloa. In August 2009, the lines for Valladolid, Palencia, and León were transferred from the Bus South Station in Mendez Alvaro.
The specific administrative specifications sheet did not set forth a collection criterion. Therefore, the concessionaires were granted freedom to manage their market in line with the rest of their revenue-generating activities. In this regard, the additional benefits arising from this concept could be used to reduce the concession term.

Source: Authors based on information from the CRTM.

Characteristics of expenditures

Among expenditure items, a difference needs to be made between operating costs, which may include regular maintenance costs, and special costs for replacement of installations and services.

Operating costs include expenses related to the staff of the concessionaire, security and cleaning, as well as annual maintenance, power and water services, insurance contracts, and tax payments.

Once the interchange is in operation, every 10 years, the bidder will carry out special operations to replace facilities and services, for which EUR 7.5 million was earmarked, approximately 8% of the initial investment.

Regarding tax expenditures, the corporate tax when the project was carried out was equivalent to 35%. However, as of the 2008 tax reform, the tax obligations of the successful bidder decreased to 30%.

Regarding VAT, the concessionaire only collects the money for the administration. The financing required to face the temporary gap between output VAT and input VAT was taken into account.

Finally, upon expiration of the concession, a final payment must be made to cover the tax on property conveyance and documented legal acts in an amount equivalent to 4% of the net book value of the assets transferred back to the granting authority.

In the analysis of the cash flows, debt service and financial costs were also considered and will be analyzed later.

Table 3.11. **Operating costs of the concession expected for 2009 (in constant 2006 EUR, VAT excluded)**

	Operating costs in 2009 (thousands of EUR)	(%)
Personnel expenses	685	17.5
Cleaning, security and maintenance	760	19.4
Power service expenses	1,556	39.8
Water service expenses	55	1.4
Insurance	305	7.8
Taxes	548	14.0
Total	3,909	100

Source: Authors based on the information in the concession economic-financial plan

3.7.2 Risk allocation and mitigation mechanisms

A proper definition of the outline of risk distribution proves essential, both for the proper functioning of the hub concession and for protecting the financial position of the independent administrations. Law No. 13/2003, in effect when the tender of the Moncloa hub was awarded, and the specific administrative specifications sheet of the project established that the agreement was entered into at the concessionaire's risk, not including Force Majeure—catastrophic natural hazards or severe public disruptions—, and reasons directly attributable to the granting authority of the concession. In this regard, the granting authority accepts the political risk of any disruption of the legal framework that could affect the economic balance of the concession.

The concessionaire assumes other risks and liabilities related to the hub's construction, financing, public service management, and maintenance. In particular, the specifications explicitly stated that the assumption of risk related to how the passengers' demand evolved in the lines of the hub that did not depend on CRTM, the economic activity from renting the commercial spaces, and the risks entailed in the evolution of financial circumstances. These risks were partly reduced through swap agreements, which will be explained below. Similarly, the specifications established a system to mitigate the demand risk by means of the possibility to extend the concession term, which will also be explained further in this text.

The specific administrative specifications sheet of the concession required that the concessionaire take out insurance policies to cover, among others, the risks related to operational civil liability, environmental pollution, directors and senior managers, and all risks related to property damage —civil works, installations, furnishings, machinery, and electrical, computer and IT devices— and other risks related to construction, such as fire, explosion, theft, pillaging, inexperience, negligence or vandalism.

Moreover, the concessionaire had to assume the risk of availability, which refers to the consequences of not providing the service under the agreed standards. Therefore, the fares that the granting authority receives would be subjected to the compliance of the quality conditions set forth in the agreement. Specifically, the Comprehensive Operation and Maintenance Plan for Transport Interchange Hubs, under the CRTM, establishes parameters for quality and service capability assessment, as well as penalties for the breach of contract. This assessment was carried out by CRTM directly.

In regard to demand risk, which represents a key element for the concession of this type of infrastructure, the granting authority assigned the study of the baseline situation of the Moncloa hub, operating since 1995. This study was submitted to the bidders as part of the tender documentation. This aim of the study was to homogenize the economic-financial plans submitted and verify whether the scenarios presented were real.

At the beginning, this risk was transferred to the concessionaire; but as soon as the amended project and its construction cost overruns were approved, the granting authority took the risk back. The reason behind this

was the need to ensure a fixed payment for passenger traffic for the CRTM bus lines. As such, demand flows were irrelevant for the concessionaire's profit. We will expand on this in the section about contract management and economic balance.

The classical theory of distribution of risks states that risks must be assumed by the agents who can better manage them. However, in practice, it is very hard to identify the aspects of the risk that the concessionaires can face and set them apart from the ones that they cannot take on. In addition, the structure of infrastructure concessions involves key fixed costs, whereas a significant proportion of investments are related to sunk costs. Once these costs have been paid out, it is hard to recover them for another purpose. For these reasons, implementing measures intended to partially reduce certain risks and, particularly, the risk associated to the demand is occasionally justified.

Key risk mitigation mechanisms

In order to establish an effective concession structure, using certain risk mitigation tools is essential. This section presents the two key mechanisms implemented in the concession agreement for the Moncloa interchange hub. In any event, risks exist regardless of the mechanisms used to mitigate them.

As described above, the main source of project revenue is passenger demand. Compared to passenger traffic on intercity bus lines, the other activities are almost irrelevant. Because the fare, which was set at the time of the award, is linked to the inflation index, revenue flows were almost exclusively generated by the traffic of passengers through the interchange hub.

Moncloa Station began operating in 1995. As such, there was a well-established history of demand, which made it possible to outline the baseline situation and make substantial projections. However, it was necessary to work on clauses in order to reduce traffic risk. A concessionaire cannot control the wide range of factors that determine the traffic volume in public transport networks, many of which are macroeconomic, such as the unemployment rate or the impact on transport prices based on fuel costs. Therefore, many granting authorities have suggested to implement these risk mitigation mechanisms in relation to demand. Even though they may not eliminate uncertainty completely, they do offer improvements in financial conditions given the positive effect on lenders' perception.

Only two months before the interchange hub began operating, an addendum to the concession agreement was signed. This addendum deals with the evolution of risks related to the demand of passengers of CRTM bus lines. This clause ensured a revenue from a minimum traffic and, therefore, the financial backers made sure that there was some fixed revenue to pay the debt. This was added to an already existing clause in the tender agreement, which set a variable term for the concession according to the actual earnings that the concessionaire obtained and to the contractual arrangements of the contract's economic equilibrium.

This mechanism of a variable term means that, in case traffic was higher than expected, the concession might come to an end before the expected

due date, whereas if traffic was lower than expected, the concession might end past the expected due date. In this regard, the term plays a buffer role in relation to demand risk. Therefore, even though the basic concession term was one of the concepts offered in the tender, based on the specific administrative specifications sheet, the term could be reduced or extended by up to five years, as long as the final term was no more than 40 years. To this effect, the following formula was determined:

$$I(1+r)^n = \sum_{i=1}^{n} S_i \times (1+r)^{(n-i)}$$

Where:
I: is all the investment made at the time the service started operating.
n. is the number of years of service needed to recover the investment.
r: is the discount rate —which should be equal to or lower than the Euribor at one year plus two percentage points.
S: is the annual balance—net profit + repayment + depreciation—as a result of the operation.

The anticipated termination date of the concession will take place when the total amount of the updated annual balances is higher than the first segment of the formula.

This mechanism reduces the impact of poor traffic estimates on concessionaires. It reassures creditors and reduces the need for public guarantees. This clause does not increase the debt service coverage ratio, which is why the additional guaranteed demand previously explained was implemented. In any event, the financial backers also valued the implications of this project guarantee.

Considering the present macroeconomic situation, the general decrease in traffic has shown the problem arising from this last clause, which means a significant burden for CRTM when it has to cover the guarantees.

3.7.3 Service standards and quality incentives

The enactment of the concession's law (Law No. 13/2003) drove the introduction of quality incentives to concession agreements, particularly in transport projects. Quality seemed to be the high-impact factor on how passengers chose to travel.

Following this assumption, during the tender stage of agreements associated with the construction and management of the transport interchange hubs, attention was focused on improving the quality attributes of facilities and operating systems, assessing criteria such as the improvements to the Comprehensive Operation and Maintenance Plan and improving the operating project. Modifications were considered for the operating, maintenance,

cleaning, and environmental management plans, setting higher standards for the installations and materials. Moreover, surveys and other measures for collecting different baseline pieces of information were recommended.

On the other hand, in the concessions' specifications, several clauses were set to define the implementation of an annual quality audit, as well as another scheme to audit operations every two years. These measures ensured that every aspect of the operation was monitored.

Taking into account that several factors contribute to how quality is perceived and verified, target quality indexes are usually included in concession agreements. These indexes, when linked to rewards and penalties, are meant to encourage the concessionaire to deliver high-quality service. Based on this concept, a penalties system was implemented when the quality standards were not complied with, available in agreements for transport interchange hubs, especially in the Moncloa interchange hub project.

Quality indexes

Implementing quality indexes in agreements that could be assessed objectively always poses a challenge. In connection with the case that is examined in this chapter, the Comprehensive Operation and Maintenance Plan for Transport Interchange Hubs established factors that would be used to monitor the maintenance and the efficient regulation of the infrastructure by the concessionaire.

In order to assess service quality and capacity, some indexes were defined: one was related to system availability; another one related to reliability; a third index related to service functionality; and, finally, an index related to the market image linked to passenger service.

The system availability index links the actual operating times to the ones previously scheduled. The reliability index measures the frequency of incidents of damage in the communications, information, signalization and interchange hub safety systems. Service functionality is assessed by means of compliance with departure times. Market image is assessed according to the general aspect of the interchange hub: lightning, temperature, noise, the condition of information panels, stairs, elevators, and state of cleanliness of facilities. In addition, each index has parameters that make it possible to outline in greater detail the quality goals to achieve. The concessionaire calculates these indicators on a monthly basis. The results are included in the report on quality assurance of the interchange hub's service. This report is sent to the granting authority, explaining the internal procedures for quality control and corrective measures taken to repair any defects detected.

Failure to comply with the required standards entailed the enforcement of sanctions provided in the follow-up plan. This plan sets forth the CRTM's supervision tasks, and establishes the failures subject to penalty based on varying degrees of severity. Serious violations could result in the termination of the agreement or a sanction of up to 0.2% of the project budget, whereas minor violations would involve half of that amount.

Complementary measures

Apart from providing the required studies to estimate the quality indexes above, the Moncloa interchange hub concession agreement required that the concessionaire conduct a user satisfaction survey.

The objective of conducting these surveys on a regular basis is to establish the value that passengers assign to the comprehensive management of the interchange hub, as well as aspects to improve in the short term, such as signalization, information about the service, air quality, commercial area, cleaning of facilities, comfort of the waiting areas, security against violence and theft, and convenience of transfers. All these aspects impact passengers' perception of the interchange hub. The analysis of the quality survey results falls outside the scope of this section. However, it is worth highlighting that the vast majority of users surveyed in 2009 expressed that they were satisfied or very satisfied with the service.

Law No. 13/2003 implemented the so-called "progress clause," focused on achieving quality levels in infrastructure based on available technology to address new social requirements. This provision required that the concessionaire implement the necessary measures to maintain public infrastructure, pursuant to the technical, environmental, and safety provisions in step with technological progress, without any legal claim to compensation, unless there were significant alterations in the economic equilibrium of the agreement.

The initial uncertainty regarding the interpretation of this clause led to setting more precise boundaries in the agreement's specification. Its enforcement was limited to the maintenance and management of transport services that involved significant technical and technological changes. In particular, after the corresponding rules were passed, compliance with these measures was compulsory for any of the aspects related to the regular and special maintenance, accessibility, assistance in the event of an accident, fire protection and safety, management of public domain, environment, and traffic management. In these cases, the concessionaire was entitled to request an extension of the concession term from the awarding authority, in order to cover the economic costs of the works in order to implement the corresponding measure.

On the other hand, the service quality assurance plan compelled the concessionaire to implement and maintain a quality management system pursuant ISO standards 9001, 9002 and 9003, as well as an environmental management system pursuant ISO standard 14001. The concessionaire was also required to obtain the European environmental management certificate (Eco-Management and Audit Scheme—EMAS), as well as any other certification that verifies the implementation of these measures. The granting authority has the right to audit the system at any time.

The establishment of an Interchange Hub Quality Committee, with the representation of the granting authority, the concessionaire, and workers, as well as the users, neighbors, companies, and the nearby shops, complemented the aforementioned actions.

3.8 Contract management and economic balance

The concession agreement of the Moncloa interchange hub in Madrid was implemented under a BOT (Build, Operate, Transfer) model, that is, the concessionaire is accountable for the construction and operation of the infrastructure during the concession term. CRTM provided a basic execution program throughout the bidding process, however the bidders were allowed to implement corrections and improvements in order to prevent potential flaws in the project which could be claimed as part of the agreement's economic-financial balance.

This section analyzes different aspects related to the management of the agreement, focusing especially on the follow-up plan and the supervision tasks carried out by the granting authority, renegotiation assumptions, and causes and conditions for termination of the agreement.

3.8.1 Ex-post monitoring of compliance with the concession contract

As mentioned in the previous section, the implementation of quality incentives to the concession agreement required the definition of monitoring systems of the compulsory standards.

Even though the granting authority's supervision was focused on verifying the indicators and the certifications of compliance with ISO standards related to quality and the environment, the follow-up plan, included in CRTM's Comprehensive Operation and Maintenance Plan for Transport Interchange Hubs, established the roles of the granting authority regarding supervision tasks to the concessionaire. In this regard, it collected a wide range of measures intended to ensure the appropriate fulfillment of the requirements in the agreement.

These measures had an effect on all the management levels by setting an audit schedule and the penalty system for failure to comply with the operating, maintenance, and self-protection plans. The provisions included in the agreement involved supervision tasks during the entire project's term, which also meant that private partners had to cover the incurred expenses.

The direct follow-up of the operation and the general use of the interchange hub, in all aspects related to regular and discretionary services for passengers, depend on CRTM, which is the highest authority in planning and regulation of traffic and service of the interchange hubs. Among other rights legally assigned to the granting authority, CRTM is in charge of the annual approval of the applicable fares to the operating entities, the approval of any change to the construction or operating characteristics of the interchange hub, the monitoring of the maintenance of the installations and equipment pursuant to the specifications and the regulations in effect, imposing penalties, the interpretation of agreements and their amendments due to public interest.

All supervision system related to the operations is based on effective communication of the information between the interchange hubs and CRTM. The monitoring of information in real time is complemented by the activity reports that must be submitted by the concessionaire on a regular basis. These reports deal with incidences pertaining to the system, claims received from passengers and operators, statistics on the functioning of the installations, measures of basic quality parameters, detection of safety problems, and information about accidents.

Of all these pieces of information, the traffic data registered in the interchange hub is the most relevant. The granting authority uses this information, also provided by the concessionaire, to calculate the payment of guaranteed minimum revenue and, at the same time, to detect possible violations, which may be penalized. Therefore, in order to avoid manipulation of this information, the specifications indicate periodic inspections, along with random inspections.

In addition, this information is of great interest to public transport authorities from Madrid for their urban planning tasks. This information helps to improve management indicators, adjust the supply of capacity based on demand, and fulfill the goals of transport operators in relation to quality of service and to users' perception.

The frequency of the reports—monthly, quarterly, or annually—submitted by the concessionaire varies depending on the type of report. Some of the annual reports are the summary of maintenance and inventory, an accounting audit, a quality audit, a report on customer service, and a summary of bus and passenger traffics. On a quarterly basis, the granting authority receives a report on service quality assurance and a report on traffic statistics.

The financial audit must contain a summary comparing the actual data of the fiscal year with the parameters established in the initial model provided at the beginning of the project, in order to verify the evolution of the economic-financial plan of the concession. Finally, on a monthly basis, the concessionaire must submit a summary of the daily schedules and registration of vehicles entering into and leaving the facility, daily summaries of incidences and accidents, a report on the activities for preventive and corrective maintenance, as well as a report including claims and complaints.

The representative of the granting authority also performs activities related to the economic-financial monitoring of the concessionaire, which additionally includes monitoring the financial issues that may occur. The concessionaires are bound to collaborate by submitting information about the status of their assets, and by granting the granting authority's representatives free access to the facilities when they perform their jobs related to general service inspection.

Regarding the penalty system for failure to comply with their contractual obligations, a classification is provided based on the seriousness of the violation. Violating a clause in the specifications would result in an economic penalty, regardless of the obligation to compensate for damages caused, which could lead to enforcement of the corresponding share of the guarantee, even leading to the termination of the agreement.

Finally, five years before the concession expiration date, the granting authority is expected to assign a technical auditor who will continuously monitor the state of the infrastructure, the assets, and the installations, in order to verify that the concessionaire delivers them in good condition and well-preserved.

3.8.2 Economic balance and contract renegotiation

In the case of incomplete contracts, such as infrastructure concessions, it is not possible to control in advance all the circumstances that may arise. In this sense, renegotiation might in some circunstances be a positive aspect for these agreements. The renegotiations driven by technological changes, force majeure or other unforeseeable events can benefit both parties of the agreement. However, renegotiations arising from excessively optimistic bids relate more to an inefficient tender mechanism, deficiencies in the design of the agreements, or the governments' tolerance to aggressive offers. In these cases, the result tends to go in detriment of social welfare, which means loss for the users and taxpayers.

Sometimes the contracting entities are not strict enough in this respect, and the bidders usually hope that they can renegotiate, which involves the subsequent hope for acceptance of offers that are unrealistic. Ultimately, this leads to a distortion in the tender process. These renegotiations have generally materialized in a rise in fares, an extension of concession terms, or an increase of contributions and public guarantees.

The concessions law sets forth that the granting authority must restore the economic balance of the agreement when the concessionaire cannot control the situation, and therefore the viability of the project can be significantly affected. The balance can be restored in favor of both the concessionaire and the granting authority for an even distribution of risks and benefits. It is important to highlight that, in the Spanish concession model, the principle of risk and peril is complemented by the principle of offsetting economic-financial equilibrium of the agreement. The former makes it possible to introduce an efficient competition among the bidders and removes the burden of investment from the granting authority's balance statement; whereas the latter partially limits the risks that the concessionaire takes, avoiding that private equity be discouraged from participating in these significant investments.

The scenarios that the Law contains for economic-financial equilibrium of the agreement include, but are not limited to, changes by the granting authority in the operating conditions of the work due to public interests (*ius variandi*). In this regard, it also contains the possibility for rebalance in the case of Force Majeure that significantly disrupts the concession's economy, and when the granting authority, without directly changing the purpose of the agreement, indirectly changes the services agreed on, with more onerous conditions for the concessionaire (*factum principis*), as it usually happens in such cases when the infrastructure, the purpose of the agreement, is duplicated. All this is tied to scenarios provided in the concession agreement.

The Spanish law grants the granting authority the power to make changes of this nature to agreements, when justified by the public interest. While the Moncloa Station was under construction, an amendment to the project for expansion and reconstruction was approved. This amendment, which was approved in April 2007 and, justified by the public interest, led to an increase of EUR 19.4 million (VAT included) in the construction investment, which meant that the investment increased 17.2% when compared to the original bid. One of the reasons given to justify the changes was the need to comply with the environmental rules of Madrid and with the technical specifications on the air quality index. Some of the emergency facilities were also expanded and protection measures against fire which had not been initially planned were also implemented. Moreover, the interchange hub was restructured in order to feature the required facilities, finishes, sectioning, accessibility, and signalization, so that it was adapted to the functionality, comfort and quality conditions required for the interchange hubs of the 2004-2007 Plan. Some individual changes were also requested by Madrid City Council. In addition, the awarding consortium suggested some amendments to the baseline project by the granting authority. They suggested alternative access tunnels to the interchange hub which involved a lower budget and better functionality. This partly reduced the need for a new investment.

In order to restore the economic-financial balance of the agreement, the fare increased from EUR 0.1476 per passenger (VAT included) to EUR 0.20 per passenger. In order to keep this increase from affecting users by an increased bus ticket price, CRTM and the bus operators jointly faced that increase. The 54.9% increase was significantly higher that the percentage increase of the target investment of the amendment to the project. Moreover, the new fare was 27.1% higher than the cheapest fare offered in the tender process, which was EUR 0.1800 per passenger. On the other hand, as Table 3.12 shows, it is important to highlight that the cost overrun during construction and the equilibrium periods in the form of fare increases and term extensions were not the exception but the rule in concession agreements of transport interchange hubs in Madrid.

Although fares increased, the discrepancy between the real traffic registered in the lines under the CMRT and the demand estimates caused that additional guarantees be required in order to keep the economic-financial balance of the concession. In this regard, the complementary Addendum to the concession agreement was signed in December 2007. This Addendum incorporated a clause into the agreement regarding the evolution of demand risk of the passengers in the lines depending on the CRTM.

This annex to the agreement changed the specific administrative specifications sheet related to the principle about the concessionaire's risk and peril. The evolution of the demand of the passengers of the interchange hub in the lines not depending on the CRTM was at the concessionaire's risk and peril.

Table 3.12. **Cost overruns and renegotiations of fares and terms in Madrid's transport interchange hub concessions**

	Avenida de América (*)	Príncipe Pío	Plaza de Castilla	Plaza Elíptica	Moncloa
Fee per passenger in city buses (EUR)	0.0600	0.1500	0.0775	0.1404	0.1476
Renegotiated fee (EUR)	0.2749	0.2667	0.0825	0.1990	0.2287
Percentage increase (%)	-	77.8%	6.5%	41.7%	54.9%
Fee per passenger in intercity buses (EUR)	0.0600	0.1700	0.1600	0.1404	0.1476
Renegotiated fee (EUR)	0.2749	0.2667	0.2000	0.1990	0.2287
Percentage increase (%)	-	56.9%	25.0%	41.7%	54.9%
Fee per passenger in long-distance buses (EUR)	7.210	9.000	13.230	11.600	(**)
Renegotiated fee (EUR)	10.380	11.060	16.600	11.600	-
Percentage increase (%)	-	22.9%	25.5%	0.0%	-
Investment budget (MN EUR)	25.36	58.00	118.32	41.76	112.78
Investment made (MN EUR)	+45.00	67.40	143.90	54.50	132.19
Percentage increase (%)	-	16.2%	21.6%	30.5%	17.2%
Concession term (years)	25	33	33	35	35
Renegotiated concession term (years)	40	-	-	-	38
Guaranteed demand	Yes	Yes	Yes	Yes	Yes

(*) The work related to restructuring and adaptation to the new standards of the interchange hub in Avenida de América finished in September 2014. The investment increased to EUR 45 million. http://www.abc.es/madrid/20140916/abci-intercambiador-avenida-america-vuelve-201409161414.html. The increase of the fare fee to face the new investment was complemented by the extension of the concession term to the maximum term permitted by law. In this regard, the initial agreement was signed on June 12, 1998, and the concession term would expire on June 12, 2038.

(**) During the first year of operation, there were no long-distance bus lines in Moncloa. In August 2009, the lines bound to Valladolid, Palencia, and León were transferred from the South Bus Station in Mendez Alvaro. The specific administrative specifications sheet did not set forth a collection criterion in this regard. Therefore, concessionaires were free to commercially manage them in line with the rest of their business activities. The long-distance bus operator that is operating today in the interchange hub, Alsa, pays a fixed fee per passenger. In 2013, the revenue from this item was EUR 42,464.57, which is not truly representative proportionally.

Source: Authors based on information from the CRTM.

The concessionaire also assumed the risks associated with the financial conditions of the market during the concession term, the risks related to the rent of commercial shops, and all responsibility arising from the construction of the interchange hub and the service operation. However, the granting authority assumed the demand risk in the lines depending on CRTM. In return, the concessionaire was compelled to provide the necessary service so that the interchange hub could offer optimal service to the passengers during the entire concession term. Risk distribution was highly relevant since the demand in CRTM lines represent a greater share of the concessionaire's revenue.

CRTM ensured a minimum annual demand of 57.5 million passengers from 2008 for all CRTM-dependent lines. This demand would start to increase starting in the fifteenth year of operation at a variable rate between 0.5% and 1.9%. The guaranteed demand at the end of the concession would be 76.7 million passengers. At the end of each fiscal year, the difference between the minimum passenger traffic guaranteed and the actual passenger traffic would be calculated. Transport operators would pay the fare corresponding to the actual number of passengers monthly; and on an annual basis, the granting authority would cover the difference up to the minimum guaranteed traffic, acknowledging some flexibility in order to avoid treasury tensions in the debt service and payment to vendors and subcontractors of the concessionaire.

In this regard, the mechanism for the guaranteed minimum revenue increases project viability, since it allows the concessionaire to obtain a minimum amount of resources each year. This is certainly important for the creditors who value the credit standing of the project each year. However, as it will be mentioned later, this guarantee currently involves significant, recurrent disbursements from the granting authority, which ultimately affect every taxpayer.

3.9 The concessionaire company and project financing

After analyzing the aspects related to the management of the agreement, this section first deals with the evolution of the shareholders' participation of the concessionaires of transport interchange hubs in Madrid and, specifically, in the Moncloa interchange hub. Secondly, the aspects related to the financing of the project will be analyzed.

3.9.1 Evolution of the shareholders' interest in the concessionaire company

When in August 2005 the call for the open procedure to award the concession agreement for public infrastructure to build, maintain and operate the Moncloa transport interchange hub was published, one of the key determinants to select the bid was equity structure of the consortium formed. The bidders had to certify that there was a mandatory participation of one or more companies regularly operating passenger transportation and that, either individually or jointly, had operated more than a hundred buses in the course of the last three years.

Going from the regular stations to the new interchange hub model posed a great challenge. At the beginning, the transport operators' full support seemed necessary to ensure project's success, so the decision was made to get operators directly involved in the interchange hub management. However, once they had been transferred to the new infrastructure, its superior functionality allowed the model to consolidate rapidly. In turn, this meant that transport operators could gradually stop being concessionaires' shareholders. By then, the transport operators had already made their contributions to the management system. Moreover, the nature of their business activity was very different from that of infrastructure operation. Consequently, CRTM did not object to these changes in the participation of the concessionaires.

In this context, the participation of concessionaires immediately after awarding the concession was characterized by a high participation of infrastructure construction companies, bus operators, and, to a lesser extent, infrastructure managers and concessionaires. Table 3.13 shows the shareholders of the concessionaires of transport interchange hubs in Madrid, as they were presented in the awarded offers of the concession agreements.

As aforementioned, once the transport interchange hubs were awarded and they started operating, the bus operators promptly sold their shares. As such, the present shareholder structures are dominated by the management and infrastructure concessionaire subsidiaries of the leading construction groups. In addition, with the construction phase completed and most of the risk eliminated, some investment funds expressed interest in acquiring a stake in the infrastructure works, which increased the revenue of some of the interchange hubs. Table 3.14 shows the current shareholders of the concessionaires of transport interchange hubs in Madrid.

Itínere Infraestructuras, a concession company owned by Grupo Sacyr, and the internal construction department held 80% of the equity stake in the Moncloa transport interchange hub after the award. The other 20% was held by bus operators. Today, Sacyr Concesiones holds 51% of the shares, and the other 49% is held by Intermadrid Holdings Coöperatief, a Dutch venture capital fund operated by Eiser Infrastructure, a British fund manager.

Table 3.13. **Initial shareholders of the transport interchange hub concessionaires**

Transport interchange hubs	Initial shareholders	Share (%)	Company's business
Avenida de América	Continental Auto	25.5	Bus company
	Trapsa	25.5	Bus company
	ACS	20.5	Construction
	Ferrovial	20.5	Construction
	Argentaria	5.0	Banking entity
	Grupo Cobra	2.0	Construction and service management
	Prointec	1.0	Engineering Consultancy
Príncipe Pío	Vías y Construcciones	55.0	Construction
	Blas y Cía.	30.0	Bus company
	Grupo Cobra	10.0	Construction and service management
	Continental Auto	5.0	Bus company
Plaza de Castilla	Interurbana de Autobuses	34.0	Bus company
	Continental Auto	22.0	Bus company
	Dragados	20.0	Construction
	Grupo Enatcar	8.0	Bus company
	Herederos J. Colmenarejo	8.0	Bus company
	Grupo Cobra	5.0	Construction and service management
	Trapsa	3.0	Bus company
Plaza Elíptica	Sacyr	80.0	Construction
	Castromil	10.0	Bus company
	Transportes La Unión	10.0	Bus company
Moncloa	Itínere Infraestructuras	60.0	Infrastructure management
	Sacyr	20.0	Construction
	Castromil	10.0	Bus company
	Transportes La Unión	10.0	Bus company

Source: Authors based on information from the CRTM.

Table 3.14. **Current shareholders of the transport interchange hub concessionaires**

Transport interchange hubs	Initial shareholders	Share (%)	Company's business
Avenida de América	Desarrollo de equipamientos públicos-Grupo ACS	100.00	Infrastructure management
Príncipe Pío	Desarrollo de equipamientos públicos-Grupo ACS	70.0	Infrastructure management
	Blas y Cía.	30.0	Bus company
Plaza de Castilla	Interurbana de Autobuses	54,0	Bus company
	Desarrollo de equipamientos públicos-Grupo ACS	37.0	Infrastructure management
	Herederos J. Colmenarejo	8.0	Bus company
	Grupo Enatcar	1.0	Bus company
Plaza Elíptica	Sacyr Concesiones	51.0	Infrastructure management
	Intermadrid Holdings Coöperatief	49.0	Investment fund
Moncloa	Sacyr Concesiones	51.0	Infrastructure management
	Intermadrid Holdings Coöperatief	49.0	Investment fund

Source: Authors based on information from the CRTM.

3.9.2 Project financing

The financing of the project must be contextualized in the economic situation. The financial conditions expected when the awarded bid was presented in 2005 and the financial conditions by the close of the fiscal year in 2009 were significantly different, presenting a significant mismatch with the original economic-financial plan.

Initial financing for the construction of the works was comprised of several corporate loans signed by Grupo Sacyr, which served as bridge loans. They were later refinanced according to the conditions shown in Table 3.15.

In 2009, a syndicated loan agreement was signed with three international entities that granted the loan jointly, divided 33.33%: Banque Nationale de Paris (BNP), Royal Bank of Scotland (RBS), and Banca Infrastrutture Innovazione e Sviluppo (BIIS). Severely limited by the financial crisis that began at the end of 2008, there was a considerable difference between the projected financing and the financing ultimately committed to the project.

On the other hand, after approving the amendment to the project, the fare equilibrium, the extension of the concession term, and the guaranteed demand, it became necessary to correct the economic-financial plan. The new plan included a 30-year financing, with relatively low interests and commissions, with a five-year grace period to start repaying the loan. Upon this scenario, it was also expected that the Debt Service Coverage Ratios (DSCR) would be higher than 1.20 every year, and that the internal rate of return for the shareholders in the baseline scenario would be at least 7.24%. However, the financing in the end was for a 10-year term; spreads and bank fees were almost double, and the financial backers' requirement that they use their own resources increased 54.5% with respect to initial estimates.

Finally, the total amount including the loan and their own resources was EUR 112 million, which matched the investment made in the interchange hub, not including the 16% percent corresponding to VAT in 2009. The EUR 20 million corresponding to VAT were refinanced by means of a VAT loan agreement, different from the debt related to the Project Finance. Through this agreement, the financial entities granted the concessionaire the financing needed to face the payment of the accrued VAT during the building of the infrastructure. This loan would be repaid with the returns arising from the input VAT of the investments and returned by Public Finance. Therefore, this part of the financing, which involved very low risks, had a financial cost highly lower than the rest of the debt.

The risk associated to the project's financing had been transferred to private partners. Since the external financing, on one hand, and the fares and initial shareholders, on the other hand, shared the same currency, the financial risks were limited, in this case, to the flows in the types of interests.

Due to the significant indebtedness incurred, the financial costs meant a highly relevant cash output from the profit and loss account, especially during the initial years of concession, in which the debt balance was very high. For this reason, in order to keep the evolution of the types of interests from increasing the amount of the cash output, an insurance on the type of interest or swap was subscribed. This insurance guaranteed a fixed type of interest for 75% of the principal amount of the debt. The remaining 25% would be returned in a varying type of interest bound to Euribor as benchmark index.

The external financing was obtained when the construction of the interchange hub was finished. The financing model of the concession already had cash flows that were likely to remain steady due to the guaranteed demand signed by CRTM. This ensured that the investment recovery term would be shorter to the concession term. This allowed the banks' acceptance to finance the project with favorable conditions, even though conditions were significantly different from the ones foreseen at the beginning.

Table 3.15. **Baseline data for the Moncloa interchange hub financing: comparison between the actual debt and the debt levels forecasted in the economic-financial plan of the concession agreement**

	Debt forecast in the updated economic-financial plan	Actual debt
Term	2007-2037	2009-2019
Principal amount	EUR 95 million	EUR 95 million
Type of interest	Biannual Euribor + 1% spread	Biannual Euribor + 2% spread
Undewriting fee	1.05%	1.50%
Commitment fee	0.40%	0.80%
Swap	4.390% (*)	4.465% (*)
Internal resources	EUR 11 million	EUR 17 million

(*) The type of interest that the swap ensures affects the 75% of the principal amount. Therefore, the effective type of interest is the biannual Euribor type plus 2% for 25% of the principal amount, and a fixed type of 4.465% for the other 75%. The cost for subscribing to swap is included in the aforementioned types.

Source: Authors based on data provided by Itemosa- Grupo Sacyr.

3.10 Project balance

This section seeks to analyze the adjustments made from the baseline scenarios since the initial works in 2005 to the current situation of the operation. The following section reviews the benefits arising from the construction of this new infrastructure. Some parameters are measured in order to provide a more precise estimate of the social value provided by the Moncloa interchange hub. This will conclude into a series of guidelines intended to improve the processes related to concession agreements of transport interchange hubs.

3.10.1 Results versus initial projections

It is true that the turning point in the economy in 2008 was partly responsible for the mismatch between the operating output and the projections of the concession tender of the interchange hub in 2005. However, it should also be considered that these differences have also arisen from other factors during the development of the project.

When comparing the operating data, provided by Itemosa, against the revenue and operating costs of the economic-financial plans, the results reveal in detail how realistic the awarded bid was. Table 3.16 shows the 2013 variations between the projections of the economic-financial plan submitted with the bid and the output of the same year. However, it is worth mentioning that these data must be considered together with the cost overrun arising from the amendment of the project, and the actual conditions obtained at

the end of the fiscal year, which ended up being very different from the ones foreseen at the beginning.

Considering the data, it may be concluded that the patronage from intercity bus lines was better than expected and, even though expenses were also higher, the final operating outcome ended up being significantly higher than the initial estimates. However, this fact is not the result of higher than expected demand, but the result of the guaranteed minimum demand that CRTM implemented. Consequently, the revenue received by the concessionaire was significantly higher than the revenue they would have perceived.

Unfortunately, it cannot be claimed that the operating income received by the concessionaires are 35.68% higher than the projections, since their investment levels were 17.2% higher, an increase they had to cover with their own resources, which in turn reduced the profits received by shareholders, and significantly stricter financial conditions than originally forecasted.

Table 3.16. **Revenue forecast in the economic-financial plan submitted with the awarded bid and the operating income in 2013.**

Year 2013	Economic-financial plan submitted in the bid (*)	Operating income	Percentage variation
Revenue (thousands of EUR)			
Traffic on CRTM lines	10,919.00	14,380.75(**)	31.70%
Traffic on long-distance lines	-	42.46	-
Office rents	114,00		
Advertising	1,280.00		
Vending	213.00	1,616.65	-9.33%
ATMs	34.00		
Telephone service	142.00		
Total	12,702.00	16,039.87	26.28%
Expenses (thousands of EUR)			
Personnel	840.00	892.80	6.29%
Power service	2,212.00	919.51	-58.43%
Insurance	433.00	126.29	-70.83%
Taxes	779.00	1,201.39	54.22%
Comprehensive and maintenance costs		280.08	
Cost of bank guarantees	1,159.00	18.40	160.88%
Audits		32.76	
Other expenses		2,692.37	
Total	5,423.00	6,163.59	13.66%
Operating outcome	7,279.00	9,876.28	35.68%

(*) It includes the update based on the Consumer Price Index expected and the 16% VAT, effective in 2005. VAT equals 21% as of September 2012, which could account for up to a 5% increase in the expenditure items and the revenue considering the actual results.
(**) It includes the contribution made by CRTM for guaranteed demand.

Source: Authors based on data provided by Itemosa- Grupo Sacyr.

Table 3.17 compares the real demand registered in the last three years against the guaranteed demand, and it breaks down the revenue during these years into two categories: the ones provided by the CRTM, on account of guaranteed demand, and the ones provided by the bus operating companies, which correspond to the actual demand that was recorded at the interchange hub.

The data reveals the important role that the documentation of the guaranteed demand carried out by the public administration has played, collectively in the revenue received by the concessionaire. The revenue from passengers' traffic on bus lines depending on CRTM would have increased to EUR 6,965,370 should this clause not have been implemented. That is, the revenue would have been 36.2% lower than the expected projections in the economic-financial plan submitted in the 2013 bid. It is worth mentioning that the projections related to the demand came from a strong operating data history collected between 1995 and 2005, which suggested reliable and accurate estimates could be made from them.

On the other hand, the total revenue would have been EUR 8,624,480 approximately, 32.1% lower than the estimates. The operating results would have been EUR 2,460,890, which is 66.2% lower than the estimate and 75.1% lower than the results actually obtained by the concessionaire owing to the guaranteed demand.

According to these data, the guaranteed demand clause proves most important for the concessionaire to maintain its stability. At the same time, the data reveals the burden that these payments meant to the public transportation authorities in Madrid. From 2011 to 2013, CRTM had to pay EUR 21.78 million only for the Moncloa interchange hub on account of guaranteed demand fares. In the case of Spain, this contribution is directly applied to the budget with no need to create a budget allocation fund.

Table 3.17. **Revenue perceived from actual demand compared to revenue perceived from guaranteed demand mechanism for intercity bus lines of the Moncloa interchange hub**

	2011	2012	2013
Actual demand (passengers/years)	26,880,963	28,299,150	27,850,343
Guaranteed demand (passengers/years)	57,500,000	57,500,000	57,500,000
Percentage relation between the actual demand and the guaranteed demand (%)	46.7%	49.2%	48.4%
Revenue paid by transport operators (thousands in EUR)	6,381.54	6,879.52	6,965.37
Revenue paid by CRTM for guaranteed demand (thousands in EUR)	7,268.96	7,098.73	7,415.38
Total revenue from traffic on intercity bus lines (thousands of EUR)	13,650.50	13,978.25	14,380.75

Source: Authors based on data provided by CRTM.

Table 3.18 breaks down in detail the revenue and expenses between 2009 and 2013, and compared the expected results in the 2008 economic-financial plan—after approval of the amendment to the project, the fare equilibrium, the extension of the concession term, and the Addendum attached to the agreement that guaranteed a minimum demand—. Naturally, this plan, which included most of the relevant amendments to the agreement, was adjusted mainly to the actual outcome.

Table 3.18. **Variation between the updated economic-financial plan and the actual operating income**

2009-2013 Period	Updated economic-financial plan	Actual income	Percentage variation
Revenue (thousands of EUR)			
Traffic in lines depending on the CRTM	68,165.16(*)	67,321.10(*)	-1.24%
Traffic in long-distance lines		119.00	
Office rents	-		
Advertising	2,295.22		
Vending	673.47	3,865.49	15.97%
ATMs	129.31		
Telephone service	235.12		
Total	71,498.28	71,305.59	-0.27%
Expenses (thousands of EUR)			
Personnel	840.00	892.80	6.29%
Power service	2.212.00	919.51	-58.43%
Insurance	433.00	126.29	-70.83%
Taxes	779.00	1,201.39	54.22%
Comprehensive and maintenance costs	342.26	1,386.59	305.13%
Cost of bank guarantees	53.88	87.60	62.59%
Audits	86.20	156.02	80.99%
Other expenses	12,672.11	14,751.78	16.41%
Total	31,246.87	29,780.24	-4.69%
Operating outcome	40,251.41	41,525.35	3.16%

(*) It includes the contribution made by CRTM on account of guaranteed demand.

Source: Authors based on data provided by Itemosa-Grupo Sacyr.

From 2009 to 2013, 94.41% of the revenue came from the traffic on intercity bus lines, against an 85.13% estimate according to the 2005 economic-financial plan for the 2009-2013 period. However, the percentage burden of the revenue from complementary activities increased owing to the effort made to diversify the sources of revenue.

Today, the revenue is classified in three main types: revenue from passengers' traffic on intercity bus lines, usually evenly paid by the bus

operators and CRTM, revenue from the traffic of long-distance bus lines —which is paid by the transport company Alsa, with little relevant percentage—, and revenue from complementary activities. In 2013, following the important effort made by the concessionaires regarding marketing, the revenue from complementary activities reached the 10% of the total revenue. Approximately half of that amount corresponded to the rental of commercial shops, one-fourth were related to advertising, and one-fourth corresponded to the operation of vending machines and telephone services.

On the other hand, the changes in the accounting rules related to concessions, implementing IFRIC 12 in 2010, have shown that these changes significantly affect the financial statements of the concessionaire. IFRIC 12 provides a new interpretation of the International Financial Reporting Standards (IFRS), applied to public-private partnerships. One of the major changes is the prompt acknowledgment of all financial expenses accrued in the fiscal year. In this regard, companies cannot delay their financial expenses in time, which meant a high impact on their accounts. Therefore, the initial years of the concession show significant loss, which could adversely affect the continuity of the concessionaire in the case that the limit allowed by commercial law was known. In this case, it would be necessary to increase the principal amount. In addition, it would bring great benefits in last years of the concession and, consequently, equally relevant tax payment. In this regard, the new rule completely modified the accounting profile of losses and proceeds during all the concession term and, consequently, tax payment as well.

Finally, this analysis should also discuss the above mismatches in regard to the construction cost overrun, which implied an economic rebalancing by increasing the fare and extending the term, and to the coordination with the mechanism of guaranteed demand. The increase of requirements related to internal resources has also affected the actual operating outcome of the concessionaire. In the same way, this outcome was also affected by the fact that spreads doubled and the debt repayment term was reduced in the 2009 fiscal year.

3.10.2 Economic, social and environmental benefits derived from the project

Despite the problems faced, the projection and financial model of the transport interchange hubs in Madrid can be considered as a win-win strategy. Everyone engaged has received benefit from the infrastructure, which means that the benefits registered greatly outweigh the expenses incurred during the construction and the present operation of the works. Public transport users save commuting time. Bus operator companies have reduced their operating expenses amply covering the fares they have to pay on account of using the new infrastructure. The Moncloa district has improved its accessibility and citizens have improved their living standards. The concessionaire receives a benefit for their business and the Government of Madrid has been able to promote quality infrastructure with minor budgetary impact.

Most of the public transport users in Madrid riding the transport interchange hubs on a daily basis transfer from the intercity bus lines to the metro rail or to the city bus lines of the EMT, a public transport company from Madrid. The interchange hub stations and, specifically, the Moncloa interchange hub allow a reduction in the overall commuting time for a number of reasons. Firstly, the BUS-VAO rails of A-6 and the exclusive access tunnel of the interchange hub help avoid the crowded access downtown, reducing the commuting time. Secondly, this time reduction strengthens the concept of public transportation and causes more demand, which increases the need for more frequency in the bus lines routes. At the same time, more frequency translates into reduced waiting time in bus stations, which also encourages the use of public transportation.

The transfer time gap between lines in the new type of subway interchange hubs is considerably shorter to the time required to transfer at aboveground bus stations. Since street crossings are avoided and there is clear and accurate signalization guiding passengers from one station to another, passengers' perception of an interrupted commute is reduced. In addition, the new infrastructures provide highly comfortable services, with air-conditioned waiting areas that prevent users from exposure to pollution from engines and harsh weather conditions. Moreover, the cafés, shops and other additional services make the transfers very appealing, since they open up the possibility to shop and run errands directly at the interchange hub.

Owing to the exclusive high-occupancy lanes, the average estimate for time saved is nine minutes per trip per passenger. The surveys on preferences conducted by CRTM reveal that the price and time relation is approximately EUR 10.5/hour for public transport users. Considering the data recorded regarding the demand in the intercity buses, which indicated 27,850,343 passengers in 2013, the annual savings is close to EUR 40 million.

On the other hand, the construction of the Moncloa interchange hub greatly benefited transport operators. The companies operating intercity buses have been the main beneficiaries, since the reduction of commuting time means an important source of saving operating expenses. This time reduction is attributable to the access tunnels to the interchange hub that connect the BUS-VAO rails. Fewer buses offer the same frequency of service to address the same level of demand. This not only involved less fuel consumption, but also less personnel costs.

The direct costs related to bus operation can be divided into those depending on the distance the bus traveled—for example, fuel consumption and depreciation of vehicles—and those depending on the actual driving time, for example, drivers' salaries. As shown in the *study Intermodal exchange stations in the city of Madrid*, promoted by Vassallo in 2011, the construction of the interchange hub at Avenida de América significantly reduced operating costs, and the surplus that the operators received was higher than the fare that the concessionaires collected from the use of the infrastructure.

The sums paid by the operators help finance the new infrastructure. However, articulation with the mechanism of guaranteed minimum demand

in Moncloa was needed to ensure that profit levels were sufficient to attract private investors.

In this regard, the demand growth caused by the infrastructure benefited the public transport company from Madrid, EMT, and the Madrid metro system, *Metro de Madrid*, since they did benefit from the users' interest in the public transport network, despite not having direct reductions in their operating costs, with no need to pay any corresponding fare to the concessionaire.

The residents in Moncloa district have also seen an important increase of their living standards, attributable to the urban improvements and better land use. Today, the interchange hub prevents more than 4,000 daily buses from circulating on the roads surrounding Moncloa, thus improving the traffic and keeping this urban space from deterioration, thanks to the underground bus station built in 1995. Although there are no specific studies that link the property price evolution to the construction of the transport interchange hubs in Madrid, there is a relevant positive correlation in other studies carried out in European cities. in broader terms, then, society benefits from an increased use of public transport in the A-6 corridor. The change from private vehicles to public means of transport entails significant reductions in gas emissions and pollution, which ultimately benefits all citizens of Madrid.

It is worth mentioning that the benefit was achieved by the two parties involved in the agreement: the concessionaire and the Community of Madrid represented by CRTM. The former receives profits from the services provided and from the investment made, whereas the latter has succeeded in providing citizens with an essential infrastructure without adversely affecting the public budget. The global role of the Madrid Transport Interchange Hubs Plan and the total investment required to implement the plan should also be considered. The concession model proved essential in terms of management. In addition, the introduction of the private sector in the management of these infrastructures was a key factor to provide them with efficiency difficult to attain otherwise. In this regard, the government receives important fiscal returns from the activities carried out in the infrastructure. The initial investments were charged with the VAT, and nowadays, the corporate tax is applicable to the profits of the concessionaire and the rest of commercial activities carried out in the interchange hub.

Finally, it is true that the time savings are related to the activities carried out in the corridor: construction of the two-way reversible lanes BUS-VAO, construction of the first stage of the Moncloa interchange hub, financed by public funds, and the renovations that completely renewed the infrastructure. The 1994 investment was 4.7 billion pesetas, the Spanish currency at that time, which consisted of a joint operation of high-occupancy vehicles and the first stage of the Moncloa interchange hub. If we update this amount including the subsequent inflation data registered and we convert it into euros, the estimated investment was higher than EUR 50 million. In 2008, when the new interchange hub was open to the public, the investment was EUR 132 million, which updated after inflation would be EUR 147 million. In this regard, the estimated collective investment in 2013 EUR has been EUR 200 million. At the same time, this

amount can be compared to the EUR 40 million that users saved in 2013 as a result of the reduced commuting time.

As mentioned before, the fares paid for the use of the interchange hub cover the operating and infrastructure maintenance costs, in addition to generating revenues for the concessionaire's shareholders. The operating and maintenance costs of BUS-VAO lanes have not been calculated since 1994 and these same costs for the interchange hub were not calculated until the concessionaire started operating. The calculation of other benefits harder to monetize is still pending, such as the reduction of gas emissions resulting from an increased use of public transportation; reduced traffic congestion; higher property values in the district thanks to the construction of new infrastructure; improved comfort for passengers traveling through the interchange hub on a daily basis; the profit obtained by intercity bus operators once the fee for using the infrastructure is deducted, or benefit for the rest of transport operators. Consequently, we believe that the data indicate a prudent valuation when we say that the investment recovery period is short in social terms, and that the cost-benefit ratio is very positive.

3.11 Lessons learned

Implementing a concession system to provide transport hubs marked a significant milestone for the city of Madrid's urban transportation. Expansion works and further operation of this type of infrastructure are developing successfully, becoming a key element in urban mobility, offering efficient modal distribution and promoting public transportation use.

The experience with the interchange hub in Moncloa, as analyzed in this chapter, points out two important challenges for the future: demand estimates and cost overruns. The significant drops in demand, the conditions under which the project financing was closed given the unfavorable macro context, and other factors not attributable to the macroeconomic scenario have all triggered a progressive mismatch between initial estimates and those results achieved in the end.

Despite initial estimates that the Moncloa interchange hub would be able to perform more than 6,000 daily trips, current numbers are just over 4,000. This excess capacity (close to 30%) demonstrates a failure to comply with demand estimates. Although it opens the door to future growth without requiring new works, it does pose the question as to whether a lower-capacity infrastructure, which would have entailed less construction, operation and maintenance costs, would have been a wiser choice to offer the same service. Under this assumption, transport operators could be charged reduced fares, thus maximizing their profit.

After the generalized criticism concerning the unsound demand studies submitted by all bidders in the process, it would have been appropriate to

explore in greater detail standardizing this crucial aspect in order to ensure the project's success, reduce demand risk, and gain all the advantages derived from thorough planning. The Moncloa interchange hub had a long-standing history of transport demand based on operation data collected between 1995 and 2005, which should have helped narrow down much more accurately the estimate on the infrastructure users.

However, as it often occurs with PPPs, the interchange hub in Moncloa suffered some project design adjustments. These were made in order to comply with environmental regulations by Madrid's City Council, the special technical specifications on air quality index, and fire protection measures. Lack of foresight regarding future adjustments in agreements may result in unchallenged renegotiations, a situation that hinders truly competitive costs for all additional works.

Cost overruns from said adjustments resulted in a renegotiation of fares and guaranteed minimum demands that ultimately had an impact on taxpayers. This fact calls attention to an underlying problem that transcends the specific project of an interchange hub in Moncloa. This type of problem could be prevented by planning works and their requirements in further detail, as well as producing more functional and realistic designs.

In addition, the fact that the actual interchange demand is not even close to 50% of the guaranteed demand reveals the difficulty in predicting such number. A solution to this problem may have been implementing a risk sharing model for both parties.

With respect to getting the intercity bus operators involved in the concessionaires, and the reasons behind the enforcement of this clause, it was a sensible requirement when ideas for new infrastructure began in a context where there wasn't any prior experience. Today, considering the success of Madrid Interchange Hub Plan, enforcement of said clause in future specifications does not seem necessary, since there is evidence the model works properly without having the bus operators involved in the concessionaire's capital structure.

These comments should be regarded as recommendations aimed at improving future development of public works concessions across the country, in addition to optimizing the specific concession model of transport interchange hubs. In any case, it is worth highlighting that this project entailed materializing essential infrastructure for Madrid's development and its citizens' quality of life. Overall, the construction of an ambitious infrastructure took place in record time and with superb standards of quality and service despite the technical complexities derived from working in a fully established urban environment: the district of Moncloa.

4

San Jose-San Ramon and San Jose-Caldera highways in Costa Rica

Introduction
Costa Rica's transport system
Experiences with public works concessions in two road infrastructure projects in Costa Rica
San Jose-Caldera highway
San Jose-San Ramon corridor

Legal and institutional frameworks
The road to public works concessions

Contract bidding and awarding
Preliminary studies
Bidder pre-qualification and access to the tender process
Award mechanism
Assessment of bids and contract awarding

Conception, contract monitoring and risk allocation
The path to the definitive concession contract for the San Jose-Caldera highway:
five addenda and a supplementary agreement
Risk allocation and changes in mitigation mechanisms
Execution framework of the San Jose-San Ramon highway concession contract

Economic-financial rebalance of highway concessions in Costa Rica
Renegotiation of the San Jose-San Ramon concession contract and its consequences

Project financing

Conclusions and lessons learned

4.1 Introduction

Costa Rica, with an area of 51,100 km^2 and a population over 4.5 million, has experienced remarkable growth in recent decades, reflected in the country's human development and competitiveness indicators. During the 2000-2007 period, its GDP was the region's third fastest growing at an annual rate of 5.3% on average.

Back in 1980, Costa Rica's population was 2.2 million. Twenty-five years later, according to the National Statistics and Census Data Bureau (INEC), the country's population had almost doubled, climbing to 4.2 million. Over that period, the country's income-producing activities also improved and diversified. Furthermore, since the mid-1980s, the government has made boosting exports a national priority.

Along with demographic growth, the country's new economic model called for changes and imposed pressures on a myriad of realms, such as the institutional framework, financial system, markets, health, education, technology and infrastructure, which had to swiftly adjust to the new demands existing in the country.

Despite having attained impressive development in areas like health or education, one of Costa Rica's greatest challenges has been securing investment to spur competitiveness across the entire infrastructure spectrum. Transport development is one of the government's biggest concerns. Costa Rica has an infrastructure backlog of more than 25 years, with most of its facilities, mainly bridges, in critical condition.

This situation could be attributed in great extent to the economic crisis in the 1980s, which imposed tight constraints on the country's foreign indebtedness, its main source of funding for large infrastructure works.

Scarcity of public resources precluded the government from executing large-scale projects. Without any other sources of financing available, investment for infrastructure was insufficient. Faced with this dilemma, the government turned to private funding as the only option to move forward with certain critical projects for the country's development. This led to the implementation of a new private financing modality in the country: public works concessions and concession of works with public services. Yet, even when this type of procurement contracting was aimed at providing the country with the required infrastructure and the greatest benefits possible for the population at the lowest cost to the state, the concession procurement modality has not performed as well as expected. Furthermore, in most of the projects where it has been applied in the country, the model has failed to be efficient in terms of meeting deadlines and complying with budgets.

This chapter aims to discuss in depth the only two road infrastructure concessions initiated in the country to date: San Jose-San Ramon highway and San Jose-Caldera highway (also known as highway 27). A painstaking analysis of the development framework for these projects will allow the reader to compare the reasons that resulted in the completion of one of

them, San Jose-Caldera highway, and, on the contrary, the government's decision to revoke the concession agreement between private and public players in the other project, San Jose-San Ramon highway, whose works were never begun.

4.2 Costa Rica's transport system

When viewed as a whole, the road network is the backbone of Costa Rica's transport system, followed by ports and airports.

The Costa Rican road network spans 42,430 km, of which 7,906 km belong to the National Road Network (RVN). The National Road Council (CONAVI) is responsible for maintaining the network. The remaining 34,525 km make up the Municipal Road Network (RVC), whose maintenance falls to local governments, with technical support and assistance provided by the Ministry of Public Works and Transport (MOPT). Roads of special strategic importance within the system include the Inter-American highway, highway 27 (Pacific route) and highway 32 (road to the Caribbean) which connects the Central Valley with the country's coastline. Newly opened highway 27, which is operated as a concession, has provided a direct route between San Jose and the different tourist destinations on the Pacific coast.

Costa Rica has the longest road network and the greatest density of roads and highways per 1000 inhabitants (8.15) and per square kilometer (0.70) in Latin America. The country has extended its highway network significantly in recent years, in keeping with outstanding social equity criteria. The lack of investment in maintenance works, however, has led to the network's failure to meet the necessary quality standards: only 36% of the RVN and 13% of the RVC are in good state of maintenance.

While poor maintenance of most highways and roads alone is already an indication of some road infrastructure deficiencies, road capacity constraints and insufficient measures to ensure road safety, which is reflected in high accident rates, are rampant. Several bridges have suffered considerable structural deterioration over the years. Likewise, low service levels have resulted in high operating costs and long travel times for users. This situation highlights the urgent need to take a several steps to improve Costa Rica's highway network and existing transport infrastructure. Certain deficiencies in need of repair have been identified. For instance, the capacity of some airports, such as Juan Santamaria and Daniel Oduber Quiros, in Liberia, has been exceeded due to the tourist boom. Plans for expansion, under the concession modality, have made sluggish headway and have failed to provide a comprehensive solution to the problem. Likewise, ports have proved to have insufficient capacity to keep up with the increase in the country's maritime trade. The rail system has been out of service since 1994, with the exception of the San Jose urban train and some lines operating in the Caribbean region.

Furthermore, it is evident that Costa Rica needs enhanced integration of all modes of transport throughout the country to derive greater efficiencies from the transport system in passenger and cargo movement. This would contribute greatly to increasing competitiveness and boosting trade and regional integration.

Over past decades, the transport sector in Costa Rica has been conditioned significantly by factors that have impaired the national economy, including high fiscal deficit and growing foreign indebtedness. This situation limited the resources available for infrastructure investment, which has translated all these years into an absence of infrastructure investment, halting to great extent the country's growth in some relevant areas.

After this experience, Costa Rica's incumbent government chose to develop the 2011-2035 National Transport Plan (PNT), an investment program for strategic infrastructure needed to bolster the country's competitiveness. The starting point for this ambitious project comprises a series of key challenges. On one hand, priority projects—for road, air, port and rail infrastructure—must be identified from among those already under construction or development. In addition, infrastructure to ensure efficient interchange among the various modes needs to be defined. On the other hand, potential sources of funding for projects must be found, envisaging public and private investment and weighing their economic and social profitability.

How these investments will be implemented shall be carried out in accordance with a series of policies and strategies for the transport sector, so that they may contribute to the country's development and the national economy overall.

If Costa Rica is to significantly improve the competitiveness of the country's infrastructure, the modernization of the transport system must be approached from two angles: a comprehensive standpoint—legal framework, organization, planning, and development of infrastructures—and an intermodal perspective: interconnected, accessible and available. To that end, the National Transport Plan (PNT) envisages a total investment of around USD 60 billion, allocated as shown in Table 4.1. Of the total planned investments, the idea is to raise over 30% from financing sources other than public funding. Resorting to alternative funding options, such as private investors, is viewed as key for the development of the National Transport Plan. With the PNT, the MOPT expects to facilitate the private sector's entry in the construction and exploitation of transport infrastructure based on two premises: first, private initiatives can clearly contribute to the objectives sought, and second, that they are under the stewardship, supervision and control of the ministry, either directly or through subordinate institutions or entities.

Table 4.1 **Planned investments, National Transport Plan 2011-2035, Costa Rica**

Chapter	Period		Total investment	Financing	
	2011-2018	2019-2035		Public resources	Other sources
Highways	6,250	38,550	44,800	33,500	11,250
Ports, coasts & marine navigation	575	2,600	3,175	350	2,825
Public passenger transport	375	1,850	2,225	1,100	1,125
Airports & air navigation	475	2,800	3,275	200	3,075
Rail	1,100	4,000	5,100	4,000	1,100
Intermodality & logistics	250	150	400	300	100
TOTAL BUDGET	9,025	49,950	58,975	39,500	19,475
Public resources	5,500	34,000	39,500		
Other sources	3,525	15,950	19,475		

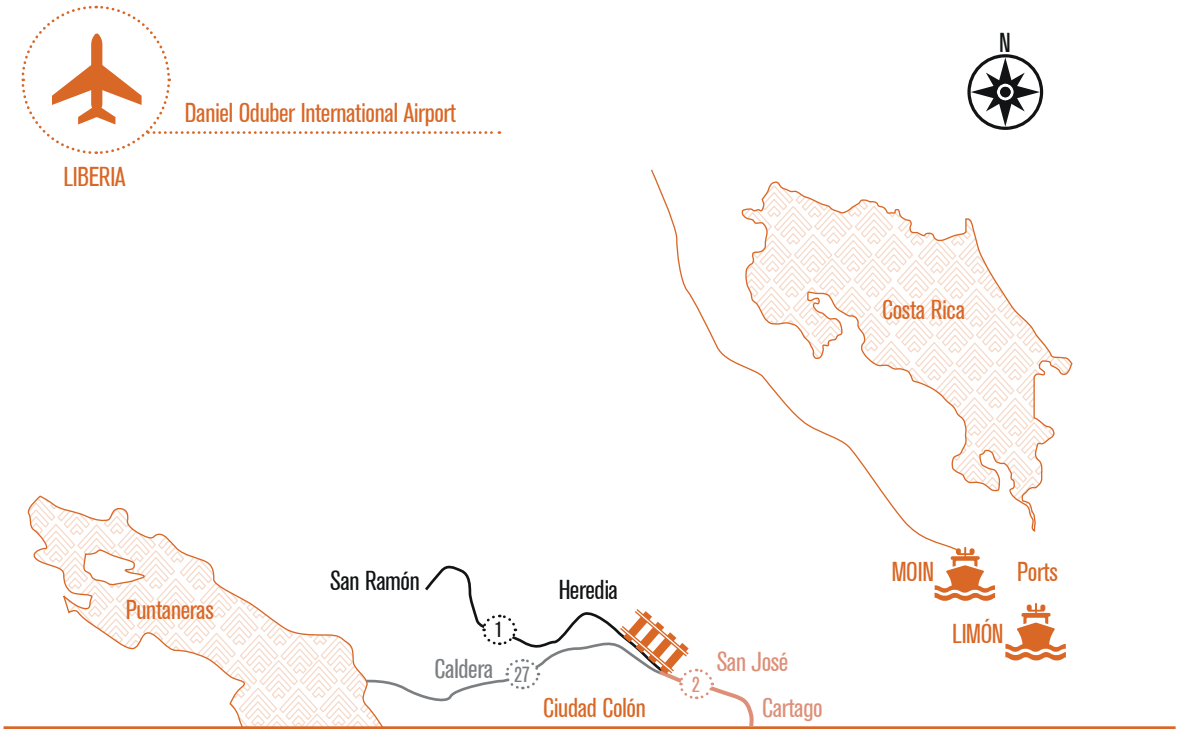
Data stated in millions of USD

Source: Ministry of Public Works and Transport

It has been several years now since the Costa Rican government first attempted to make room for the private sector in infrastructure management. With the creation of legislation packages addressing public work concessions, different projects have been implemented in the past decades under concession schemes in all modes of transport (see Image 4.2).

Although some of them were successfully completed—the San Jose-Caldera highway and the new passenger terminal of the Daniel Oduber airport—in many other cases it has become evident that the public-private partnership model has a long way to go before the country's desired level of development is reached.

Figure 4.1. **Transport infrastructure projects implemented under public works concessions in Costa Rica as of 2014**



Concession of public works with public services, San Jose-San Ramon corridor

San Jose-Cartago highway concession

San Jose-Caldera highway concession

Construction of a new passenger terminal, Daniel Oduber airport

Moin and Limon ports concession

Heredia-Curribat metropolitan electric train

Source: Adapted from the Ministry of Public Works & Transport

4.3 Experiences with public works concessions in two road infrastructure projects in Costa Rica

4.3.1 San Jose-Caldera highway

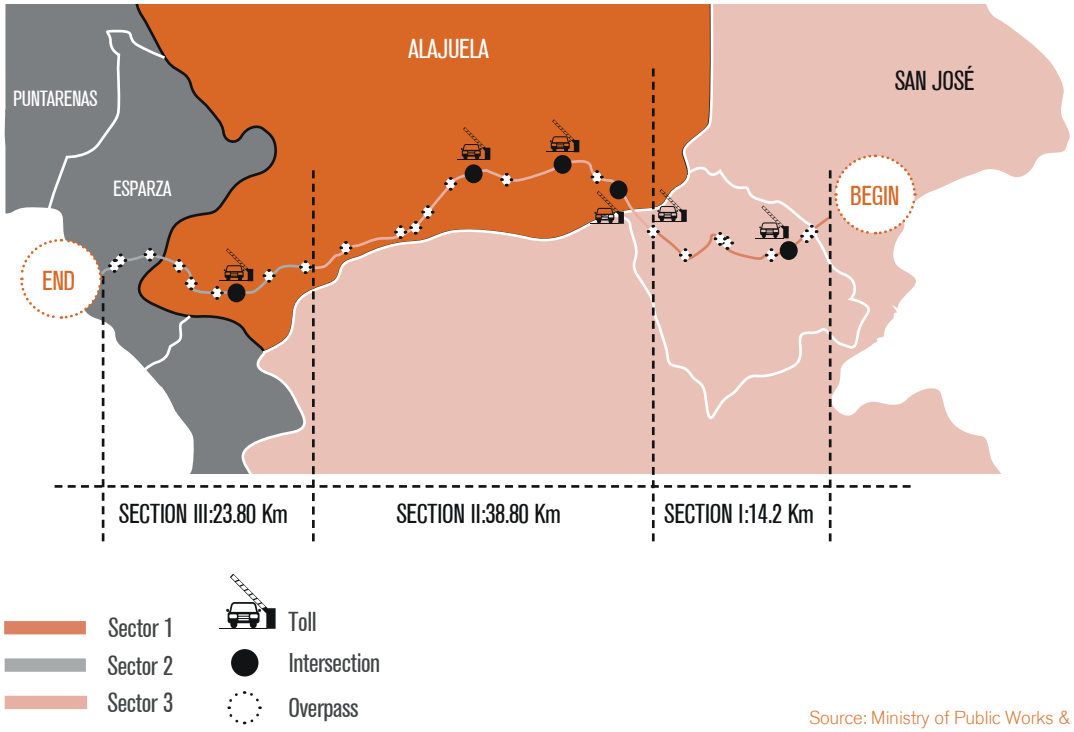
One of the first projects implemented by the government of Costa Rica under the concession modality was the San Jose-Caldera highway. It was designed to provide a direct, fast and safe connection between the country's capital and areas located on the Pacific coast, including the city of Puntarenas, the port of Caldera, the Central Valley, and the many tourist destinations along the Southern Coastal highway (Costanera Sur). This new highway is part of a road system made up of other critical routes in the country's transport system and economy, such as the Southern Coastal highway and the Southern Inter-American highway. A second road infrastructure project, the San Jose-San Ramon highway, was also earmarked for implementation under the public work concession modality.

In spite of the problems faced as a result of insufficient expropriated land, which initially led to the suspension of works and a several-year delay of the commencement of works, the San Jose-Caldera highway is now showcased as a venture implemented by the Costa Rican government under the public concession modality fully funded with private resources. It has contributed to the country's economy and generated employment in the cities within its area of influence. In addition, its commissioning has resulted in significant time and fuel savings for road users, who pay a toll of around USD 4 in each traffic direction. Yet, despite the accomplishments achieved with this concession, which was partially opened in 2010, numerous adjustments, renegotiations and modifications have been made to the original project first presented more than thirty years ago.

The beginnings of the project date back to 1978, when the first technical and design studies were conducted for the Ciudad Colon-Orotina stretch. That year, the Inter-American Development Bank (IDB) granted the government of Costa Rica a USD 40 million loan for the development of works and the construction of the five bridges to be built in that section. However, due to successive delays incurred during expropriation process, the government had to forgo the loan after having uselessly paid the bank USD 3 million worth of commitment commissions to maintain the loan for almost 10 years. Under the BID's policy, it was no longer possible to extend the loan and, therefore, a decision was made to tender the highway as a concession. September 11, 1998 marked the commencement of a process that would conclude over a decade later, in 2010, when the highway was opened to become Costa Rica's first road concession in operation.

The project comprises three sections—San Jose-Ciudad Colon, spanning 14.2 km; Ciudad Colon-Orotina, stretching 38.8 km; and Orotina-Puerto Caldera, with 23.8 km—totaling 78.6 km—linking San Jose and Puerto Caldera. The investment program totals USD 265.9 million, including additional work approved in 2008. Exploitation and maintenance of these road stretches are included in the final agreement for a 25-year, six-month concession with a works commencement date set for January 9, 2008.

Image 4.2. **Map of the San Jose-Caldera highway project, Costa Rica**



Source: Ministry of Public Works & Transport

4.3.2 San Jose-San Ramon Corridor

The San Jose-San Ramon corridor, made up of the General Cañas and Bernardo Soto highways, is part of the Inter-American road of Costa Rica. Because of its location and route, it is one of the most strategic thoroughfares in the country's infrastructure. It is used by a high percentage of the population, in addition to carrying national production and goods along the Central American road corridor. Along certain sections, daily traffic totals approximately 90,000 vehicles on average.

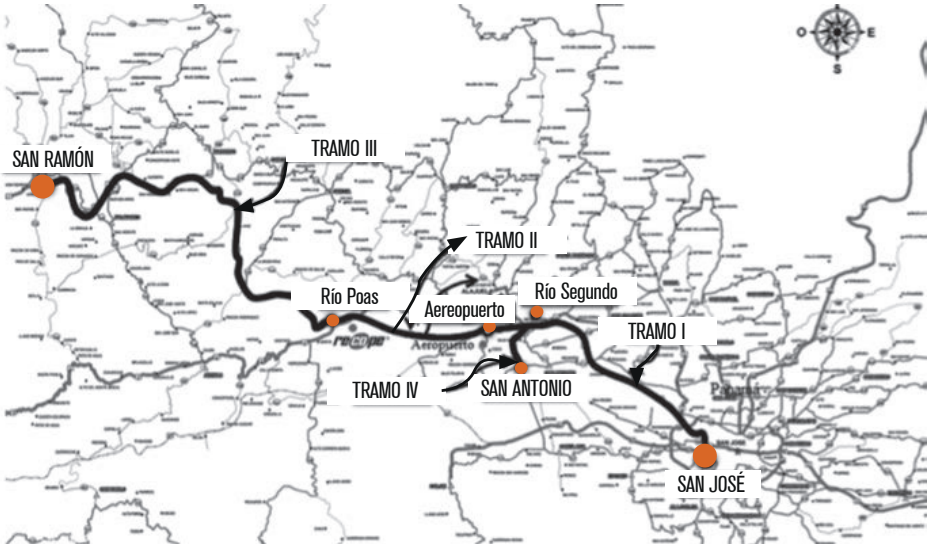
The road's poor state of maintenance, due to poor maintenance and signage, increases risk of accidents. In addition, the corridor's capacity over its entire length is insufficient to meet traffic demand, making collapses due to traffic and bottlenecks commonplace occurrences. Confronted with this urgent need

to rehabilitate the corridor, enhance its capacity, and improve its traffic signage, the government made the development and modernization of this roadway a matter of national interest, and devised reforms aimed at reducing travel times and waiting times at highway entrances and exits, increasing average speed, eliminating bottlenecks and enhancing road safety. These measures would in turn help reduce environmental pollution in the corridor surroundings.

In view of these objectives, the works and reforms needed to rehabilitate the highway were of such magnitude that the granting entity came to understand that it could not finance the investment for the required works with its own resources, due to the lack of sufficient public resources. In 2002, it decided to tender the project under a public works concession scheme.

Specifically, works involved the expansion, rehabilitation and improvement of the General Cañas highway (Section I); expansion, rehabilitation and improvement of the Bernardo Soto highway stretch running between the Juan Santamaria Airport and the Poas River (Section II); rehabilitation and improvement of the Bernardo Soto highway stretch between the Poas River and San Ramon (Section III); and construction and maintenance of the new Panasonic radial road, running from Rio Segundo to San Antonio (Section IV) (refer to Image 4.3).

Image 4.3. **Map of the San Jose-San Ramon highway project, Costa Rica**



Source: National Concessions Council, Ministry of Public Works and Transport of Costa Rica

Over the seven years after the concession contract was signed, there was a succession of countless stumbling blocks that resulted in delays and multiple renegotiations. For all these reasons, and as it will be seen later in this chapter, the concession never got off the ground and the project had not yet been implemented as of May 2014.

4.4 Legal and institutional frameworks

The development of road infrastructure projects in Costa Rica without tying up and encumbering the budgets of the government stakeholders involved—including the Ministry of Public Works, the National Road Council and the National Road Safety Council—had to go a long way before it came up with and implemented the basic tools to establish a legal framework for the concession of public works in the country.

4.4.1 The road to public works concessions

Decree LI dated October 20, 1860 created the Directorate General of Public Works in Costa Rica. Over a century later, in 1963, Law No. 3155 established the Ministry of Transport. Both institutions were later merged to create the Ministry of Public Works and Transport (MOPT), which was entrusted with the tasks of building, maintaining and improving the national highway network, as well as regional routes and roads nationwide; building, maintaining and improving national airports and managing air transport; controlling and regulating rail transport, and regulating and improving maritime transport. Since its creation, the institution's mission was to ensure the provision of efficient transport service to users, through sound management of its financial, material and human resources.

By the late 1970s, given the direct relationship between transport infrastructure and the country's social and economic growth, the government of Costa Rica decided to promote the development and efficiency of the transport system. To that end, it decided to clearly define MOPT's institutional responsibilities and introduce certain modifications to the management of the infrastructures within its jurisdiction.

The economic crisis that hit the country in the 1980s led to an in-depth debate about the most suitable steps to take to intervene effectively in the transport sector, and the tools that would enable the country to resort to alternative sources to finance road infrastructure, thus supplementing institutional government budgets.

One of the adopted strategies was the enactment of the Concession of Public Works General Act in 1994 (Law No. 7404) which sought to secure an additional source of financing from the private sector, in order to meet the growing demands for transport infrastructure. However, three years after the law was passed, the government of Costa Rica had not yet put it into practice. This drawback prompted the government to ask the Latin American Council for Competitiveness and Sustainable Development (CLACDS) of the INCAE Business School to produce a document focusing on the concession of public works in Costa Rica within the framework of the Central American Agenda for the XXI Century. The move aimed to help raise national consensus regarding the urgent need to implement this modality to finance public infrastructure.

In 1997, Louis Berger International, Inc., with the World Bank's financial assistance, was contracted to secure the technical support required to design and execute the national transport system institutional reform. The technical study concluded that the country was fraught with major institutional organizational problems that impinged on the sector's performance across the board. The creation of MOPT-attached institutions, to which tasks poorly performed by the ministry would be transferred, was analyzed in 1998. As a result of this, several reforms were initiated under different laws, such as Law No. 7798 and Law No. 7762.

Law No. 7798 modified the transport infrastructure management system, retaining MOPT's stewardship role in the road sector and transferring the administration of national highways to the National Road Council (CONAVI), a highly decentralized board with the legal, instrumental and budgetary autonomy to administer the Road Fund, created for the maintenance and construction of highways, throughways and bridges that form part of the national highway network.

In relation to the reforms required to boost investment in transport infrastructure development, Law No. 7762 definitely paved the way for private investors to participate in the identification, design, investment, construction, maintenance and operation of major infrastructure works in the country through the mechanism of public works concessions.

The new Concession of Public Works Act (Law No. 7762)

As mentioned above, the first version of the Concession of Public Works General Act dates back to March 1993. It underwent substantial amendments, which were incorporated in 1994. The law in force was then analyzed and the need to redefine its scope was identified. On April 2, 1998, the Concession of Public Works with Public Services General Act and its Regulation No. 7762 were passed, with partial amendments introduced by Law No. 8643 in 2008, although the essence of the norm remained unaltered.

Under this legislation, all services and works, as well as their operation, can be tendered for a term that in no case may be longer than 50 years, when duly justified reasons of public interest exist. An exception is made in the case of infrastructure and services relating to electric power, telecommunications and existing ports. In the case of ports, concessions made be used only in the case of new works or expansions of existing infrastructure. Subsequent legislative amendments have further excluded health services from the scope of application of public service concessions.

Law No. 7762 sets forth the rights and obligations of the public and private sectors under concession contracts, as well as users' rights. According to this law, projects are awarded pursuant to the procedure defined in the regulation, as explained in detail in the following heading within this chapter. They are subject to the guiding principles of publicity, equality, and free competition. In addition, the law authorizes the submission of private initiatives, as long as they are in public interest and are accompanied by technical, environmental and economic feasibility studies, as well as a construction and operation plan.

In this case, private bidders are subject to the same terms and conditions as other private parties.

March 22, 1998 marks one of the milestones in the implementation of the concession procurement modality. It was on that date that the Law No. 7762 was published, creating the National Concessions Council, the regulatory authority for public works and works with public services concessions.

National Concessions Council

Like other Latin American countries, Costa Rica has a specialized concessions unit reporting directly to the central government that combines most management functions for this procurement modality: the National Concessions Council (CNC). Like CONAVI, the CNC is a highly decentralized body, within the sphere of MOPT, vested with legal and instrumental personality to administer the Concessions Fund and arrange for the signature of agreements and contracts required to carry out projects under the concession modality in Costa Rica.

At the time of CNC's creation, several cooperation agreements were made between the US government (Department of the Treasury), the Chilean government (Ministry of Public Works) and the Costa Rican government (Ministry of Finance and MOPT) to provide the CNC with technical cooperation and assistance to carry out the tasks that it was created to fulfill. The aim of these agreements was to acquire the required knowledge from those groups or institutions that already had consolidated experience in the development of public works concessions.

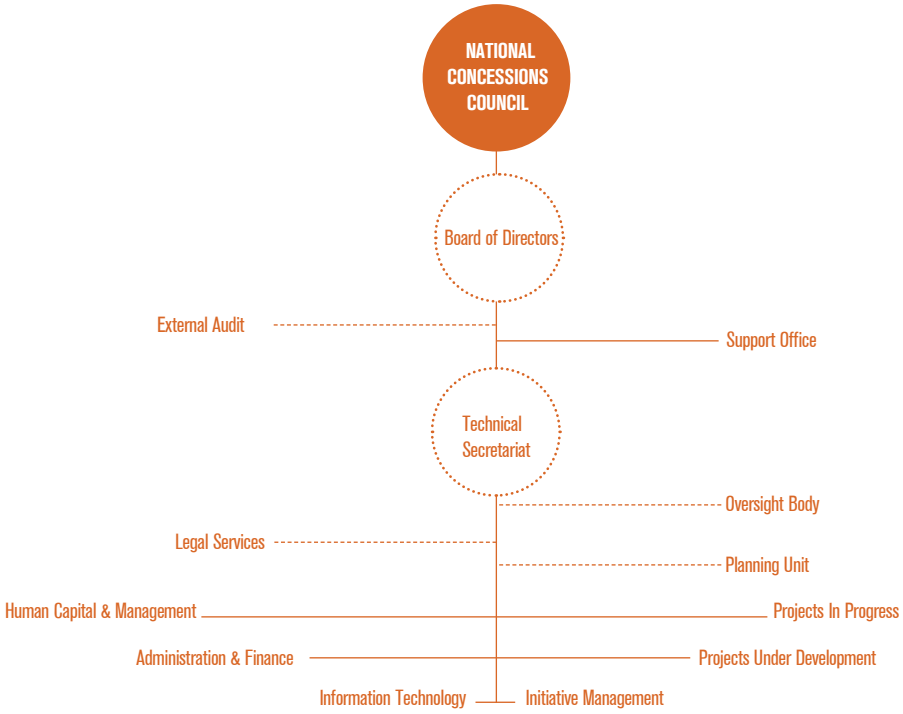
The CNC was entrusted with safeguarding the transparency and legality of any administrative act pertaining to concession projects: approval, rejection or modification of tenders, award of concessions and signing of contracts—on behalf of the granting entity—and ensuring proper fulfillment of the duties of inspection and oversight of concessions granted.

As of April 2014, the CNC has three projects in progress: the San Jose-Caldera highway, which is partially operational after its opening in 2010; the passenger terminal at the Daniel Oduber Quiros International Airport, which has been operational since its opening in 2012, and the new container terminal at the Mohin Port awarded in 2012; the commencement of works is still pending.

To meet payments, in the form of guarantees or indemnities, in relation to this project and any concession undertaken in the country, the National Concessions Fund was created as the CNC's main financing instrument. As provided for by the Concession of Public Works General Act, and its Regulation No. 7762, this fund falls under the oversight of the Office of the Comptroller General (CGR), and has various financing sources: the sum that each concessionaire must pay for supervision and control performed by the CNC's Technical Secretariat; national and international donations; federal budget allocations and transfers for the purposes of this law; penalties and guarantees collected from or enforced upon concessionaires, and reimbursement of studies conducted by the CNC's Technical Secretariat,

as may be required from the concession awardee in accordance with the bidding terms. To facilitate the fulfillment of the various project tasks, the CNC has an organizational structure comprised of different departments and areas, as shown in the figure below:

Figure 4.4. **National Concessions Council Organizational Chart**



Source: National Concessions Council, Ministry of Public Works & Transport, Costa Rica

The Technical Secretariat is responsible for commissioning the technical studies required to establish the feasibility of concession projects, preparing the bidding documents, conducting inspections to verify the concessionaire's compliance, promoting and announcing concession projects, and imposing sanctions and penalties if the concession contract is breached.

Initially, the government of Costa Rica had hoped that the concession mechanism established by Law No. 7762 and implemented and managed by the National Concessions Council would solve the problem of insufficient infrastructure investment in the country. Ten years after its inception, very few infrastructure projects have been tendered under the concession model in Costa Rica, and even fewer have been successfully implemented under this modality.

In *The State of the Nation in Sustainable Human Development 2006 report*, several problems had been identified not only at the time of seeking financing or selecting the most eligible projects for implementation, but also in terms of the way concession processes were being conducted: deficient expropriation mechanisms, delays in the relocation of public services along the roadways, or lack of money to cover the costs of studies and expropriations.

By mid-2014 the then Transport Minister announced the restructuring of the CNC and the CONAVI, which would be merged into the National Institute of Infrastructure (INI), and the ensuing redefinition of the institutional framework for concession projects in Costa Rica. The reform seeks to ensure enhanced performance and interrelation with other players involved, such as the Office of the Comptroller General, the Technology Institute of Costa Rica and local governments.

4.5 Contract bidding and awarding

In Costa Rica, as per Law No. 7762, a public works procurement project under the concession modality undergoes a four-phase process. In the first stage, once the project has been devised and its legal, technical, environmental, economic and financial feasibility has been demonstrated, the appropriate contracts are negotiated and signed by the CNC and the grantor entity. It is then that the project announcement process begins and, if the granting entity deems it proper, an optional pre-qualification process is undertaken, prior to project bidding, to assess the technical and financial background and availability of bidders. In this case, an evaluation committee announces the names of the firms shortlisted to take part in the next bidding stage.

During the second phase, the bidding conditions are drafted, approved and published, for bid submission and concession contract awarding, according to the technical and/or economic criteria set forth in the bidding conditions.

To formalize the contract, the awardee must organize the concessionaire company and, once this formality is met, the CGR approves the contract and the granting entity issues an order for works to start. Project progress—construction and/or operation—will be supervised by the granting entity's auditor.

4.5.1 Preliminary studies

Under Costa Rica's Concession of Public Works with Public Services General Act, the Technical Secretariat of the CNC is responsible for conducting the activities and studies needed to prepare the concession bidding documents. Specifically, before the required agreements are signed by the CNC and the granting entity, the legal, technical, environmental, economic,

and financial feasibility of the project in question must be established. This is accomplished through a series of studies that will serve as the basis for the preparation of bid proposals by potential concessionaires.

In the San Jose-Caldera project, pre-qualified firms deposited USD 450 to cover the costs incurred in the drafting of the tender and the reference studies delivered by the CNC, consisting of the demand review report 1999; geotechnical survey and report on marginal roads, intersections and sewer improvement for the Ciudad Colon-Orotina section; study on the construction, rehabilitation and maintenance costs for the concession project; geotechnical survey of the entire route; pavement review and design based on the traffic survey; specifications for the construction of the project's road and structures; plans for marginal roads, intersections and bridges, and the Ciudad Colon-Orotina highway environmental impact assessment study.

As for the San Jose-San Ramon project, the bidding conditions preparation costs were covered by a USD 100 deposit made by bidders. Consulting firms Getinsa and Novotecni conducted the technical studies and prepared the reference plans for the construction, rehabilitation and improvement of the different sections of the General Cañas-Bernardo Soto highway. These studies were later supplemented with documentation and reference plans for the improvement of the Santa Ana-San Antonio radial road and the construction of the San Antonio-Rio Segundo radial road, prepared by the Louis Berger Group, Inc.

The above-mentioned studies expedited the private sector's preparation of proposals. However, careful consideration has to be given to whether such studies are to be taken as final, if they meet the final project requirements, or, to the contrary, if they are to be adapted, modified or updated if necessary. For instance, in the San Jose-Caldera highway project, the time elapsed from project conception (1978) to concession agreement's signing (2001) to works commencement (2008) led to design problems when infrastructure construction was about to begin. On that occasion, the concessionaire—Autopistas del Sol S.A.—claimed that the supporting documents were out of date. For instance, project plans dated from 1998 and the traffic survey done in 1999 did not meet current specifications and standards in terms of safety, durability and service. As a result of this, new studies had to be conducted and, hence, initial work investment ended up being over 60% higher than initial estimates under the concession contract.

4.5.2 Bidder pre-qualification and access to the tender process

As already mentioned, it is common practice in Costa Rica to conduct a pre-qualification process prior to concession contract bidding and before the tender is issued, where the granting entity, through an evaluation committee made up of CNC members, reviews information pertaining to different firms and consortia. It then shortlists the bidders who have the technical and financial experience and availability required for the project.

This procedure was applied in the San Jose-Caldera concession bidding process where, by tender notice published on September 11, 1998, the CNC called for proposals for the pre-qualification of potential road concession bidders. A total of nine firms and/or consortia pre-qualified to bid. However, following the publication of the call for tender in 2000 and the opening of the process for the submission of bids, only one bidder, the Cartellone-Acosol consortium, submitted a proposal. It was awarded the concession contract.

To the contrary, in the case of the San Jose-San Ramon highway, even when it was well-known that it was advisable to screen for bidders who met the financial and technical capacity requirements, eligibility was determined during the bidding process itself. The bidder, or at least one of the members of the consortium, had to demonstrate a successful background in comparable road infrastructure works concessions and activities, in terms of the sums involved and the complexity of the works to be performed. It also had to show proof of previous experience in securing financing for civil engineering works under concession or private financing schemes for funding of public infrastructure works. The bidding terms included a series of forms for the bidder to complete in order to demonstrate that it met all of the required bidding terms.

Oddly enough, just as it happened in the San Jose-Caldera highway bidding process, only one tender bid was submitted and the contract was awarded to the sole bidder, the San Jose-San Ramon Road Consortium.

4.5.3 Award mechanism

San Jose-Caldera highway

As established in the bidding conditions for the San Jose-Caldera highway concession, the proposal evaluation process consisted of the following stages: (1) verification of bidder compliance with the legal requirements and technical and financial qualifications not assessed during the pre-qualification process; 2) assessment of the technical aspects of the proposal, and their viability; 3) financial proposal viability assessment; (4) overall assessment, based on which the contract would ultimately be awarded.

As part of their technical proposals, bidders had to submit their financial plan with a detailed cost estimate and the expected revenue from the exploitation of the works, demonstrating that the development and construction of the works specified in the bidding conditions could be finance within the timeframe stipulated. In addition, the technical proposal had to include the works schedule for the construction stage, and an operations and maintenance plan for the implementation stage. All plans were assessed by an evaluation committee, with the aid of advisors, to verify the viability of the cost estimates and the work program proposed by each bidder.

Following that process, a financial analysis of the bid proposals was conducted. Bidders, using conventional feasibility and profitability analysis techniques, had to estimate the cash flow over time at an annual 12.5%

discount rate. The analyzed period had to cover the duration of the execution of the works and the 23 years that the contract concession was expected to last, so that financial calculations could be reviewed in detail, making sure that the proposal's expected profitability was reasonable. The guiding criterion was that any proposal that failed to conform to the required methodology or differed from the established assumptions would be disqualified.

Finally, once the above steps were completed and certain proposals were declared technically and financially admissible, the concession contract was to be sine qua non-awarded to the bidder who obtained the highest score according to the formula below. By following this procedure, the successful consortium would be the one that bid the least present value of revenues—the most important criterion, accounting for 64% of the total pondered criteria, the lowest toll fee—representing 26% of the total—and, finally, the lowest co-participation of the state in the concession (10%).

$$X_i = 100x[Y_{min\ NPV} / Y_{i\ NPV}] + 40\ x\ [T_{0\ min}/T_{0i}]15x[\beta_{min}/\beta_i]$$

Where:

X_i= Score obtained by bidder "i". The proposal with the highest Xi value would be the successful bid. Constants 100, 40 and 15 are the pondered weights of each score variable.

$Y_{min\ NPV}$= The least Net Present Value of Total Revenues requested by one of the bidders, for the proposed T0 toll fee, stated in millions of USD, with up to 3 decimals, discounted at an annual rate of 12.5%.

$Y_{i\ NPV}$= Net Present Value of Total Revenues requested by bidder "i", consistent with the T0 toll fee offered, stated in millions of USD, with up to 3 decimals, discounted at an annual rate of 12.5%, offered by the bidder in its Economic Bid.

$T_{0\ min}$= The lowest basic toll fee for light vehicles per traffic direction for an end-to-end trip offered by one of the bidders. The T0 min value had to be consistent with the proposed YNPV and lower than USD 2.75, as that was the maximum basic toll fee established by the granting entity for the project concession.

T_{0i}= The basic toll fee offered by bidder "i" for light vehicles per traffic direction for an end-to-end trip. Like the above data, the value of T0i had to be consistent with the proposed YNPV value and lower than USD 2.75. Bidders quoting rates above that maximum would be disqualified.

β_{min}= The lowest percentage offered relative to revenue sharing with the government.

β_i= The value of the percentage offered by bidder "i" relative to revenue sharing with the government.

The law states that in the event of a tie among different bidders when the above formula is applied a Costa Rican proposal will be preferred over a foreign bid and, if the tie involves two or more domestic bidders, the successful bid will be the one submitted first.

San Jose-San Ramon highway

During the bidding process for the concession of the San Jose-San Ramon corridor, an evaluation committee was set up to assess proposals, initially by verifying bidders' background in civil engineering works and financial capacity and, subsequently, by reviewing the studies for the different technical plans submitted. Once the eligible proposals were shortlisted, the award process would be much simpler than the case above described for the San Jose-Caldera highway, as the contract would be awarded, from among the shortlisted bids, to the one quoting the lowest basic toll fee.

The evaluation of the proposal's financial reasonableness consisted in setting a toll fee below which the project's profitability was deemed insufficiently profitable for the bidder. In this regard, any bid with a proposed toll fee under USD 1.30 would be deemed an unprofitable proposal and, hence, ineligible.

Under the bidding conditions, in the event of a tie between two or more proposals, the preferred bid would be the one offering the shortest term for commissioning all project sections. If the tie persisted, the contract would be awarded to the bidder requesting the lowest minimum revenue guarantee, as the traffic risk assumed by the granting entity would be lower.

If even then the tie persisted, the Costa Rican proposal, i.e. the consortium made up of domestic companies or the consortium having the greatest percentage of domestic partner participation, would be preferred over a foreign proposal. If the tie was between two or more national or two or more foreign bidders, the contract would be awarded to the bidder who submitted its proposal to the CNC first.

4.5.4 Assessment of bids and contract awarding

San Jose-Caldera highway successful consortium

Nine consortia pre-qualified for the concession of the San Jose-Caldera highway in 1999. From among them, the Cartellone-Acosol consortium, made up of Argentina's José Cartellone Construcciones Civiles S.A. and Costa Rica's Industrias Acosol S.A., was the only bidder that had submitted a proposal by November 29, 2000, the scheduled deadline for that stage of the bidding process.

This was due to the fact that the highway had seen more than 20 years of failed construction attempts, and required an investment of nearly USD 150 million. As a result of this, the perceived risk was too high and the remaining consortia refrained from going any further in the bidding process.

In February 2001, the consortium's technical proposal was approved, and the CNC's evaluation committee moved on to assess the companies' technical proposal and financial guarantees. At that point, certain reservations were expressed in relation to the consortium's financial capacity, partly because Cartellone was linked to an alleged non-compliance with the Honduran government.

A series of discussions were held with the CNC, the consortium and the financial institutions. The purpose of these talks was to clarify concerns surrounding the financing of the works. The project was in part a new work, there was a big demand risk component as it was not possible to precisely assess the expected traffic. In this context, the banking institutions—the IDB, the Central American Bank for Economic Integration (CABEI), and the Dresdner Bank—limited their participation to 60%, while the consortium was expected to contribute the remaining 40%.

In May 2001, the concession was awarded to the Cartellone-Acosol consortium and, in December of that same year, the contract was signed with Concesiones Viales S.A. (COVISA), whose shareholders were José Cartellone Construcciones Civiles S.A., which owned an equity interest of 95%, and Industrias Acosol S.A., which owned the remaining 5%.

In October 2002, however, problems arose between the partners. Both companies had to pay USD 12.5 million worth of performance bonds and create a joint corporation. Yet, Acosol failed to pay as agreed, and Cartellone had to meet the payments owed by both parties. As a result of this, there was an assignment of the rights of Acosol in favor the Canadian company SNC-Lavalin de Costa S.A., with COVISA's equity ownership now distributed as follows: 47.5% of stocks were now owned by José Cartellone Construcciones Civiles S.A., 5% was retained by Acosol S.A., while SNC-Lavalin de Costa Rica S.A. now held a 47.5% interest. That year, however, the CNC authorized Industrias Acosol to, as member of the successful consortium, assign the totality of its rights and obligations to SNC-Lavalin S.A. In 2003, the first contract addendum was signed and countersigned by the CGR in August of that same year. It should be noted, however, that this is not the consortium that would eventually execute the works.

The San Jose-San Ramon Road Consortium

On February 5, 2002, the CNC published the notice of International Competitive Bidding for the Concession of the San Jose-San Ramon Corridor, declared to be in the public interest by the President of the Republic in May of that same year. When bids were accepted in January 2004, only one bidder submitted a proposal: the San Jose-San Ramon Road Consortium, made up of Concesiones Viales de Costa Rica S.A. (a subsidiary of Spain's FCC), Itinere Costa Rica S.A., Soares Da Costa Concesiones Costa Rica S.A., and M&S Concesiones S.A.

The evaluation committee declared the submitted technical proposal eligible and, after opening the envelope containing the consortium's financial proposal, the CNC was advised to award the contract to the sole bidder. On June 7, 2004, the CNC's board of directors awarded the contract to the successful consortium concessionaire Autopistas del Valle, made up of FCC, with a 35% interest; the Spanish Itinere, with another 35%; Soares Da Costa Concesiones Costa Rica, with 17%; and M&S Concesiones, with 13%. On April 18, 2005, the CGR approved the contract.

4.6 Conception, contract monitoring and risk allocation

4.6.1 The path to the definitive concession contract for the San Jose-Caldera highway: five addenda and a supplementary agreement

Since 1998, a great number of players have participated in working out the definitive concession contract for the San Jose-Caldera highway concession: seven public works ministers, seven finance ministers, seven from Planning and five different presidents of the Central Bank of Costa Rica, along with a similar number of representatives from the private sector.

A total of eight years passed from the submission of bids in 2000 until the order was given to start construction of the project. The lapsed time brought with it multiple changes regarding project conditions, start times and costs, which meant that five addenda to the contract and a supplemental contract had to be added, resulting in constant modifications to the project and the original concession contract and thereby complicating its later management.

In the two years after the CNC and COVISA signed the original concession contract in 2001, the winning consortium underwent changes—with the company SNC Lavalin de Costa Rica S.A. joining the consortium, as mentioned in the preceding section. It was therefore agreed to introduce a series of changes in some of the clauses of the initial concession contract, with the goal of providing greater clarity regarding the rights and obligations of the parties involved. All of that was expressed in Addendum No. 1.

Afterward, Addendum No. 2 was drawn up with the goal of similarly clarifying certain clauses related to new investments that the concessionaire would have to make while developing the project, which had not been initially foreseen. In this addendum, the procedures for adjusting the initial contract fees were reviewed, and the opportunity was also taken to revise the IRI (International Roughness Index, or highway pavement surface) which were originally established values that had to be guaranteed.

In November of 2004, after approval of the previous addendum, when the order was given to start, the concessionaire claimed that the granting entity had failed to secure the necessary land expropriation, which led to the concessionaire's request to cancel the agreement. It was then that the CNC considered the assignment of the concession to Autopistas del Sol S.A.—formed by P.I. Promotora de Infraestructuras S.A., Itínere CR Valle del Sol S.A., Infraestructuras SDC, Costa Rica S.A. and M&SDI-M&S Desarrollos

Internacionales, S.A. The terms of this assignment were included in Addendum No. 3, endorsed finally by the Office of the Comptroller General (CGR) in 2006. However, construction would not start until 2008, as it was not until the end of 2007 when Autopistas del Sol managed to sign a financing agreement for the highway with CABEI and Caja Madrid, having requested, as is reflected in Addendum No. 4, formation of a guarantee trust in order to transfer 100% of the concessionaire company's shares.

On the other hand, this addendum also revealed a new investment plan that included a set of new works not anticipated in the original conception of the project and that became necessary in order to provide the infrastructure with the safety, durability and service conditions required at the time. These works meant an increase of more than 60% in the budget over what was initially estimated for the project in the original agreement. The detailed technical studies, carried out during the transition period, showed that greater slope stabilization treatment was necessary in some sections and that several pre-existing structures in sections I and II of the work had deteriorated greatly during the time that passed since the baseline draft project, creating the need for additional investments to repair much of the pavement. In addition, the fact that so many years had passed made it necessary to update the unit prices of the initial bid. These modifications in turn entailed planning of new works and processing of a group of expropriations not considered in the initial project, leading finally to a decision to extend the term of the agreement to carry out the works by six months.

Due to all this, the updated investment and financing plan that the concessionaire submitted was approved in October, 2007—with an estimated cost overrun relative to the initial investment of USD 22,721,233 (in dollars as of November 2000). By this time, during the process of renegotiation, it might have been a good idea for the granting entity to consider the option of promoting competition among other private sector companies to seek new, alternative bids. This might have led to not having to accept in full the new conditions that the concessionaire demanded.

A fifth addendum incorporated into the contract was signed after being endorsed in November of that same year. This document specified the conditions of the guarantee trust, increasing the amount and the timeframe for the minimum earnings guaranteed by the government as well as the sharing percentages. The latter was due to the fact that the CABEI issued a statement expressing that the conditions needed to be changed in order to make it viable to finance the project.

In January 2008, the order was given to begin the definitive concession contract for project construction, but it again became necessary to sign a supplementary agreement to incorporate new investments for a value exceeding USD 22 million (priced as of April 2008).

These investments would cover a series of tasks that the concessionaire submitted three months after starting the works considered indispensable for

the continuation of the construction process, which would be paid directly by the state as they were incurred by the concessionaire.

Furthermore, this supplementary agreement introduced a clause into the concession contract that allowed the concessionaire to provisionally commission part of the highway and to collect tolls for its use before the works were completed. The government's goal was to avoid an economic/financial imbalance of the contract so that the concessionaire would not be entitled to renegotiate the conditions even more, as that had been detrimental to the country. However, it was not until four years later when the government would declare the final roll-out of the infrastructure, even though there were still works pending to complete the project. At the time, the concession was completely administered by Globalvia, after that company acquired all of the Autopistas del Sol shares.

Source of income, fees applied and government's share

The evaluating commission determined that the concession contract for the San Jose-Caldera highway offered a return on investment of over 18%. According to the final contract, the updated value of gross revenue that the concessionaire company hoped to collect during the concession term rose to USD 258 million.

To do that, the concessionaire counted on the right to charge a toll to end users for the effective use of the infrastructure at different toll stations in accordance with an approximate total or partial distance driven along the highway, charging a maximum fee for light vehicles of USD 2.70. The concessionaire would receive some revenue from the state in the event that exercised the minimum revenue guarantee mechanism. Additionally, the concessionaire could receive income for general services resulting from the exploitation of the commercial services in the mandatory rest zone in section II of the project as well as for new commercial services that third parties could request.

On the other hand, in accordance with the concession contract, the granting entity had the right to receive a share of the revenue from tolls from the concessionaire. It is important to point out that, as was mentioned above, these numbers, with respect to the particulars in the original agreement, were revised in Addendum No. 5 from October 2007, due to all the changes introduced to project conditions over the years, including anticipated vehicle traffic. The next table shows a comparison of the ratios established by the granting entity in both phases of the conception of the agreement:

Table 4.2 **Revenue sharing by the state in estimated revenues from tolls in the original and final contracts of the San Jose-Caldera highway concession**

Calendar year of operation	Revenue estimated by the granting entity(*) Original contract	Percentage offered Original contract	Revenue estimated by the granting entity(*) Final contract	Percentage offered Final contract
1	-	-	31.010.000	6%
2	-	-	32.300.000	13%
3	19.033.587	6%	33.620.000	15%
4	22.186.970	13%	34.860.000	17%
5	24.036.096	15%	36.170.000	19%
6	25.474.152	17%	37.670.000	21%
7	26.943.003	19%	37.720.000	22%
8	28.433.833	21%	37.640.000	23%
9	29.977.872	22%	39.150.000	26%
10	31.546.394	23%	40.710.000	28%
11	32.663.084	26%	42.330.000	30%
12	33.819.300	28%	44.090.000	31%
13	35.118.983	30%	45.940.000	33%
14	36.468.610	31%	46.820.000	29%
15	37.759.527	33%	47.730.000	25%
16	38.969.024	29%	49.160.000	21%
17	40.217.261	25%	50.630.000	17%
18	41.505.478	21%	52.150.000	13%
19	42.834.958	17%	53.720.000	10%
20	44.207.020	13%	55.330.000	7%
21	45.474.989	10%	56.990.000	5%
22	46.779.325	7%	58.700.000	3%
23	-	-	60.460.000	1%

(*) All revenue stated in USD of the year 2000.

Source: Original and final concession contracts for the San Jose-Caldera highway.

4.6.2 Risk allocation and changes in mitigation mechanisms

In the original concession contract, it was specified that the concessionaire assumed the risks associated with the construction, financing and management of the highway. The consortium was, in turn, contractually obliged to purchase a series of insurance policies that covered, among other things, the construction risks with civil liability coverage, civil liability for the period of operation and occupational risks.

The granting entity, in turn, had to assume expropriation risks. It committed to carry out any necessary steps to acquire the plots adjoining the works area defined in the contract. However, as was mentioned throughout this chapter, one of the main problems encountered when developing the San Jose-Caldera concession was the fact that the public sector was incapable of meeting the planned deadlines to complete the expropriation process. This caused continuous delays in construction, which led to significant cost overruns for the project and to the concessionaire demanding the subsequent economic/financial rebalancing of the contract.

An analysis of the Law of Expropriations in effect during the development of the project shows that the structure for expropriation processes established by law is insufficient. The process is divided into an initial administrative phase and a subsequent judicial phase. After a declaration of public interest regarding the land, the granting entity requests an assessment of the plot and the owner is notified of the assigned value, after which a judicial process is initiated so that the owner may file a complaint or contest the offer if it is deemed unacceptable. The problem lies in the fact that the state cannot occupy the plot until the entire process is completed and a final agreement is reached, which can cause excessive delays in the acquisition of the necessary land, as seen in this case.

Undoubtedly, this situation should have been foreseen. Furthermore, in the event that no way to accelerate the process was found, the state should have opted to hold off from calling for bids for the concession until the expropriation process was well advanced or even finalized, thereby avoiding many of the problems that arose during contract development.

On the other hand, the set of risks associated with the projection of traffic and the respective revenue, which had been included in the bid by the winning consortium, would be the exclusive responsibility of the concessionaire. However, to mitigate these risks, which could affect the viability of the project, the CNC established a guarantee of minimum revenue intended to compensate the concessionaire in the event that revenue obtained was less than the estimated amount. In addition, the ability to readjust the fees in US dollars in certain situations specified in the agreement that could alter the concessionaire's economic/financial equilibrium was guaranteed, and partial operation of the works was allowed in order to benefit cash flow.

As was mentioned above, the minimum revenue guarantees that the government guaranteed the concessionaire and the duration of these

guarantees were increased by Addendum No. 5 so that the project could secure the necessary financing and banks would not perceive the risk as being so high. This assertion can be appreciated in Table 4.3.

Table 4.3 **Minimum revenue guaranteed by the state, original and final contracts of the San Jose-Caldera highway concession**

Calendar year of operation	Minimum guaranteed revenue(*) Original contract of 2001	Minimum guaranteed revenue(*) Final contract of 2008
1	15.361.030	28.700.000
2	15.821.861	30.530.000
3	16.296.517	32.530.000
4	16.785.412	34.700.000
5	17.288.975	37.060.000
6	17.807.644	39.640.000
7	18.341.873	40.790.000
8	18.892.129	41.980.000
9	19.458.893	43.210.000
10	20.042.661	44.470.000
11	20.643.940	45.770.000
12	21.263.258	47.200.000
13	21.901.156	48.690.000
14	-	50.220.000
15	-	51.810.000
16	-	53.450.000
17	-	54.450.000
18 (6 months)	-	27.735.000

(*) All revenue stated in USD of the year 2000.

Source: Original and final concession contracts for the San Jose-Caldera highway

For each individual year during concession operation, the concessionaire had the option of accepting or declining the minimum revenue guarantee, which it would receive if that year's revenue from tolls was less than the amount established in the guarantee. This mechanism would take effect once the concession was in full service, meaning that it would not be applied during the construction phase, nor during the partial operation of the project, for that reason, with the works still incomplete as of 2014, this mitigation mechanism had yet to come in effect.

Control and monitoring of quality standards

Under the requirements established in the concession contract for the San Jose-Caldera highway, the concessionaire had to submit a Self-Monitoring Plan for Works Quality to the granting entity. The concessionaire was supposed

to install its own quality control laboratory to perform tests and measurements required to monitor the state of the infrastructure. The concessionaire was also supposed to present an Operation and Maintenance Plan once the infrastructure was placed in service to monitor compliance with the terms of the concession contract. The granting entity would then appoint a supervisory committee to conduct the relevant inspections and verify compliance with the various plans that were submitted. This team would be composed of civil servants from the Secretariat of Concessions, the MOPT and CONAVI, and, if necessary, external consultants would be contracted.

Considering this aspect, in 2004 a bidding process was initiated to contract a firm that would supervise the execution of the concession contract, which was finally awarded to the consortium IMNSA-Euroestudios for USD 3,350,700.5, in which Euroestudios contributed the know how in the matter of concessions required by the consortium, since IMNSA had never supervised a concession contract. The supervision agreement was signed on April 28, 2005, but it was not endorsed by the CGR until June of 2006. In March 2007, an addendum was signed to increase the value of the contract by USD 180,000.

In the initial reports, the supervisory firm pointed out to the CNC a series of irregularities in the concessionaire Autopistas del Sol's incompliance with certain requirements regarding contamination of aquifers and poor quality of the asphalt layer or the slopes. However, the granting entity did not recognize the information as valid, after it was discovered that IMNSA Euroestudios had incurred several acts of incompliance since the supervisory agreement had come into effect—mainly in terms of tax payment and social security contributions for the human resources required under the contract. This created the perception that the supervision was incomplete and untrue.

The fines established by the agreement therefore were enforced, reaching 25% of the total contract value, but the deficiencies discovered were not resolved. In February of 2009, the National Comptroller asked the CNC to act in the matter. Finally, in August of that same year, the CNC made the decision to terminate the supervision agreement, which was now awarded to the company COCISA-CANO after the formation of the Commissioning Authorization Committee (CAPS), which was composed of officials from the CNC, the MOPT and CONAVI, and which would perform the necessary inspections of the works for the granting entity. In February 2010, with the inauguration and provisional commissioning of the highway, damage in the roadway became visible. This led to the formation of an investigative committee that concluded that the supervisory and monitoring tasks performed had been insufficient.

Similarly, during the early years of operation, the highway showed signs of congestion, lowering the quality of service and affecting the highway's end users. A series of acts of incompliance committed by the concessionaire were also discovered, which led the granting entity to enforce a set of fines. However, as the table below shows, in those years and since the inauguration of the highway in 2008, there were certain aspects that took a long time

to address, and others in which the granting entity found quantification and processing difficult. The main result of this was that in 2014 the highway was still unfinished, and after four years of delay, the concessionaire still had not had to pay a single fine, and still had not given a definite date for the final commissioning of the infrastructure. It remains unknown when the highway will be finished.

Table 4.4 **Fines imposed by the granting entity for incompliance with the terms of the concession contract for the San Jose-Caldera highway**

Incompliance with	Amount (USD)	Start date	Duration until solution (days)	Fine enforced
Traffic Management Plan	179,000.00	May 4, 2009	638	NO
Delivery of Operation and Maintenance Plan	4,500.00	May 13, 2009	247	YES
Technical specifications for the construction of the Jesus Maria bridge	15,750.00	May 19, 2009	623	NO
Late delivery of March 2009 report	1,000.00	May 21, 2009	239	YES
Lack of lighting in the section between Cuesta de las Palomas and Forum in Santa Ana	-	May 28, 2009	305	Dismissed
Delay in delivery of financial report pursuant to clause 3.5.2, subsection b3 of the concession contract	6,912,00	November 9, 2010	34	YES
Delay in delivery of financial report pursuant to clause 3.5.2, subsection b4 of the concession contract	6,912.00	November 9, 2009	34	YES
Delay in delivery of financial report pursuant to clause 3.5.2, subsection b5 of the concession contract	Not assessed	Not started since October 27, 2009	-	NO
Contribution of information on financial states and revenue from toll stations	Not assessed	Not started since October 27, 2009	-	NO
Delay in delivery of information related to the works required for improvement of stability conditions of cut slopes in Section II	Not assessed	Not started since October 19, 2009	-	NO
Total	USD 224,826.00			

Source: Report on the monitoring performed by the CNC of the concessionaire's revenue and the fine enforcement process in the San Jose-Caldera highway concession. Operational and Evaluative Audit Division, as of February 2011.

Revenue and traffic registered during the operational period of the highway: results vs. forecasts

In the concession model submitted by Cartellone, the San Jose-Caldera concession was earmarked to begin operations in 2001. However, as was seen in this chapter, it was not until 2010 that the works were partially operational and the applicable toll was collected. It is evident, therefore, that for the purposes of traffic, the evolution in the country's economic and demographic conditions over those nine years altered initial estimates.

From June 2009 until the end of the summer of 2013, a total of 207 million vehicles passed through the different toll stations. This meant traffic was on average 19,000 vehicles per year higher than the original estimates, with a greater actual variation in vehicular flow in the first year of operation. Among all the data it is worth noting that traffic levels at two stations alone—Pozón and San Rafael, which represent 22% of total traffic, were 200% higher than expected in the first year.

Looking at these results and taking into consideration future forecasts, it can be inferred that revenues received by the concessionaire will be greater than those of the initial model submitted, not only in the first years, but over the entire life of the concession.

In the early years until the present date, the concessionaire has collected revenue over and beyond what was originally estimated, on average 119% more per year. This means that if this trend continues, the present value of revenues would be achieved much earlier than was thought and the concession would reach its end in the year 15, long before the maximum term of 25.5 years established by the contract.

4.6.3 Execution framework of the San Jose-San Ramon highway concession contract

Contract concept and consequences of failure to comply with preceding conditions

On September 22, 2004, the CNC approved the Work Concession Contract with Public Services for the San Jose – San Ramon Corridor for a term of 25 years and a budget of USD 314 million. The contract modality was Build-Operate-Transfer (BOT) with a maximum building term of 25 months. It was signed with the Concessionaire Autopistas del Valle S.A. and countersigned by the CGR in April 2005.

In exchange for the building, rehabilitation of the existing segments of the corridor and maintenance of the highway, the concessionaire was granted the right to operate five toll stations located along the corridor. A maximum toll fee was set at USD 1.30 for light vehicles traveling the complete distance.

In accordance with the economic bid submitted by the successful bidder, the contract offered the project administrator a profit of 22.64%. The concessionaire's investment needs were USD 270 million to build the road with the additional condition that it had to cover at least 20% with its own resources.

Under these conditions, the entity granting the contract notified that the transition period had begun, which, as set forth in the contract, was to last 12 months to ensure compliance with other preceding conditions, including the financial closing and necessary expropriation processes. Working under this assumption, the construction period was scheduled to begin on May 3, 2006. However, the review committee created to analyze the work progress decided that it was not feasible to issue the construction startup order within the timeframe foreseen due to the obstacles encountered in the expropriation process as well as in the design and relocation of public services affected by the work. As a result, the transition period was extended an additional six months.

Later, the CNC Technical Secretariat once again issued an extension of the transition period term until there was confirmation that all the preceding conditions had been met. Within this context, Autopistas del Valle S.A., the concessionaire, filed a claim against the granting entity for USD 53,869,490.23 for the delay in the startup of construction works, which had led to a loss of the economic-financial balance in the concession contract. It argued that since the date of submitting the bid, the international market prices of cement, steel, oil by-products and other building inputs for the project had increased, which had a direct impact on building costs.

In 2008, the parties began negotiating a contract addendum to compensate for the problems to date. The concessionaire argued that over this period the delays in starting the work were the granting entity's fault because it had failed to comply with the contract conditions. Furthermore, there was land that had still not been expropriated. This project ran into the same problems encountered in the concession of the San Jose-Caldera corridor due to the government's difficulties in managing expropriation risks. On the other hand, the government blamed the private company for not having yet obtained the financial closing for the project.

In 2009, Autopistas del Valle forwarded to the CNC a letter from Caja Madrid, Project Director in charge of project structuring. The letter outlined the conditions to obtain the financial closing based on three items: revision of the minimum revenue guarantees; compensation for damages and higher financial costs as a result of "market disruption"—at that time there were signs of a shift in the financial market as a result of the international economic crisis; and changes to risk schemes.

Within this context, the CNC started to draw up an addendum specifying the changes implemented to the San Jose-San Ramon Corridor civil works. It was decided to include additional items to improve the functional, operational and safety conditions of the concession and to maintain the financial viability of the project. This addendum also specified modifications made to the toll fees and the conditions and terms for putting the road works and the toll stations into operation.

Investments were updated applying a model similar to the one used in the San Jose-Caldera highway (Addendum No.5) which was supported by the banks financing this project. Additionally, the terms of the new addendum contemplated the creation of a Guaranty Trust requested by the concessionaire

to make it more viable for obtaining financing. The building period was extended to 30 months and the minimum revenue guarantee was raised.

However, on March 29, 2012, Autopistas del Valle S.A., faced with the impossibility of complying with the contract, submitted a request to the granting entity that it authorize the transfer of the contract to "Vial Valle Central S.A." constituted by the Brazilian company OAS Central America Limited. With CNC's approval, the new concessionaire requested the contract's renegotiation to reestablish the project's economic-financial balance. OAS thus acquired the right to demand new contract terms without any competition.

The conditions that were finally agreed upon and included in the new contract, which was signed in February 2013, provoked several demonstrations by the inhabitants of the western cities: San Ramon, Palmares, Zarcero, Naranjo, Valverde Vega. (The conditions are explained in detail in the next section of this chapter.) Then, on April 22, 2013, the President of Costa Rica announced that the concession contract of the San Jose-San Ramon highway had been revoked. As of April 2014, the work had not yet been started.

Risk Sharing and Guarantees

According to the concession contract, the concessionaire of the San Jose-San Ramon highway bore the risks of the construction work and the delays in the completion of the works provided they were not attributable to the granting entity or the state or as a result of force majeure.

At the same time, the risks associated with the operation and the exploitation of the concession related to the demand estimates and the corresponding revenues were borne by the concessionaire. However, it was necessary to mitigate this traffic risk to obtain financing for the project. Thus, it was decided to follow the example of the only highway concession contract entered into previously in Costa Rica, the San Jose-Caldera concession. It was then set forth in accordance with the original contract signed in 2004 that the concessionaire would be entitled to a minimum revenue guarantee for the first ten calendar years of the operation. As shown in the next paragraph, the economic-financial equilibration of the contract led to a substantial increase of the amount and the timeframe of these guarantees.

As discussed in previous chapters of this book, a clear and detailed risk sharing scheme adopted in any concession is one of the essential elements to achieve a correct development and execution of a project. In this specific case, it is clear there was deficient management of the risks associated to a variety of situations that hindered the project startup.

There were multiple delays in the expropriations for over seven years. The granting entity incurred the same mistakes in the management of the expropriation risks as seen in the San Jose-Caldera project, running into the same difficulties to acquire land faced in the previous case study.

The concessionaire, Autopistas del Valle, the successful tender bidder, failed to obtain the financial means to operate the work of the San Jose-San Ramon highway and even after it had to transfer the contract almost a decade after the initial startup date for the works, it did not pay any fines to the granting

entity. This was due to the fact that in 2006 and with the hope that the original contract would finally be carried out, the government and the company entered into a new agreement eliminating all responsibilities of both parties.

4.7 Economic-financial rebalance of highway concessions in Costa Rica

The circumstances surrounding the development of concession projects in Costa Rica led to a frequent need to adjust the equilibrium of the contracts via increases in budget, the timeframe and guarantees. The two highway concessions described in this chapter illustrate this process.

It is true that the consequences and the changes made to the original contracts of these concessions after re-establishing the project's equilibrium were significantly more notorious in the case of the San Jose-San Ramon road than in the San Jose-Caldera highway. In the latter case, as discussed, constant delays in the work execution made it necessary in 2007 to update the amounts submitted in the bid for the initial investment and the expected exploitation revenues, to extend the concession term for six months and to adjust the minimum revenue guarantees as well as the government participation rates. On the other hand, changes made in the San Jose-San Ramon highway contract deserve special attention because the conditions set forth in the original contract were changed dramatically.

4.7.1 Renegotiation of the San Jose-San Ramon concession contract and its consequences

Negotiations involving the addendum to the San Jose-San Ramon concession contract between Autopistas del Valle S.A. and CNC came about in part because the concessionaire argued that all the delays incurred by the granting entity in the process of expropriating the land next to the highway had led to the loss of the contract's economic-financial balance.

Although several changes to the original contract signed in 2004 were analyzed to address this situation, such as increases in the concession term and the fees to be charged to users, the contract could not be carried out and in the end Autopistas del Valle transferred the contract to OAS in 2012 with CGR's authorization.

At the time, the new concessionaire submitted a request for the renegotiation of the contract terms to reinstate the economic-financial equilibrium, which resulted in significant changes to key aspects of the concession. The granting entity accepted the new conditions demanded by the concessionaire–without any consideration of the possibility of fostering new competition in this negotiation process—and signed a new contract, which was approved in 2013.

The technical and design changes made to the original project plus the additional works included–such as the construction of the new Santa Ana-San Antonio branch–along with the adjustment of construction material unit prices involved an increase in the initial investment, which rose from USD 266,663,000 to USD 650,423,399. The concessionaire alleged that incurred investments would be 143% higher than the ones foreseen in the original contract.

In order to reinstate the project's economic-financial balance, two important modifications were made to the contract. First, the term of the concession was extended from 25 to 30 years. And, a very significant increase in the stipulated base toll fee was approved. Initially, the maximum toll fee for users of light vehicles (automobiles, motorcycles and light weight vehicles) traveling the full length of the road in either direction—which included Los Arcos and Grecian toll stations—was USD 1.30 expressed in USD values of January 20, 2004. In the new contract signed with OAS, it was increased to USD 2.99, 130% higher. With these changes, as shown in Table 4.5, users would have to pay much higher fees at each one of the five toll stations. The table also shows that the changes made to the project resulted in the fact that the distances to be paid at each station would be different, which led to the decision to re-locate the stations.

Table 4.5 **Toll fees at the toll stations of the San Jose-San Ramon highway concession project before and after the contract was renegotiated**

Toll stations	Equivalent distance in Km		Maximum toll fees authorized per Light vehicle (USD)		
			Contract 2004	Contract 2013	% Increase
Los Arcos	13.33	13.33	0.408	1.570	285%
Manolos	11.89	11.89	0.344	0.437	27%
Grecia	23.32	40.90	0.714	1.420	99%
Palmares	5.69	-	0.178	-	
Rio Segundo	8.00	8.50	0.255	0.293	15%
Castella	-	13.33	-	1.570	

Source: Original and final concession contracts for the San Jose-San Ramon highway

Along with higher toll fees, the concessionaire demanded an extension of the term and higher minimum revenue guarantees (See Table 4.6) because the banks financing the project were unwilling to assume any traffic risk at the time. In order to ensure payment of the minimum revenue guarantees to the concessionaire or by default to the project creditors, the government of Costa Rica, made the commitment to issue and maintain in force a liquidity bond through the National Treasury of the Ministry of Economy for an amount of USD 15 million, which would remain in effect during the whole risk mitigation period as of the date of final delivery of the work and commissioning of the last stretch of the project.

Table 4.6 **Minimum revenue guarantees by the state in the original and final contract for the San Jose-San Ramon highway concession**

Operations calendar year	Minimum revenue guarantees in the 2004 Contract	Minimum revenue guarantees in the 2014 Contract
1	15,362	53,832
2	21,100	62,920
3	22,766	60,951
4	20,023	58,446
5	20,765	54,954
6	20,591	51,548
7	19,857	48,245
8	20,824	45,060
9	21,289	41,958
9	21,289	41,958
10	20,983	38,953
11		36,044
12	-	33,227
13	-	30,501
14	-	27,863
15	-	25,311
16 (6 months)	-	11,799

Source: Original and final concession contracts for the San Jose-San Ramon highway

The approval of this set of changes led to serious civilian demonstrations and the pronouncement of several sectors of the country in particular from the western area—San Ramon, Palmares, Naranjo, Grecia, Zarcero, San Carlos and Valverde Vega—because the new toll fees were considered to be exceedingly high and unaffordable for highway users. Public opinion filed a petition with the government of Costa Rica requesting that the highway's management be transferred to the state. In response, the president announced on April 22, 2013 that the concession contract had been revoked as a result of a presumed "mutual agreement" with OAS. The government was forced to pay the concessionaire USD 35 million in compensation for cancelling the Contract.

The Brazilian company initially claimed USD 45.8 million—USD 33.9 million related to investments made, USD 900,000 paid in taxes and USD 11 million in new expenses and investments. However, during the negotiations, the granting entity resorted "conciliation" with the aim of compensating the concessionaire for a smaller amount and managed to get OAS to waive the final amount related to the new works item.

At the time that this book was being drafted, the government did not have a short-term plan to build the San Jose-San Ramon highway. It was waiting on Congress to enact a law that would allow funding of the new works along this 58 Km road through a trust fund.

4.8 Project financing

A final agreement was entered into on December 20, 2007 between the financial banks and the concessionaire—at the time, Autopistas del Sol SA—to finance the development of the San Jose-Caldera highway as reflected in Addendum No.4 of the concession contract for a total estimated budget of USD 280.5 million assigned to different items that included the costs associated to the transfer of the contract already performed, the parties reached a financial agreement (see Table 4.7) whereby the banks would provide 75% of the total investment and the 25% balance would be paid in by the concessionaire partners. CABEI agreed to lend USD 160 million of the principal amount divided into two loans for USD 120 million and USD 40 million. Caja Madrid would lend USD 50 million as a loan for the principal amount.

The financial model that Autopistas del Sol and the Ministry of Public Works used to reach a deal with CABEI and Caja Madrid for the highway's construction was named the "Latin America PPP Deal of the Year" by European finance magazine Euromoney. A second award was granted by the Latin American Infrastructure Leadership Forum in the financing category. The award is fostered by the World Bank, among other banks, in recognition of initiatives with a financial structure that serve as a model to be replicated.

Table 4.7 **Financial model used for the San Jose-Caldera highway**

Sum (in millions USD)		%		Sum (in millions USD)	%
Initial investment in civil works	204	72.73	CABEI Loan	160	57.04
Contract transfer expenses	5	1.78	Caja Madrid Loan	50	17.83
Concessionaire expenses	9.5	3.39	Capital	70.5	25.13
Systems and Toll	12	4.28			
Interests and bank fees	38	13.55			
Initial payment reserve account	12	4.28			
Total	280.5	100	Total	280.5	100

Source: Addendum 4 to the San Jose-Caldera highway concession contract

On the contrary, the negotiations to reach a financial closing for the San Jose-San Ramon highway were much tougher. Autopistas del Valle S.A., the original successful tender bidder, submitted the financial model shown in Table 4.8, along with its tender offer. Although at the time it seemed viable and was approved by the granting entity, the concessionaire was unable to reach an agreement with the banks and failed to obtain the necessary funding. The final result was, as presented within this chapter, the transfer of the concession contract.

After the option to grant the highway concession in 2013 was rejected due to public unrest, the government was made aware of the fact that the San Jose-San Ramon road was in very bad condition with poor maintenance and very few actions taken to provide adequate road signage which involves high accident risks for highway users. Furthermore, this entire corridor is insufficient to sustain the current existing traffic demands and the expected future demands.

Table 4.8 **Financial model of the offer submitted by the successful bidder, Autopistas del Valle, S.A. in the initial contract for the San Jose-San Ramon highway**

Sum (thousands of USD)		%		Sum (thousands of USD)	%
Investments in construction	197,381	73.03	Capital	54,041	20.00
Expropriation funds	34,020	12.59	Subordinated debt	8,070	2.99
Concessionaire expenses	8,363	3.10	IDB security	96,000	35.53
Financial expenses	26,899	9.95	A/B Loans	100,155	37.07
Company taxes	3,544	1.31	Incoming traffic during construction	11,941	4.41
TOTAL	270,207	100		270,207	100

Considering that the granting entity lacks the necessary economic resources to develop and modernize this road, the latest initiative has been the proposal to undertake this public works project through a trust agreement by raising existing funds from banks or financial institutions via the payment of rates or toll fees for highway usage and via the sale of highway services.

Under this assumption, the current and future cash flows will be initially assigned to pay for the principal amount of the loan plus interests and the project management when the work is completed.

By April 2014, the government was waiting for Congress to pass the San Jose-San Ramon highway Development Act via a trust submitted for approval last August.

4.9 Conclusions and lessons learned

In line with the National Transport Plan, an annual investment of USD 2.4 billion per year is needed to close the existing gap in transportation infrastructure in Costa Rica. The state lacks the necessary economic resources to tackle this task. Considering that there is a limit to public debt, the possibility of resorting to public works concession contracts offers an attractive alternative to access other financing sources to develop major projects that are critical for the country's growth. Concessions represent a model that is widely used around the world. They are used even in the wealthiest counties to develop infrastructure and create competitiveness.

The government should create awareness about the country's infrastructure investment needs and foster dialogue with its citizens. One of the greatest problems encountered in establishing the concession model in Costa Rica has been that the state has failed to win over public opinion in favor of this modality. The citizens are used to moving freely on the roads without paying tolls with a few exceptions. However, throughout this chapter, it has been shown that in spite of all the difficulties encountered in the development of the San Jose-Caldera highway concession, the community accepted this project more willingly than the San Jose-San Ramon highway. The reason for this is that there are clear differences between the two projects, which ended up being determining factors in this regard.

The San Jose-Caldera highway project was presented as a new highway added to the existing one. When the announcement was made that there was a proposal to grant a concession, the citizens had alternative roads and failed to detect the negative social impact of high toll fees along this corridor. However, the alternative roads of the San Jose-San Ramon highway, which was one of the country's main highways at the time that the concession was awarded, were inconvenient or inexistent. General Cañas and Bernardo Soto, two towns dependent on this highway, were also more highly populated than in the previous case and were not used to paying flat charges to use the roadway.

It is also quite clear that the government must get the population to understand what the social benefits of certain projects are and why on certain occasions they must be financed via higher taxes or toll fees. The other relevant aspect is to select which projects are toll friendly and fit to be developed under the PPP modality and which are the projects that the state should develop directly.

The experience of failed concessions in the country generates mistrust around this model but what should actually be questioned and improved is not the term concession, per se, but the actual execution of the contracts by learning from previous mistakes and solving the technical and management deficiencies of the past.

When the idea of the San Jose-Caldera highway concession was conceived and development started, lack of concession experience led to the requirement of a period of over 30 years to get the project finally completed; the preliminary technical and design studies were conducted in 1978, works started in 2008 and the highway was not inaugurated until 2010. Lack of specific details in some aspects of the applicable law, no specialized team during the different concession stages or lack of efficiency, and the problems associated with the expropriation processes, all contributed to the fact that this project, with a call for tender in 2000, had to be negotiated at many different stages with the approval of five contract addenda and a supplementary agreement. All of these facts delayed project startup for eight years and it became necessary to reinstate the equilibrium of the concession contract.

Poor government management in terms of expropriation risks is one of the main threats to the potential success of concessions in Costa Rica. In recent years, there is a realization that it is necessary to reform the laws in force and several bills have been submitted for approval, although for the time being they

have been put aside and have not been passed. It is clear that government should not allow expropriations to become a hindrance for national development. It must foresee possible problems and address them urgently.

On the other hand, it has been clearly shown that in the case study of Costa Rican highways, there was insufficient competition in the tender process. Due to the lack of promotion of the tenders, the granting entity found itself in a situation with very few bidders competing. So much so that in both the San Jose-Caldera and San Jose-San Ramon concessions there was only one bidder at the tender showing that most investors did not find any of these projects attractive or profitable enough. In view of this situation, it would have been preferable for the grating authority to extend the deadline so that alternative bids could be submitted instead of granting the concession to the only interested bidder. It is apparent that a single bidder can exercise great pressure on the government, forcing it to accept conditions that the only bidding company or consortium may wish to impose.

On the other hand, lack of promotion of these concessions has likewise affected the chances of obtaining financial closing for the contracts since the banks requested an increase in minimum revenue guarantees from the state and changes to certain conditions to accept participating in both projects.

In spite of all of the above, in the case of the San Jose-San Ramon concession, the bidder—after a decade of negotiations with the granting entity and the banks—failed to secure financing. This fact added to the overall lack of definition and the problems associated with the public sector's poor risk management of the land expropriation led to the transfer of the concession.

The Concession of Public Works General Act allows transfers of this nature, whereby the final concessionaire ends up strongly positioned before the granting entity to renegotiate the contract terms to reach an equilibrium.

It is not clear why the government did not contemplate the possibility of fostering more competition in the transfer process to limit the rights of private businesses to request approval of certain conditions that are unfair from the perspective of what is in the public's best interest. The final consequences have been clearly shown in the San Jose-San Ramon Project where OAS managed to get the granting entity to approve toll fees and terms that led to the rejection by the community and the termination of the contract. At present, Costa Rica is faced with the fact that one of the key infrastructure projects to the country's development is in critical condition and the state has no short-term plan to handle the necessary works, added to the fact that it must pay an economic compensation to the concessionaire.

Project supervision and control are critical for correct performance of concession contracts. If the private sector is not capable of performing the contract, meeting contract conditions and providing adequate service, the model must contemplate a way for the state to rescue the project rapidly so it can be operated by the public sector or to be transferred to a different private partner without such strong negotiation powers.

All of the above would contribute to more efficient management and would avoid constant delays, multiple renegotiations or the general rejection by the community seen in the concessions implemented to date in Costa Rica.

5

Airport Terminal El Dorado in Bogota (Colombia)

Introduction
Demographic and economic context of the region
The airport sector in Colombia

Legislative and institutional framework
Reference legislation
Institutional framework

The existing procurement framework and the decision to use the PPP model
Background and studies prior to tender
Alternatives for bringing in private capital

Tender and award of contract
Studies prior to tender
Award mechanisms and evaluation of bids

Contractual design and risk allocation
Income sources
Risk allocation and mitigation mechanisms
Standards of service and quality incentives

Contract management and economic balance
Ex-post supervision of the performance of the concession contract
Change in the initial contract conditions

The concessionaire and project financing
Evolution of shareholder concessionaire structure
Project financing

Conclusions: the project's outcome

5.1 Introduction

About three decades ago, airport infrastructure was conceived as a purely public initiative. However, in order to comply with the applicable quality standards and due to huge increase in passenger and cargo traffic in recent years, different schemes of participation in the private sector have been required, from technical assistance and operation, to the management and development of infrastructure.

Particularly in South America, the role of the private sector has emerged in the development of this type of infrastructure, as has occurred with highways, railways and seaports. *According to Private Participation in Infrastructure* (PPI) Project Database, the World Bank financed a total of 163 airport projects with ties to the private sector over the period 1990-2013. Of these, the majority were executed under concession schemes (51%) in the region of Latin America and the Caribbean (42%).

A total of 69 airports were developed under different public-private partnership schemes in countries such as Chile, Brazil, Mexico, Colombia, Argentina, Ecuador and Peru (see table 5.1)[2], of which: 52 were implemented under *Build-Operate*, *Transfer* concession schemes, eight as *Greenfield projects*,[3] eight as management and leasing, and one through the sale of assets.

Within this context, it is interesting to analyze the particular case of Colombia, where the concessions and the schemes of public-private partnerships have been key pieces for the development of the national infrastructure. Its largest airport, which is positioned to become the main hub of the Americas, is located in the third place of importance in passenger traffic and is ranked number one for cargo traffic in Latin America.

This chapter focuses on the case of El Dorado International Airport concession in Bogota. The analysis aims to provide the reader with a global vision of the incorporation process of the private participation in the administration,

2. Only 30 projects have been developed in Europe and Central Asia, 13 under concession modalities.

3. They are projects that have been developed from the start, or entail a total change to an existing one. In Greenfield project concession contracts, the private sector designs, finances, builds, operates and maintains infrastructure that did not previously exist.

Table 5.1 **Airport projects developed under PPP schemes in Latin America and the Caribbean (1990-2013)**

		Features	
		Number of projects	Total investment (USD million)
Countries	Chile	15	617
	Brazil	14	15,411
	Colombia	8	1,374
	Mexico	6	3,324
	Argentina	5	2,381
	Peru	4	687
	Ecuador	3	665
	Dominican Republic	3	350

Source: Private Participation in Infrastructure (PPI), World Bank.

expansion, modernization, maintenance and operation of the country's most important airport infrastructure, whose concession period is currently in effect and will end in the year 2027.

5.1.1 Demographic and economic context of the region

Bogota, officially Bogotá, Distrito Capital, is the capital of the Republic of Colombia and the Department of Cundinamarca. It is located in the center of the country and extends approximately 33 km from south to north, and 16 km from east to west. According to the Observatory of economic and business dynamics of the Chamber of Commerce of Bogota, the Bogota-Cundinamarca region is the engine of the Colombian economy for its size, the dynamics of their productive activities, the generation of employment and the strength of its business activity.

It has a total of 7.5 million inhabitants (Bogota City Hall, 2011) and is the most important economy with greatest international prospects in the country. The city is recognized as the seventh among emerging countries with high potential to position itself globally. According to *América Economía Intelligence,* Bogota ranks eighth among the best cities for doing business in Latin America and is recognized as the fourth to attract investment (Chamber of Commerce of Bogota, 2014).

Despite the fact that the analysis of the productive activity of the country shows positive trends, several major challenges in strategic areas such as transport infrastructure persist. In Colombia, the availability of roads, railways, ports and airports is low and infrastructure gap is evident.

A country with Colombia's characteristics should have 26% more kilometers of roads than it has today, calculating its deficit at 45,000 kilometers of roads, according to Fedesarrollo (2013).[4]

Although the infrastructure gap in ports and airports is not so dramatic, the quality of air transport infrastructure is below the global average, ranking 89 out of 139 and registering a score of 4.1 out of seven, according to the Global Competitiveness Report 2010-2011—see IATA (2013). The airports in Hong Kong, Singapore, Barbados and Panama come in at the top of this ranking.

Recognizing this panorama, the country has made significant efforts to increase public and private investment in infrastructure in recent years. In regard to airport facilities, the need to modernize and expand various airports in the country was identified. In the case of Bogota, the government has proposed to take advantage of its strategic geographic location in a synergetic manner and make an example out of El Dorado, positioning it as the most attractive airport in Latin America for airlines and their passengers. Modernization and expansion of the airport involves important opportunities for the integration of the national and regional economy, and the creation of an integration hub proposed by the model of land use in Bogota.

4. Fedesarrollo is the foundation for higher education and development. It is a private entity. and one of the main think tanks in the country dedicated to economic and social policy research.

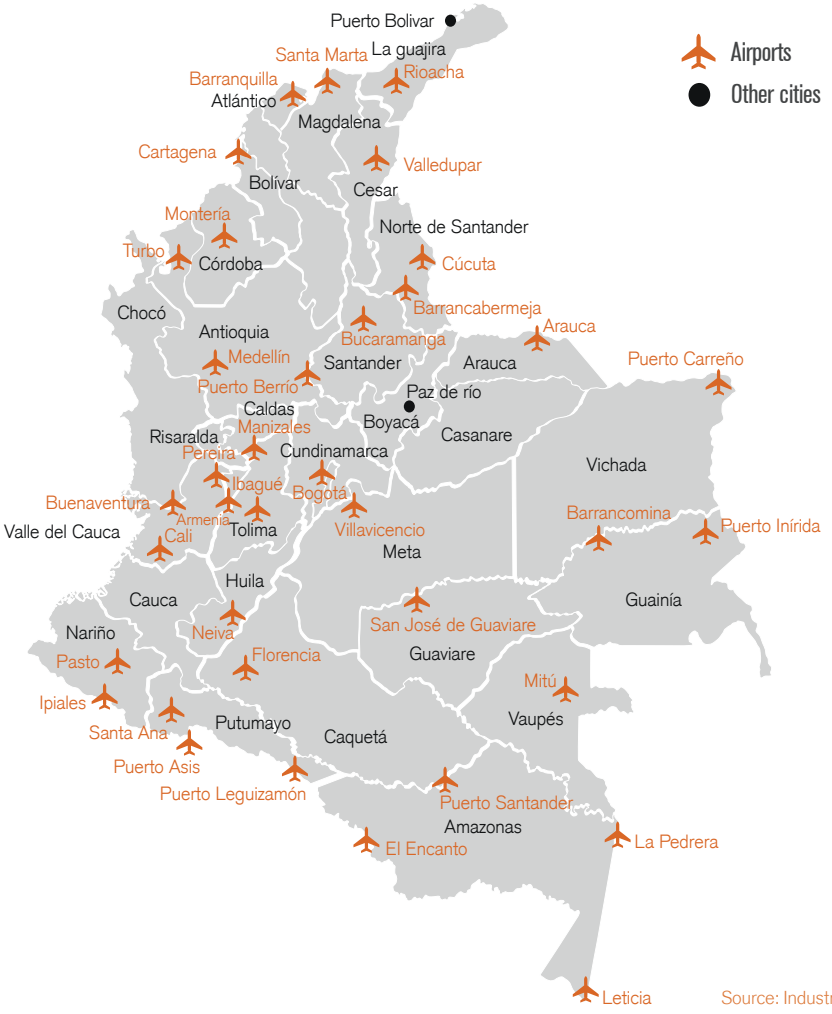
5.1.2 The airport sector in Colombia

Currently, there are a total of 202 commercial, military, municipal and private airports in Colombia. The Special Administrative Unit of Civil Aeronautics (AEROCIVIL) of the Ministry of Transport is in charge of ensuring the operation and supervision of 75 of these airports—see image 5.1. El Dorado is the most important airport of the 75, handling about 50% of the passengers flying into and out of Colombia and around 70% of air cargo in 2012 (Industry and Trade Superintendence, 2012).

In recent decades, the transport sector has recorded high growth and the airport sector has not been an exception. This growth has driven the government to make an important economic contribution to improve the quality of airport infrastructure and cargo terminals.

According to the Ministry of Transport, total investment in the air transport sector in 2012 was USD 548 million, 56% higher than the amount invested in 2011 (Ministry of Transport of Colombia, 2013).

Image 5. 1. **Airports in Colombia**



Source: Industry and Trade Superintendence (2012)

There were two main reasons for granting private consortia a contract for the operation, expansion and modernization of the busiest airports in the country: (i) large increases in air traffic registered, framed within the country's accelerated economic growth under a policy of liberalization of air space and (ii) interest in promoting the proper operation, management and development of the terminals with greater representation within the country's airport structure.

Currently, 17 of 75 airports operated by AEROCIVIL are in the hands of private investors (see Table 5.2), under the umbrella of the provisions established in state contracting laws, which will be explained later. Since 2011, the functions related to structuring, signing and management of concession contracts in airfield areas assigned to AEROCIVIL have been taken on by the National Agency of infrastructure (ANI)—see next section: legislative and institutional framework.

Table 5.2. **Airport concessions in Colombia**

		Features	
		Airport	City
Concessions	Center - North Airport Concession AIRPLAN S.A.	Antonio Roldan Betancourt	Carepa
		El Caraño	Quibdó
		José María Córdova	Rionegro
		Las Brujas	Corozal
		Los Garzones	Montería
		Olaya Herrera	Medellín
	AeroCali S.A	Alfonso Bonilla Aragón	Cali
	OPAIN S.A	El Dorado	Bogotá
	Compañía de Desarrollo Aeropuerto Eldorado S.A. CODAD S.A	El Dorado (construcción de la segunda pista y mantenimiento de la existente)	Bogotá
	Sociedad Aeroportuaria de la Costa S.A. – SACSA S.A.	Rafael Núñez	Cartagena de Indias
	Concesión Aeropuertos San Andrés y Providencia S.A. - CASYP S.A	Gustavo Rojas Pinilla	San Andrés
		El Embrujo	San Andrés
	Aeropuertos de Oriente S.A.S.	Palonegro	Bucaramanga
		Camilo Daza	Cúcuta
		Simón Bolívar	Santa Marta
		Yarigüires	Barrancabermeja
		Almirante Padilla	Riohacha
		Alfonso López Pumarejo	Valledupar

Source: Industry and Trade Superintendence (2012)

The Colombian Air Transport Association (ATAC) classifies Colombian airport concessions in three categories:

- First generation concessions: carried out under a model of minimum income guaranteed to the concessionaire. The runways for El Dorado airport in Bogota (1996) and the airports of Cartagena (1996) and Barranquilla (1997)5 were awarded under this modality.
- Second-generation concessions: the private operator's payments to AEROCIVIL were divided into fixed and variable payments based on the concessionaire's gross revenue. One example is the concession contract for the airport in Cali (2000).
- Third-generation concessions: in addition to the administration and operation, this type of concession includes works of modernization and expansion, which are the concessionaire's responsibility, who assumes the associated risk. Under this scheme, concessions were awarded for the airports of San Andrés and Providencia (2006), the airports of the northeast (Barrancabermeja, Bucaramanga, Cúcuta, Valledupar, Riohacha and Santa Marta) (2010), and the airports in the north central area (Medellin, Rionegro, Corozal, Quibdó, Apartadó and Montería) (2008).

This latter group of concessions includes the most important airport concession awarded in the country up until that point in time, which is also the focus of this chapter: the process of modernization, operation and expansion of El Dorado airport in Bogota (2006).

5.2 Legislative and institutional framework

5.2.1 Reference legislation

The institutional and legislative framework of the project for the modernization, expansion and operation of El Dorado airport is rooted in the constitutional principles of the Republic of Colombia. As a first step, the 1991 Constitution states in article 133 of the economic and public finances regime: "economic activity and the private initiatives are free, within the limits of the common good." In addition to these two guiding principles of the Colombian economic regime (freedom of enterprise and private initiative), the Constitution establishes in article 365 that public services can be provided by the state, either directly or indirectly, by organized communities, groups or private individuals.

Given that the management and operation of airports is a public service that can be provided by a private entity, Colombian legislation contemplates different alternatives for using private capital for this type of infrastructure. Thus, the possibility of private entities building and operating airport infrastructure is explained in the Code of Commerce, in the fifth chapter.

In Colombia, private participation in the financing and management of infrastructure was institutionalized in the 1990s. This was accompanied by an important policy development regarding the legal handling of concessions within Colombian legal framework. Currently, the legal regime for the country's concessions is based on two fundamental regulations: the General Statute for State Contracting, Law 80 of 1993 and the Transport Law, Law 105 of 1993, along with their subsequent amendments.

In paragraph 4 of article 32, Law 80 of 1993 defined the concession as a contract agreement "signed by State entities in order to grant a person called the concessionaire the total or partial provision, operation, exploitation, organization, management of a public service or the total or partial construction, exploitation or maintenance of works or assets intended for public use or service, as well as all activities necessary for the adequate provision or operation of the works or service at the concessionaire's risk and expense and under the supervision and control of the awarding entity, in return for payment that may consist in rights, fees, rates, infrastructure appreciation, or participation granted thereto in the exploitation of the asset, or in a periodic, one-off or percentage sum and, in general, in any other form of consideration agreed to by the parties."

Besides extending the possibilities so that the private sector could participate in state contracting actions under principles of transparency, economy and responsibility, Law 80/1993 managed to establish the concession contract as a contract and not as a mode of payment of the public works contract (as previously regulated by Decree Law 222 of 1983), extendable for periods above 20 years.

From this law, it is worth highlighting that the concessionaire's assumption of risk and the development of the activity under the government's surveillance is considered as an element derived from the very nature of the concession contract. In addition, the law indicates that concessionaire entities shall have the right to demand "that the administration restore the balance of the economic equation of the contract to a point of no loss in the case of unexpected situations that are not attributable to contractors."

In addition to the provisions in the Law 80/1993, Law 105/1993 decrees basic provisions on transport, redistributes competences and resources between the country and regional entities, and regulates the planning in the transport sector. This law establishes the securitization of assetsas a long-term financial mechanism. Thus, it dictates in its article 31 that "in order to ensure the domestic investments needed for infrastructure projects, the concessionaires can securitize projects, through independent assets while keeping the contractual responsibility."

Law 105/1993 also establishes that in concession contracts for transport infrastructure projects the awarding entity has the ability to establish some kind of guarantees, such as minimum income levels. Thus, as part of the definition of the risk policy for government contracts, Law 448 of 1998 creates a contingency fund, aimed at meeting the contingent liabilities of state entities as established by the government, which will determine the type of risks that may be covered by the fund.

On the other hand, despite all of this regulatory development, the Legislative Observatory (2012)[6] has acknowledged a series of structural failures in Colombian public works concessions. These include:

- The entities' lack of experience conducting pre-feasibility and feasibility studies, project design and financial structuring, which doesn't allow bids to adjust to the real value of the works in the tendering processes.
- Contractors' bids below the actual price to later ask for additions and extensions to the initial contract.
- Lack of transparency in contract awards.
- Contractors' misapplication of advance payments.
- Lack of suitable risk allocation, which is reflected in the incentives and forms of remuneration.

As a tool to face the aforementioned problems, the recently approved Law 1508 of 2012 offers a legal framework for projects using public-private partnerships and introduces a new generation of concessions. By virtue of this law:

- Service level and availability payments are introduced
- A normative regime is designed that includes a scheme of prizes and incentives
- A minimum equity contribution can be required, or that the construction be funded predominantly by the contractor in exchange for various forms of compensation

Finally, with the fundamental objective of promoting private participation and with the legal framework in place as regulated by Decree 1467 of 2012, investors with sufficient financial capacity can be sought out. The functions of state institutions involved in the formulation, revision and implementation of this type of project are also clearly defined.

6. The Legislative Observatory is a project of the Institute of Political Science Hernán Echavarría Olózaga, which monitors, disseminates and analyzes legislative activity in order to foster debate, promote transparency, facilitate accountability and promote citizen participation in Colombia.

5.2.2. Institutional framework

The state oversees planning, regulation, control and monitoring of air transport in Colombia. The entity responsible for regulating the sector is the Special Administrative Unit of Civil Aeronautics (AEROCIVIL) of the Ministry of Transport. It also participates in the Ports and Transport Superintendence, which monitors, inspects and controls the provision of public transport services, related infrastructure and services, means and nodes within the logistics chain of transport.

AEROCIVIL's main objective is to ensure the development of civil aviation, the airline industry and the safe use of Colombian airspace efficiently. Its main purpose is to coordinate the policy guidelines and general plans of civil aeronautics and air transport working with the Ministry of Transport, as well as seeking the development of airport infrastructure. Other roles include: (i) implement the necessary activities to constitute, maintain, manage, operate and monitor the aviation infrastructure and airports under its jurisdiction; (ii) issue, modify and uphold aeronautical regulations, according to the development of civil aviation, and (iii) monitor, evaluate and oversee compliance with the aviation and airport norms at airports operated by AEROCIVIL, under a concession, decentralized or privately run. Initially, it was responsible for grating aviation concessions in the country.

For its part, through Decree 1800 of 2003, a public national entity attached to the Ministry of Transport was created: the National Institute of Concessions (INCO). The goal was to bring together into a single entity the activities related to the structuring, procurement and execution of road, rail and port infrastructure concession contracts, and the involvement of private capital. However, INCO faced systemic problems of various kinds such as difficulties in deciding which projects to develop, weaknesses of capital markets, management failures due to structural inadequacies, etc. Therefore, the government carried out an institutional reform through Decree 4165 of 2011, amending the legal nature and designation of the National Institute of Concessions for the National Agency of Infrastructure (ANI).

In summary, the ANI is currently the entity responsible for the implementation of the concession contracts of all existing modes of transport in Colombia, including the structuring, signing and administration of airport concession contracts in the country, initially assigned to AEROCIVIL.[7] In this regard, the Council of Economic and Social Policy (CONPES) in its document CONPES 3796 recognizes that the functions reassigned to the National Agency of Infrastructure (ANI) refer exclusively to tasks related to the structuring, holding and contractual management of concession projects and any other type of public-private partnership in reference to areas of airfields—airside and landside—defined according to Colombia's aviation regulations.

7. By means of Decrees 4164 and 4165 of 2011.

5.3. The existing procurement framework and the decision to use the public-private partnership model

5.3.1 Background and studies prior to tender

At the request of the Special Administrative Unit of Civil Aeronautics and the United Nations Development Program (UNDP), the drafting of a master plan for El Dorado International Airport in the city of Bogota was contracted. Thus, the consortium, formed by Aéroports de Paris (ADP), The Louis Berger Group, Inc., Ingetec SA, CEI Ltda. and Euroestudios S.A., signed the contract and the studies began in February 2001. The study was conducted in three phases:

- Phase I: Review and analysis of the current airport situation.
- Phase II: Presentation of the airport development options for five, 15 and 25 years.
- Phase III: Master plan for El Dorado International Airport and initial project for the five-year development plan.

The final report of the Master Plan study was approved in 2002, at which point AEROCIVIL requested approval from the *International Civil Aviation Organization* (ICAO). Finally, the Master Plan was adopted by Resolution 03862 of September 2003. It basically proposed a number of improvements and adjustments in the first years (e.g., construction of a new building, the adaptation of the current terminal, the relocation of AEROCIVIL's offices, and the construction of a new international cargo building). To do this, the study outlined planning and design specifications including passenger demand forecasts, among other calculations.

Having identified the expansion needs of the airport terminal, and before AEROCIVIL ordered the opening of the tender for the expansion and modernization of El Dorado International Airport, KPMG was hired to handle the financial, legal and technical structuring of the concession process. The study focused on defining the demand projections, the investment plan, the operational requirements and the definition of content of the technical requirements. The legal part of the study centered on drafting early versions of essential documents of the tender process, such as the agreement draft and bidding terms, and different analyses related to legal issues tied to the project's development.

Advisory reports addressed, among others, the following topics:

- Technical and financial assessment of El Dorado airport.
- Requirements analysis on site.
- Review of airport development plan.
- Analysis of alternatives for enlisting private capital.
- Investment proposals, legal aspects and financial models.
- Definition of the control system for monitoring contract fulfillment.

More recently, after granting the concession, an update to the Master Plan of El Dorado International Airport was proposed. Thus, the United States Trade and Development Agency (USTDA) in April 2011 granted AEROCIVIL a non-reimbursable loan to finance the drafting of a new plan within twelve months. An update of the Master Plan, carried out by the US-based consulting firm T.Y. Lin International, is of great importance because the airport's growth has exceeded estimates since 2001. This study was commissioned to update demand forecasts, including passenger, operations and cargo projections for the domestic and international market.

Finally, at a more macro level, the land-use zoning plan for the city of Bogota (Decree 190 of 2004) addresses the strategic operation of El Dorado airport with the main objective of linking and integrating its functionality with the regional setting and Bogota. This implies an ambitious urban renewal project to convert land uses to those consistent with an airport of such magnitude.

5.3.2 Alternatives for bringing in private capital

Previous studies, as mentioned above, concluded that despite compliance with standards of air operation and security, the service levels recorded in the terminal area were deficient and therefore, several adjustments and expansion works were required. The same advisory study for structuring the tender process proposed four alternatives for enlisting private capital. The alternatives, which differed from each other in terms of legal, operational and technical criteria, were: (i) *status quo*, (ii) concession of the terminal, (iii) concession of the entire airport and (iv) privatization. Table 5.3 summarizes the characteristics of each of the alternatives evaluated:

Table 5.3. **Analysis of alternatives for enlisting private capital**

		Alternatives			
		Property of the airport	Entity to assume the risk of demand	Responsibility transferred to private operator	Financing
Alternatives	status quo	AEROCIVIL	AEROCIVIL	None	Responsibility of the government
	Terminal Concession	AEROCIVIL	Concessionaire	The design, construction and responsibility for the financing of passenger terminals, platforms and the jet bridge are transferred to the private developer-operator	Responsibility of the concessionaire
	Integral airport concession (excluding the runways)	AEROCIVIL	Concessionaire	The responsibility for the operation of the entire airport will be transferred to the contractor	Responsibility of the concessionaire
	Privatization	Private company	Private company	Design, construction and financing responsibility along with responsibilities associated with the airport management are transferred to the private developer/operator	Responsibility of the private developer/ operator

Source: KPMG study report.

The consulting firm responsible for structuring the tender process will carry out an evaluation of the alternatives for bringing in private capital by assigning a score from one to three based on different basic criteria, with three being the best and one, the worst. The table below presents a summary of the evaluation criteria used in making this decision.

Table 5.4. **Evaluation of the alternatives for bringing in private capital**

		Alternatives			
		Status quo	Terminal Concession	Integral airport concession	Privatization
Alternatives	Cover infrastructure requirements	1	2	3	1
	Contract administration		2	3	3
	Time to implement		3	3	1
	Risk of implementing		3	3	1
	Market interest in transaction		3	3	2
	Economic stability of the airport system	3	2	2	1
	Financial impact AEROCIVIL	3	2	2	1
	Total	7	17	19	10

Source: KPMG study report.

In addition to the above analysis, a financial evaluation was carried out. The net present value of cash flows was positive for all alternatives. However, as was the case with the qualitative analysis presented in Table 5.4, the most favorable alternative was the concession of the airport. In conclusion, after analyzing the financial, legal, technical and operational aspects, it was concluded that the concession of the airport was the most advisable alternative to bring in private capital to operate El Dorado.

5.4 Tender and award of contract

5.4.1 Studies prior to tender

As mentioned above, the advisory study for the structuring of the private capital involvement aimed at improving, maintaining and operating El Dorado airport resulted in a series of financial, legal and technical recommendations. The pre-bidding studies explained in this section correspond to the most noteworthy results of such consultancy: demand projection studies and the report containing the contract award and bid valuation mechanisms.

Analysis of demand

The demand forecasts developed by the firm that was structuring the process were based on an econometric regression model. The applied methodology involved the following steps:

- Collection and analysis of historical traffic information. This task consisted in collecting information on the different types of traffic at El Dorado: international passengers, domestic passengers, exports and imports. These variables were assessed as the dependent variables of the developed model.
- Selection of the regression model. A “time series” model was used along with an econometric regression model.
- Selection of independent variables. The following variables were selected: GDP of Colombia and Bogota, domestic end demand (demand facing the national productive sector, net of the effect of foreign trade), household consumption, exports and imports, and population.
- Modeling and statistical analysis. Numerical expressions were obtained for the prediction equations for the different traffic sectors. Results showed that passenger traffic would increase by a factor of approximately 1.9, and cargo traffic by a factor of approximately 2.5 from 2004 to 2020.

Using the procedure described above, a study of demand was carried out, which laid the groundwork for the drafting of tender specifications. The importance of this calculation lies in ensuring that the effective value of a concession agreement pay for the assumption of these types of demand and traffic risks, as well as risks related to commercial, construction,

environmental, operational, administrative, financial, tax, regulatory, political, currency exchange aspects of the projects and all others deriving from the obligations of the concessionaire. Accordingly, the volume of traffic and the growth expected for the years 2005 to 2020 are presented below:

Table 5.5. **Projected traffic growth 2005-2020**

Years			International passengers	Domestic passengers	Export cargo	Import cargo	Domestic cargo
	2001	Real	4.03%	0.81%	-1.83%	-2.33%	1.46%
	2002		-3.08%	3.88%	6.30%	3.19%	24.37%
	2003		-1.30%	-3.10%	16.43%	14.14%	10.44%
	2004		13.12%	4.73%	3.94%	9.91%	-5.17%
	2005		-4.19%	11.58%	6.39%	18.97%	10.32%
	2006	Projections	2.83%	2.00%	9.43%	3.45%	2.84%
	2007		3.95%	2.65%	9.02%	4.52%	3.25%
	2008		3.84%	2.59%	9.06%	4.41%	3.21%
	2009		6.14%	3.91%	8.26%	6.57%	4.05%
	2010		5.42%	3.50%	8.51%	5.90%	3.79%
	2011		7.29%	4.57%	7.87%	7.66%	4.47%
	2012		4.74%	3.11%	8.75%	5.26%	3.54%
	2013		4.96%	3.24%	8.67%	5.47%	3.62%
	2014		5.00%	3.26%	8.66%	5.50%	3.64%
	2015		4.49%	2.96%	8.84%	5.02%	3.45%
	2016		4.51%	2.97%	8.83%	5.04%	3.46%
	2017		4.36%	2.89%	8.88%	4.90%	3.40%
	2018		4.79%	3.14%	8.73%	5.31%	3.56%
	2019		4.37%	2.89%	8.88%	4.91%	3.41%
	2020		4.43%	2.93%	8.86%	4.96%	3.43%

Source: KPMG study report.

It is worth highlighting that based on the results of the traffic forecasted for 2020, an investment plan for El Dorado's development was carried out, with the objective to prove that the facilities described in the investment plan could handle that traffic offering internationally accepted service levels.

5.4.2 Award mechanisms and evaluation of bids

For the development of El Dorado airport, AEROCIVIL—based on the terms of laws 80 and 105 of 1993 and the outcome of the consulting process carried out by KPMG—called a public tender in order to select the most favorable proposal to enter into a concession agreement to "grant a concession so that the concessionaire, at its own risk, carry out the administration, operation, commercial exploitation, maintenance and modernization and expansion, among other activities, of the El Dorado International Airport in the city of Bogota, under the guidance and surveillance of AEROCIVIL." In exchange for carrying out these five fundamental activities, all regulated and unregulated income would be transferred to the concessionaire, who would pay AEROCIVIL a fee, as explained later in section 5.5. This section aims to present the main features of the mechanism for the award of the contract, including the evaluation criteria of the bids and the selection process of the final bid.

Criteria for evaluating the bidders

Two evaluation criteria were used to determine if a bidder had submitted an acceptable or an unacceptable proposal: (i) experience and (ii) financial capacity. With regard to the first criterion, the bidder had to prove it had successful experience in conducting studies and designing passenger terminals, constructing architectonic works and constructing bridges or viaducts. At the same time, it had to demonstrate experience operating passenger terminals, cargo terminals and in attaining financing. The following table shows a summary of the experience required of the bidders.

On the other hand, bidders also had to demonstrate a minimum financial capacity for a proposal to be deemed acceptable. For this purpose, requirements included USD 80 million in equity and USD 15 million in working capital.

Criteria for the evaluation of the proposals

Proposals were evaluated based on legal criteria, experience and financial capacity, and the economic evaluation. The fulfillment of all legal requirements was considered a qualifying factor that ruled whether the bid proposal was eligible or not. On the other hand, the fulfilment of the requirements determined whether proposals were acceptable in regard to the bidder's experience and financial capacity. Only acceptable proposals were eligible for the award of tender. The winning proposal was chosen from among those deemed eligible in terms of the legal requirements and the financial capacity specified in the bidding terms, in accordance with the tender documents:

"The amounts of the economic bids deemed acceptable will be listed in descending order (from highest to lowest)."

Table 5.6. **Experience required of the bidders**

		Experience valid from	Minimum revenue	On account of
Experience	Studies and designs for passenger terminals	10 years before	USD 2 MN	At least two (2) contracts to carry out studies and final design of passenger terminals for one or several international airports.
	Construction of architectural works	10 years before	USD 25 MN	Execution of a single contract or several contracts, provided that they relate to no more than three projects, which include the construction of an architectural work, like shopping malls, transportation terminals or urban facilities.
	Construction of bridges or viaducts	10 years before	USD 4 MN	Execution of at least one contract for the construction of bridges or viaducts for vehicle or rail traffic.
	Operation of passenger terminals	10 years before	10 million Passengers An international airport, or 12 million passengers for various airports	Operation of one or more passenger terminals at an international airport.
	Operation of cargo terminals	10 years before	150,000 tons of cargo	Operation of at least one cargo terminal at an international airport.
	Financing	10 years before	USD 80,000,000	Financing of civil works construction projects or private financing systems of infrastructure projects or companies in this sector.

Source: KPMG study report.

Once the economic bids are organized, the median will be calculated as the intermediate value of the series in the case of a series with an odd number of elements, or the simple average of the two core values in the case of a series with an even number of elements. Proposals including an economic bid of eleven (11) percentage points above the median will be rejected.

From among all proposals qualified as "eligible," based on the assessment of legal requirements, and the "acceptable proposals," according to the bidder's accredited financial capacity and experience, which were not rejected in accordance with the above criteria, the proposal with the highest economic bid will be named the awardee of the concession contract."

Valuation of bids and the award outcome

Five proposals committing to set up different types of companies in the future were submitted to tender. The following table shows the composition of the participating consortia, as well as the economic bid offered by the bidders. "In accordance with the concession contract, the 'fee' for the provision of the service will be understood as the amount the concessionaire shall pay AEROCIVIL for the rights acquired as a result of the concession contract."

The awardee of the concession was Group OPAIN, which presented a proposal that ensured AEROCIVIL 46.16% of the gross income earned over the course of the concession. The contract between AEROCIVIL and the new company was signed in March 2006. This completed the bidding process begun in July 2005. The most important milestones of the process are illustrated in Table 5.8.

Table 5.7. **Composition of the participating consortia in the bid for El Dorado airport and the offered 'fee'**

		Companies involved	Fee proposal
Participating consortia	Sociedad Futura Concesión El Dorado S.A	Corporación América S.A. Villalonga Furlong S.A. Compañía Transportadora S.A. Nautiservicios S.A. Corporación América Suramericana S.A.	35.15%
	Sociedad Futura El Dorado Nuevo Milenio	Constructora Colpatria S.A. HAS Development Corporation. Mario Huertas Cotes. Siemens Project Ventures GMBH. Dorssch Consult Airports GMBH.	49.52% (disqualified)
	Sociedad Futura Aer Dorado S.A	Conalvías S.A. Unión Eléctrica S.A. Stratis Ltda. Sociedad Aeroportuaria de Colombia S.A. Fernando Mazuera y Cia S.A. Administración e Inversiones Comerciales S.A. Pavimentos Colombia S.A.	35.16%
	Sociedad Futura Sociedad Concesionaria Operadora Aeroportuaria Internacional (Opain)	Organización de Ingeniería Internacional S.A. CSS Constructores S.A. Grupo Cóndor Inversiones S.A. Marval S.A. Termotécnica Coindustrial S.A. Arquitectura y Concreto S.A. Consultoría Colombiana S.A. Flughafen Zurich AG. Construcciones El Cóndor S.A. Luis Héctor Solarte y Carlos Alberto Solarte.	46.16%
	Sociedad Futuro ASA Internacional El Dorado S.A	MNV S.A. Alejandro Char Chaljub. Vergel y Castellanos S.A. Antonio Char Chaljub. Portales Urbanos S.A. Vías y Construcciones S.A. Supertiendas y Droguerías Olímpica S.A.	36,75%

Source: KPMG study report.

The concession period initially agreed upon was 20 years. Originally, the investments to be carried out by the awardee were estimated at approximately USD 650 million. The works were already defined in a draft agreement attached to the tender documents (Appendix D, Modernization and Expansion Technical Specifications).

The winning consortium was expected to meet the established terms and progress of works, which were scheduled in six milestones. The concessionaire responsibility will be explained in detail in the next section.

Table 5.8. **Overview of the main milestones of the bidding process**

	DATE
El Dorado Airport Master Plan	2001
Hiring of consultancy for structuring	July 2004
Publishing of pre-tender documents	July 2005
Call for tender	August 2005
Close of tender	February 2006
Contract award	March 2006
Concession delivery act	January 2007

5.5 Contractual design and risk allocation

5.5.1 Income sources

In Colombia, the process of concession, management, operation, commercial exploitation, adaptation, modernization and maintenance of airports has been conducted using regulated revenues and some unregulated revenue as the source of payment to the private party. Within the regulated concepts are, among others, the rights paid by airlines for use of the airport, parking of aircraft, airport taxes, rights of use of international or national boarding bridges, rights for the issue of circulation permits, right of use of fire truck for fueling and cleaning. Unregulated revenues are those derived from the additional services provided by the airport such as the lease of spaces, the use of hangars, retail or revenues from fuel sales.

In the case of El Dorado, in accordance with the terms established in the concession contract, AEROCIVIL assigned all regulated and unregulated revenue to the concessionaire, as defined in the image below. The winning concessionaire is required to ensure that the services associated with regulated and unregulated revenue are delivered in a safe and efficient way to airport users.

Figure 5.2. **Description of revenue collected by the concessionaire of El Dorado airport**

Regulated revenues	Unregulated revenue
-Airport tax -Parking rights Right of use of passenger registration counters -Right of use of the national and international boarding bridges -Rights for issuance of permits -Rights for issuance of circulation permits for vehicles on platforms -Rights to fire truck for fuel supply -Rights to fire truck fire for cleaning of platform	Worthy of special mention are: -Revenue from aviation fuel sales -Air operation services -Airport operation services -Food and beverages -Trade in goods -Personal services sales -Advertising

Source: Authors based on AEROCIVIL (2006)

The provision of services associated with regulated revenues is paid entirely by the rate structure[8] contained in the concession contract. Therefore, the private party must provide these services, without charging any additional fees other than the ones foreseen. The contract also lists the minimum obligations that the concessionaire is required to meet in the provision of these services. The concessionaire must submit an operational plan reflecting these obligations and describing in detail the mechanisms which shall be used to meet the

8. According to the concession contract, the structure of rates included in resolution 05496 of 2005, issued by AEROCIVIL, applies.

technical specifications for operation. In order to verify fulfilment of these minimum obligations, the concessionaire will have to contract independent surveys of satisfaction of airport users (see section of Standards of service and quality incentives).

In the case of services not associated with regulated income, the contract also establishes a fee to be collected by the concessionaire for the provision of each service. In the event that a specific fee is not established for some of the services not associated with regulated revenue, the concessionaire will be able to set a value in agreement with free market terms.

5.5.2 Risk allocation and mitigation mechanisms

The structuring process showed that it was important to identify the project risks to avoid the concessionaire from seeking renegotiation of the contract or using litigation to define the ambiguous terms. In general, the basic principles of risk allocation outlined in CONPES 3107 pose that these should be assumed "by the party that is best able to assess them, control them and manage them; and/or by the party that has better access to instruments of protection, mitigation and/or diversification."

Policy guidelines for contractual risk issued by the Colombian government have defined different mechanisms to mitigate the diverse risks that may arise in infrastructure projects with private participation. Specifically, for a project like El Dorado airport, the following applies:

Image 5.3. **State's management policy of contractual risk in processes of private participation in infrastructure in Colombia**

Risk mitigation policy
Regarding the business risk: *"Risk impact mitigation depends in most cases on the business management capabilities by the system operator and/or the service provider."*
Regarding the construction risk: *"The mechanisms to mitigate this risk shall mandate that the project executor comply with design, construction and commissioning expertise requirements in line with the project's technical characteristics."*
Regarding the operational risk: *"The mechanisms to mitigate this risk shall mandate compliance with operations and technical capacity expertise requirements."*
Regarding the financial risk: *"The mechanisms to mitigate this risk shall mandate experience in obtaining financing in accordance with the project's borrowing requirements."*
Regarding the foreign exchange risk: *"For projects with high investment requirements and income set in local currency, state entities may structure mitigating mechanisms such as financial support to provide resources to partially cover potential liquidity gaps caused by fluctuations in exchange rates."*

Source: Authors based on data from the Ministry of Finance and Public Credit (2001)

The previous guidelines, expressed in the policy document, were taken into account as risk mitigation mechanisms and were incorporated in the contract, which also included a special clause dedicated to the risks assumed by each of the parties. Thus, the state policy to manage contractual risk for processes of private participation in infrastructure in Colombia—outlined in the CONPES documents 3107 and 3133 of 2001—defined an allocation of risks that corresponds with the information shown in table 5.9.

Just as outlined in CONPES 3107, the new regulation on Public-Private Partnerships (law 1508 of 2012) maintains the premise of an efficient allocation of risks, attributing to each party the risk that they can best manage. In this manner, the need to properly classify, estimate and allocate risks and contingencies in a matrix of risks is established, leading to an adequate remuneration, proportional to the investment and the risks assumed by the private sector.

Table 5.9. **Risk allocation in El Dorado airport concession**

		CONPES Guidelines 3107	Assumed by	Comments about the project's risk management
Infrastructure project risks	Business risk: demand and portfolio	"This risk is generally allocated to the private investor, since the assessment of its impact depends in most cases on the business management that the system operator and/or the service provider can carry out."	OPAIN	The concessionaire will assume the favorable and unfavorable effects of demand behavior. The portfolio risk (which refers to non-payment by users, which leads to a lower-than-expected cash flow) will also be assumed by the concessionaire whenever revenue is transferred to the concessionaire, who will also handle payment collection.
	Construction risk: Number of works, prices and terms	"As a general principle, these risks should be transferred to the private sector, insofar as the latter has more experience and knowledge about the variables that determine the value of the investment and will be in charge of the construction activities."	OPAIN	These will be assumed entirely by the concessionaire: risks for larger amounts of work as well as the favorable or unfavorable effects of any variations in the market prices of inputs for the works and the risk associated with fulfilling the construction deadline.
	Operation risks	"The operation of the project is part of the objective of the contract, so this risk is assigned to the private investor under the principle that the latter has greater control over the operation."	OPAIN	In regard to the airport operation, the operational risk is completely allocated to the investor. Service standards are defined in the appendices to the contract.

Table 5.9. **Risk allocation in El Dorado airport concession**

		CONPES Guidelines 3107	Assumed by	Comments about the project's risk management
Infrastructure project risks	Financial risks: financing and financial conditions (terms and rates)	"In general, this risk is allocated entirely to the private investor though state entities can design liquidity supports for projects."	OPAIN	Favorable or unfavorable effects of an alteration in the financing conditions will be assumed by the concessionaire, as one of its contractual obligations is to obtain full funding for the project's implementation.
	Currency risk	"The risk of possible variations in project flows, as a result of income and expenses denominated in a foreign currency or subject in some way to the behavior of foreign exchange rates, usually is on the private investor."	OPAIN	Because income will be transferred in pesos and in dollars, the concessionaire may determine its debt profile in accordance with the denomination of its income. In addition, since the Colombian financial market is in a position to assume the portion of the debt in pesos, coverage against fluctuations in the value of the peso against the dollar was not needed.
	Regulatory risks	"The state will explicitly describe in the contract terms all procedures regarding regulatory, administrative and legal changes that can significantly impact project flows. As a general rule of thumb, these risks must be assumed by the private investor, except for contracts where service rates are agreed to in advance."	OPAIN and AEROCIVIL	The public entity must assume the risk of modification of service tariffs for regulated revenues. In the event of a decrease in rates, the concessionaire will be compensated—see Clause 57 of the concession contract. However, the concessionaire will assume the risk due to changes in the rates of unregulated income.
	Force majeure risks: insurable and not insurable	In accordance with the CONPES document, these represent two types of risk: a). Insurable risks of force majeure (assumed by the concessionaire). b).Non-insurable political force majeure risks (assumed by both parties).	OPAIN and AEROCIVIL	The concession contract states that the concessionaire must purchase insurance to cover all insurable force majeure risks. In respect to non-insurable force majeure risks (foreign wars, acts of terrorism, civil war, coup d'état, strikes, archaeological finds and discoveries of treasures), AEROCIVIL will assume the risk and cover ensuing damages. The risk that these events may generate in terms of lost earnings will be the concessionaire's responsibility.

Table 5.9. **Risk allocation in El Dorado airport concession**

		CONPES Guidelines 3107	Assumed by	Comments about the project's risk management
Risk in infrastructure projects	Environmental risk	"The private investor will assume this risk, when, prior to the closing of the bidding process, the respective resolutions are made available. Also in case that there are any modifications required. When the environmental license and/or the environmental management plan is not available before the close of the tender, the government agency may assume the risk of higher than estimated costs for environmental liabilities."	OPAIN and AEROCIVIL	The contract stipulates that in the event that the competent environmental authority require changes in the environmental license or the execution of works and/or other mitigation activities or compensation for environmental impact after the closure of the invitation to tender, AEROCIVIL will be accountable for such works or activities. The concessionaire will be responsible and assume all risk associated with all environmental issues directly related to the construction activity needed to fulfill the contract.
	Sovereign or political risk	"In private participation projects in Colombia, this risk is traditionally assumed by the private investor."	OPAIN	This risk within the El Dorado airport concession project has been allocated to the concessionaire. It is emphasized that the favorable or unfavorable effects of the variations in the tax legislation will be assumed by the private operator.

Source: KPMG study and AEROCIVIL (2006)

5.5.3 Standards of service and quality incentives

As mentioned above, through the signing of the concession delivery act, the concessionaire assumed the responsibility for all services associated with regulated revenues and services not associated with regulated revenues, provided to passengers, aircraft operators and other airport users. However, the contract requires fulfillment of minimum quality standards for all the services, in particular those associated with regulated revenues.

The concessionaire must provide services under the terms indicated in the *Technical specifications of operation* (Appendix F of the concession contract), complying with all applicable Colombian regulations such as the Manual of Airport Operations, Colombia's aeronautical regulations and the AEROCIVIL Airfield Manual. The concessionaire must also comply with the 18 ICAO Annexes (International Civil Aviation Organization), as well as with technical manuals contained in each Annex: for example, the Annex on safety, the transport of goods without risk and the protection of the environment.

In addition to the above Annex requirements, the contract establishes that the concessionaire "shall operate the airport by applying best practices, standards for airport operation and all norms that modify, add to or complement it."

Further to that, in order to verify that the concessionaire is complying with the minimum performance requirements specified in the concession contract, airport user satisfaction surveys will be conducted periodically,

as described above. These surveys will be conducted at least once a year and will take into account the aspects that pertain to passenger and cargo services (Table 5.10 and Table 5.11, respectively). The surveys must be carried out by a market research firm with experience conducting surveys to measure the quality of service and/or customer satisfaction.

The concessionaire must obtain, at a minimum, the levels of satisfaction outlined in the following tables. On the contrary, the concessionaire will be obligated to present and implement an action plan to the financial comptroller (see section 5.6) for the improvement of the service category in which the minimum threshold was not reached. Given the concessionaire's failure to fulfill the obligations stated in the concession contract, the concessionaire will be subject to a fine for each unfulfilled item.

Table 5.10. **Passenger service quality indicators that the concessionaire must report**

	Minimum satisfaction scores	
	Before and after stage of modernization and expansion	After the stage of modernization and expansion
Overall user experience in the airport	70%	75%
Airport tax collection (ease, time)	70%	75%
Image of the airport	70%	75%
Lighting	70%	75%
General environment	70%	75%
Safety	70%	75%
Cleanliness	70%	75%
Availability of restroom facilities	50%	75%
Quality of restroom facilities	65%	75%
Cleanliness of restroom facilities	80%	75%
Quality and level of health care services	75%	80%
Quality and service at information points	75%	85%
Quality of the reception and handling of complaints services	75%	85%
Signage and ease of navigating within the airport facilities	65%	75%
Flight information display systems	55%	75%
Sound system quality	55%	75%
Baggage claim information display systems	55%	75%
Comfort at boarding areas	65%	75%
Comfort at baggage claims areas	70%	75%
Telecommunication service availability	70%	75%
Condition of floors and chairs	80%	85%
Availability of baggage carts	70%	80%
Availability of taxis	85%	85%
Availability and quality of parking lots	60%	75%
Condition of access routes	50%	75%
Airport bus service quality	NA	75%

Source: AEROCIVIL (2006).

Table 5.11. **Cargo service quality indicators that the concessionaire must report**

	Minimum satisfaction scores	
	Before and after stage of modernization and expansion	After the stage of modernization and expansion
Lighting in cargo transfer areas	70%	75%
Lighting in the cargo consolidation area	70%	75%
Lighting of the cargo administrative center (CAC) parking lot	70%	75%
Lighting of the ECC parking lot	70%	75%
State of the pavement of the zones of load transferred	NA	80%
State of the pavement of the cargo consolidation area	NA	80%
State of the pavement of the CAC parking lot	NA	80%
State of the pavement of the ECC parking lot	NA	80%
Security in the cargo areas	70%	75%
Cleanliness in the cargo areas	70%	75%
Quality and cleanliness of restroom facilities in the cargo areas	65%	75%
Signage in the cargo areas	65%	75%
Availability of telecommunications services	70%	75%
Availability of complementary services like banking, coffee shop	70%	75%
State of the pavement along access routes	50%	75%
Signage along access routes	65%	75%
Ease of vehicular flows in the cargo areas	50%	75%

Source: AEROCIVIL (2006).

5.6. Contract management and economic balance

As a complement to the already discussed quality standards, this section discusses different aspects of contract management, in particular, tasks related to the monitoring, surveillance and control of the concession contract and its execution. It will also describe changes in the initially established concession conditions, including an analysis and an assessment of their causes and consequences.

5.6.1 *Ex-post* supervision of the performance of the concession contract

El Dorado airport concession contract defines the figure of the comptroller for the coordination and monitoring of the implementation and fulfillment of the contract agreement. The external auditor shall be an individual or legal entity, consortium or temporary joint venture chosen by AEROCIVIL to exercise technical, legal, administrative, financial control over the contract, complying with the following functions:

- Verify that the concessionaire complies with all of its obligations.
- Verify that the modernization and expansion works comply with what is stated in the contract's technical specifications pertaining to modernization and expansion.
- Review and certify the quality and quantity of the works carried out.
- Verify that the operation of the concession area complies with the requirements stipulated in the contract, especially in the technical specifications of operation, and ensure that the concessionaire makes any necessary corrections in the event of non-compliance.
- Review, along with the concessionaire, the concessionaire's gross revenue.

In particular, as the works of modernization and expansion advance, along with complementary works[9] and voluntary works[10], the concessionaire will be required to submit bi-monthly reports to the comptroller, indicating the progress of the works, including: a table outlining the status of the works executed during the reporting period, technical characteristics of the works, additional studies carried out by the concessionaire to move forward with the corresponding works and records of compliance with the provisions adopted by the relevant environmental authorities.

Additionally, the introduction of quality standards in the concession contract for passenger and cargo services, discussed in the previous section, also forms part of the contracting authority's ex-post supervision. In the event that a breach of the design technical specifications or the modernization, expansion or operation engineering specifications is detected, the corresponding fines in the concession contract will be applied.

9. According to the concession contract, complementary works are those works that are not contemplated under the concessionaire's obligations or those resulting from force majeure or unforeseen circumstances. They require the signing of an additional contract or an addendum to the concession contract.

10. Depending on the concession contract, voluntary works are the works carried out at the concessionaire's sole expense and risk; their approval or execution does not entail any modification of the concession contract's conditions.

5.6.2 Change in the initial contract conditions

Significant amendments to the agreements have been one of the principal problems identified in infrastructure concession contracts executed in different countries. These imply a failure to comply with the conditions initially agreed to and, generally, translates into extensions of concession terms, adjustments of tariffs, reductions of the fee (*canon*) paid by the concessionaire to the government and higher public contributions, among others. A review of the statistics of concessions in Latin America reveals that contract revisions are extremely frequent, especially for the sector transport, reaching 55% of granted concessions—see Guasch (2005).

The incidence of the contractual modification of the concession contract for El Dorado airport, the reasons that gave rise to it and the investment obligations that led to this change will be discussed in the following sub-sections.

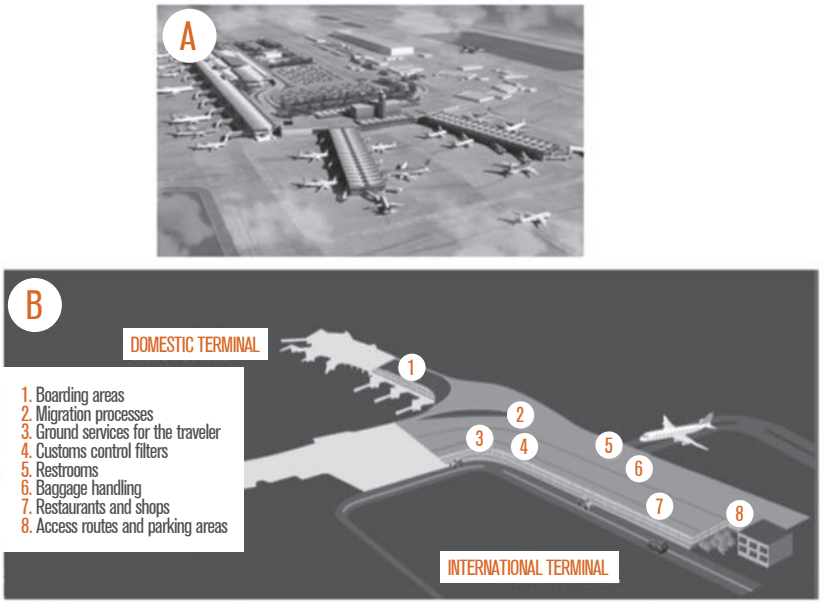
Justification of the changes

As already mentioned, through the concession contract, the concessionaire consortium at its own expense and risk was responsible for the management, modernization and expansion, operation, commercial exploitation and maintenance of the concession area of El Dorado airport in Bogota.

After initiating the works of modernization and expansion in March 2008, the parties signed a memorandum of understanding, which stipulated the possibility to execute the demolition works and replacement of the airport's terminal one (T1), a situation initially contemplated in the concession contract in section 21.3.1. The decision was made in November 2009, when the Addendum No. 2 was signed. The document legally defined the modification of the concession contract, specifically the decision to not remodel the existing works and seismically reinforce the terminal initially agreed upon, but rather demolish and build a new one.

The original works plan included the remodeling of the old 55,000-square-meter terminal and the construction of a viaduct for the future international terminal (see image 5.5A). The modification included replacement of the existing 55,000 meters with a new terminal and the construction of 25,000 additional meters, as well as other works such as the construction of a new viaduct and a platform for aircraft parking. Thus, the final design called for an H-shaped terminal, divided into two docks: domestic and international (see image: 5.4b).

Image 5.4. **Original design (A) and final design after the modification (B)**



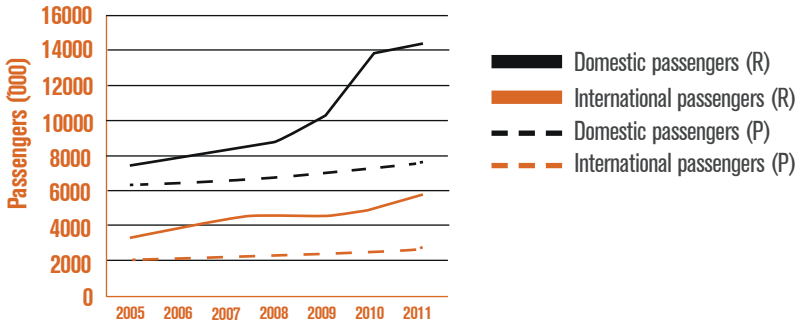
Source: Portafolio (in http://www.portafolio.co/especiales/aeropuerto-eldorado, retrieved

The reasons that led to the renegotiation were rooted in two aspects: traffic projections and the standards of quality and safety. Regarding the first argument, the same concession contract included what is known as a 'trigger' clause, which applies when traffic exceeds certain levels and then requires new works as a solution. Particularly, the contract indicated that, where traffic grew dramatically, AEROCIVIL or the concessionaire could develop the facilities required at the airport to address the additional traffic, through voluntary works and complementary works (see clauses 33 and 34 of the agreement). In addition, clause 32 sets forth that if the volume of cargo transported through the airport exceeds 1.2 million tons over the course of 12 months straight, the concessionaire must submit a proposal for the development of additional infrastructure.

In order to review and analyze the request for this substantial contractual modification, AEROCIVIL signed an agreement in 2009 with the National University of Colombia (UNAL) to conduct different technical studies to assist the government in its analysis. In regard to the traffic levels, the study found that "the initial traffic projections, used for the initial design and master plan, estimated a total of 9,712,585 passengers in 2009 (arrivals + departures + domestic + international), but the current figures [2014] show that numbers have already far exceeded the estimate, by more than 40%. Today, the real traffic is 13,690,953 passengers. If this trend continues, in much less than half the estimated time of the concession, the gap accounting for the margin of error between traffic levels estimated in the initial design of the concession and actual levels would equal 100%. Clearly, the result is a difference much higher than the tolerable margin of error for a critical variable.

This analysis was confirmed by the update of the Master Plan for El Dorado airport in 2011. Chart 5.1 illustrates a comparison between the demand forecast data (P) and the real demand. (R). Real values surpassed traffic estimates in high percentages. For example, in 2011, the gap between projected and real domestic passenger traffic was greater than 90%.

Chart 5. 1. **Demand forecasting vs. real demand**



Source: T.Y. Lin International (2014).

The first argument used in support of the petition to change the contractual terms was then confirmed, in line with the conclusion of the contracted external study that an underestimation in traffic would produce an underestimation in the project, affecting the provision of the public service and quality standards. Finally, in regard to standards of quality and safety, the UNAL study also concluded that it would be pointless to make significant seismic-resistant investments in terminal 1 without updating all of the other elements, according to the latest construction technologies.

These changes were carried out under the umbrella of the State Council's indications, according to the regulation of article 16 of Law 80 of 1993, which sets forth that it is possible to modify a public service concession contract by mutual agreement when there are grounds of benefits that "will improve the contract subject-matter and the provision of the public service at stake, seeking an effective implementation of the state's purposes and an efficient provision of the service, as long as it can be shown that not making the change will have a serious negative impact."

In summary, it was concluded that it was relevant to revise the originally signed concession contract to seek an improvement of the contracted objective and efficiency in the provision of the service. However, the entire process to define the construction alternative for a single passenger terminal (equivalent to the new T1 plus the annexed T2) took almost three years, including the period of renegotiation and definition of the value and the form of payment of this new condition, explained in the next section.

According to local control entities in Colombia, during this time, the project did not advance with the required speed. This led to multiple discussions and debates that generated tremendous uncertainty among citizens and the aviation and business sectors. In fact, an AEROCIVIL audit report in December 2011—see Comptroller General of the Republic (2011)—concluded that all changes to the initial conditions laid down have disfigured the concept of the concession. Due to this, as will be explained later, it has been the state that has finally had to use resources to cover the costs of these additional works. In this specific case, the Comptroller has raised the following two questions: (i) "What was the reason for contracting the reinforcement of the old terminal taking into account that there were prior technical studies that considered the demolition of the airport?". (ii) "What was the justification for the signing of Addendum No. 2 without having previously determined the cost of the contractual modification?"

Form of payment of the additional works

Having analyzed the reasons for the amendment of the concession and for including the demolition of terminal 1 and the construction of a unified terminal, this section will explain the consequences of that renegotiation, outlining the state's corresponding additional contributions and the mechanism of payment required for the addition in this contract.

Continuing with the chronological analysis of the addenda of El Dorado airport concession contract, in February 2010 Addendum No. 3 was signed. It was known as "Delta of investment and its form of payment". The delta of investment (see Image 5.6) is described in the tenth clause as the difference in the resulting values of the option of building a single passenger terminal, i.e. defined in Addendum No. 2, and the reinforcement and renovation of the current terminal with the construction of terminal 2, which was initially foreseen in the concession contract.

Image 5.5. **Definition of the delta**

Where:
Option B: cost of works and investments that result from future terminal 1 and its potential integration with terminal 2

Option A: cost of remodeling and seismic reinforcement works for terminal 1 and its northern and southern docks, air traffic control tower and terminal 1 central processing facility.

Source: OPAIN

In this manner, the parties ratified the following final calculation of the delta value, breaking down CAPEX from OPEX. The OPEX agreed upon was USD 99,380,366, with a CAPEX of USD 114,260,848[11]. To reach this agreement the parties took into account the schedule of works for the stage of modernization and expansion planned in Addendum No. 3 and the 2006 schedule of works. According to the previous conditions, the figures agreed upon for the OPEX and CAPEX payments of the delta value were as follows:

11. Values converted using the exchange rate on August 5, 2014. Figures in Colombian constant prices, December 2010, refer to 187 billion pesos (OPEX) and 215 billion pesos (CAPEX).

Table 5.12 **Annual values agreed upon by AEROCIVIL and OPAIN**

		Payment of the Delta of CAPEX and OPEX	
		CAPEX (USD)	OPEX (USD)
Year	2007		
	2008	(11.338.357,54)	
	2009	(50.450.084,07)	(231.488,47)
	2010	(35.420.646,77)	(781.765,42)
	2011	120.796.154,91	(7.590.566,76)
	2012	57.748.233,87	(6.006.804,65)
	2013	22.726.714,57	1.689.534,67
	2014	10.198.833,84	(708.742,35)
	2015		5.045.062,20
	2016		(7.448.566,79)
	2017		26.236.174,90

		Payment of the Delta of CAPEX and OPEX	
		CAPEX (USD)	OPEX (USD)
Year	2018		19.229.357,78
	2019		(2.756.162,67)
	2020		5.476.469,56
	2021		(20.949.043,72)
	2022		37.915.382,65
	2023		28.001.303,91
	2024		2.181.678,54
	2025		8.499.466,75
	2026		(11.837.132,16)
	2027		23.416.208,22
	Total	USD 114.260.848	USD 99.380.366

Source: AEROCIVIL (2006).

The positive values of the above table correspond to the values granted the concessionaire for higher investment or operation costs, while the negatives (in parentheses) represent savings thanks to lower investment or operation costs in favor of AEROCIVIL. Semi-annual payments flow, considering a 12% nominal annual rate, corresponded to a total amount of USD 195,530,290, approximately 35% of the initial estimated value of the contract.

In this regard, the initial conditions of the concession contract were modified two years after it was awarded, which is discussed in this chapter. In line with what was found by Benavides (2008), as exhibited in his analysis of the contractual changes in Colombian concession contracts, the modified attribute was the investment requirement. However, in this case the change did not materialize in an increase in tariff rates to users or an extended concession period. It led to an increase in public contributions to the private sector.

Finally, it is important to mention that the above was conducted despite provisions set forth in the concession contract, which established that differences in cost that the demolition works would represent in respect to the cost of the works included in the technical specifications for the airport's modernization and expansion should be compensated with "an extension of the estimated term of the concession contract, as the only mechanism of additional remuneration for carrying out the works."

5.7 The concessionaire and project financing

After having analyzed contract-management related aspects, the next section will examine the composition of the members of El Dorado airport concession and their evolution. All aspects related to the financing of this project will also be analyzed.

5.7.1 Evolution of the shareholder concessionaire structure

The call to tender with an open procedure for the award of the concession contract of El Dorado International Airport set forth some requirements that would result in the bidder's eligibility. Individual or multiple bidders (promise of a future legal entity or a consortium/temporary joint venture) could participate in the tender. The bidder that participated under the promise of a future legal entity should take into account that, in case it was awarded the concession, it would have to restrict the disinvestment of shareholder property or partner's stock.

As mentioned earlier, OPAIN was chosen as the winning consortium of the tender. The authorized equity of the company amounted to more than USD100,000, divided into 20,000 ordinary shares. The shareholding structure (see table 5.13), in the moments immediately following the award, was characterized by a high level of participation from companies with experience in

the construction and infrastructure industry, with stakes in some concessions such as toll roads, airports, power generation plants, telecommunications and public services. To a lesser extent, the consortium was also composed by financial companies and other international airport operators.

Table 5.13. **Initial shareholding structure of the winning consortium (OPAIN)**

		Activity of the company	% participation	Shares
Shareholder	Grupo Odinsa S.A.	Construction and engineering	29.99%	2.999
	CSS Constructores S.A.	Construction and engineering	24.98%	2.498
	Grupo Cóndor Inversiones S.A.	Miscellaneous investment activities and related financial services	14.99%	1.499
	Marval S.A.	Building constructor	10.00%	1.000
	Termotécnica Coindustrial S.A.	Architecture and engineering activities	10.00%	1.000
	Consultoría Colombiana S.A.	Architecture and engineering activities	5.00%	500
	Arquitectura y Concreto S.A.	Architecture and engineering activities	5.00%	500
	Flughafen Zurich AG	Airport operator	0.01%	1
	Construcciones el Cóndor	Construction and engineering	0.01%	1
	Luis Héctor Solarte	Individual	0.01%	1
	Carlos Alberto Solarte	Individual	0.01%	1
		Total	100.00%	10.000

Source: OPAIN (2005).

Given that the OPAIN bidding proposal mentioned that the authorized equity could be either increased or decreased, the current shareholders presented some percentage changes, maintaining the predominant structure of the construction and engineering groups. The composition of the concessionaire company OPAIN has been impacted by the assignment of some actions and the disappearance of some funders such as Grupo Cóndor Inversiones S.A. and Consultoría Colombiana S.A. The shareholding composition as of July 2014 is shown below in Table 5.14.

Table 5.14. **Current shareholding composition of the winning consortium (OPAIN)**

	% participation	Variation
Grupo Odinsa S.A	31,66%	↑
CSS Constructores S.A	29,98%	↑
Marval S.A	10,00%	=
Termotécnica Coindustrial S.A	10,00%	=
Arquitectura y Concreto S.A	3,33%	↓
Flughafen Zurich AG	0,01%	=
Construcciones El Cóndor	15,00%	↑
Luis Héctor Solarte	0,01%	=
Carlos Alberto Solarte	0,01%	=
Total	100,00%	

Source: information received from OPAIN.

5.7.2 Project financing

Experience has shown that projects related to public property, like El Dorado airport, can be financed although their assets cannot be offered as collateral because they belong to the state. One of the things that facilitated the financing of this project was the incorporation of a mathematical formula that estimated the financial considerations of each party in the event of early contract termination (see clause 75 of the concession contract). In this case, payments to recognize unamortized investment would serve as a source for the credit guarantee. The financial model indicated that the termination payment would always be a sufficient quantity to cover the senior debt, with a loan life coverage ratio of approximately 1.89x.

In particular, the project that has been discussed throughout this chapter obtained funding with resources from the Inter-American Development Bank (IADB), CAF-Development Bank of Latin America and Asian bank loans. The airport project has also been financed through the operating cash flow and capital contributions from funders.

Table 5.15, which appears below, describes the project costs and the financial plan. The data include changes in the project scope, namely the amendment to the concession contract originally signed to authorize the demolition of terminal 1 and the construction of the unified terminal.

Table 5.15. **Project cost and financial plan**

	Project Cost (in USD thousand)		Financial plan (in USD thousand)		
Engineering, procurement and construction	872,666	80.3%	**Senior debt**		
Interests during the construction	134,834	12.4%	China Eximbank/China Development Bank	175.000	16%
Reserve account for debt service	26,701	2.5%	IADB	165.000	15%
Advisory committees and others	23,556	2.2%	CAF	50.000	5%
Commissions financing	14,362	1.3%	**Total senior loans**	390.000	36%
Exchange losses	6,784	0.6%			
Legal commissions	4,304	0.4%	Committed cash flow*	368.000	34%
Fines and penalties	873	0.1%	Equity contributions**	328.200	30%
Others	2,120	0.2%			
Total project cost	1,086,200	100%	**Total financial Plan**	1.086.200	100%

Source: information received from OPAIN.

The winning concessionaire requested USD 50 million in loans from CAF to partially finance the project. This loan was part of a package of USD 390 million (36%), under a credit structure with a shared collateral package that corresponds to the total of the required funding. In particular, the CAF loan is defined under the following features[12]:

12. With respect to the characteristics of the IADB loan, it was not possible to obtain detailed information. It is known that the IADB debt is senior, as is the share received from CAF, and the repayment profile was made to order to reduce the pressure on cash flow during construction.

Table 5.16. **Characteristics of CAF loan**

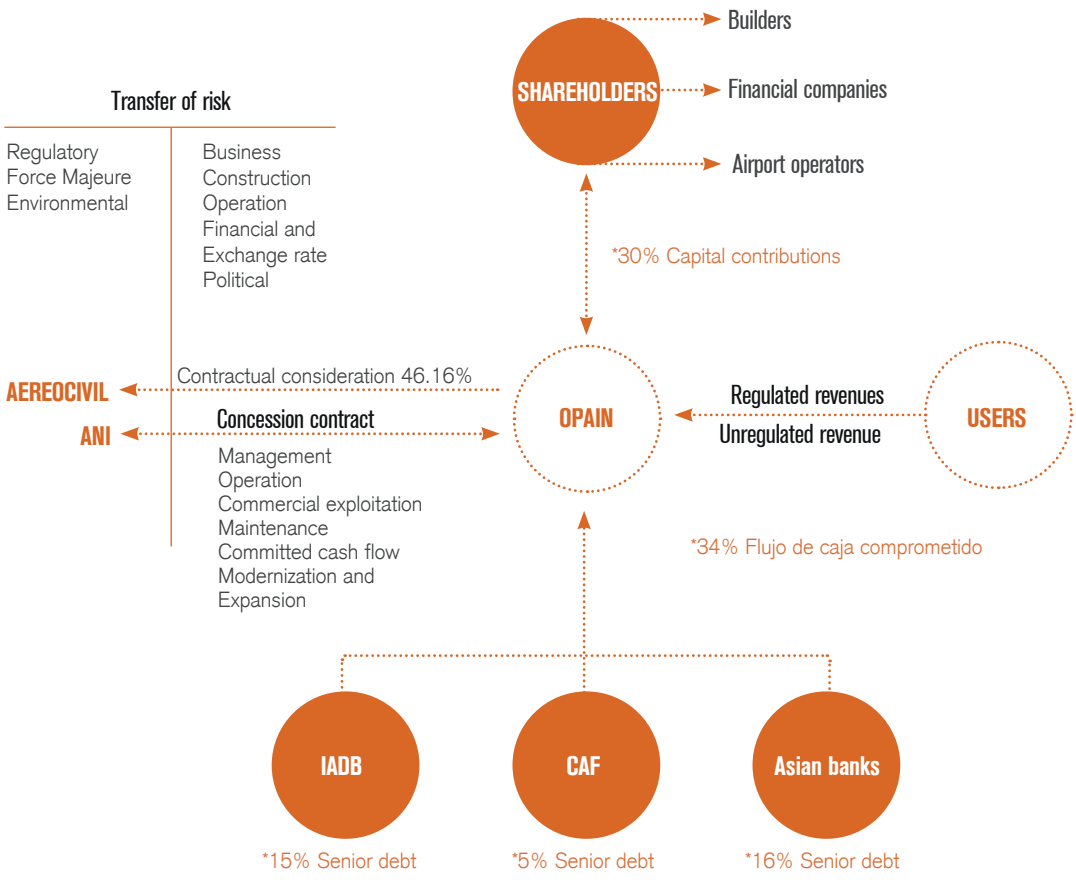
Features	Modality	Long-term senior loan
	Amount	Up to USD 50 million
	Term	Up to 14 years (although the deadline will depend on the financial closing date) Libor 6
	Interest rate	months + minimum 500 bps
	Grace period	The period that elapses from the financial close until the first of (i) completion of the construction period or (ii) three years
	Amortization	Semi-annual, unequal and growing installments

Source: information received from OPAIN.

However, partner contributions (30%) and committed cash flow (34%) were also important resources for assuming the development and modernization of the airport under study. The committed resources in operating cash flow generated during the construction period amounted to USD 368 million. Finally, the shareholders made capital base contributions committed to the borrower separately for an aggregate amount of USD 328.2 million.

In short, Image 5.6 outlines the typical project structure:

Figure 5.6. **Typical project structure**



*FINANCIAL PLAN OF THE PROJECT

Source: Authors

Along the lines of the financial plan, if the annual cash flow generated during the construction period exceeds the committed cash flows projected for the year, there will be a reduction in the capital base. The borrower shall ensure that maximum debt to capital ratio is maintained once that loans have been disbursed, the committed capital base contributions have been made, along with the cash flow commitments and, if necessary, the committed capital base contributions will be made pro rata with the loan disbursements.

Finally, it is important to mention that the concessionaire signed an irrevocable mercantile trust agreement on management and source of payment with BBVA Fiduciaria at the end of 2006, subsequently ceded to Fiduciaria Bancolombia S.A. in October 2009. The assets of the trust correspond to (i) the totality of regulated and unregulated revenues, (ii) the capital contributions, (iii) financing from lenders, and (iv) interest generated by the trust resources.

5.8 Conclusions: the project's outcome

The rapid growth of the Colombian economy presented the government with the need to decentralize the country's airports. Private participation materialized through concession contracts has become one of the alternatives to address that need.

The analysis of the experience of bringing in private capital to El Dorado airport in Bogota makes it possible to highlight different key findings. Firstly, it seems appropriate to point out Colombia's long tradition with concession projects, including airport infrastructure. This has enabled the country to establish a scheme of continuous learning, passing through three generations of concessions. These generations differ among themselves, mainly, due to the distribution of risks between the state and the concessionaire. Since the first airport concessions in the country in the mid-1990s, the country has forged ahead to develop more efficient projects in the reallocation of risks and the management of investments.

In addition, this process of strengthening the infrastructure in Colombia has been accompanied by an important regulatory development, including a legal framework of public-private partnerships with the recent enactment of Law 1508/2012. With this, an important milestone was achieved, leading to the fourth generation of concessions.

In addition, the country has recognized the importance of the institutional framework for PPPs, recently creating the National Agency of Infrastructure (ANI). From an institutional perspective, the creation of this entity, which replaces the former National Institute of Concessions (INCO), an entity that faced systemic problems of various kinds, represents a step forward toward the proper structuring and technical management of concessions to tender.

However, obstacles have been encountered in the development of contracts awarded for the management, operation, exploitation, maintenance, modernization and expansion of Colombian airports. In particular, the project that has occupied us throughout all of this chapter indicates two important challenges: traffic projections and investment cost overruns.

In regard to the projected traffic levels, they have been widely surpassed by real values. In fact, it has been estimated that is this trend continues, there would be a gap of more than 100% before reaching the mid-point of the concession period. The lack of an adjustment in the traffic forecasts in relation to the real demand was precisely the main reason that an important change in the conditions originally laid down in the concession contract was justified: the demolition of the passenger terminal in lieu of its remodeling.

This situation led to a long negotiating process that took almost three years and resulted in an increase of approximately 35% in the initial contract value. In this context, it is interesting to highlight that the modification of the concession contract was accepted before the cost of the decision to not remodel the existing terminal was calculated.

In any case, it should be noted that the country has made important efforts to overcome the backlog of airport infrastructure, which still persists. The involvement of private capital has made it possible for projects like El Dorado to materialize, despite the problems detected throughout its implementation.

6

Administrative Center
in Tlajomulco de
Zúñiga (Mexico)

Introduction

The demographic evolution and administrative needs of Tlajomulco
- The socioeconomic context of the municipality and its administrative needs
- Public finances in the municipality
- The budgetary feasibility of the project

Legislative and institutional framework
- Evolution of Mexico's legislation for PPP
- Service provision projects (PPS)
- Contract legislation

Characteristics of the project
- Project goals
- Technical description of the project

The decision to use the PPP model
- Project feasibility. The value-for-money analysis

Award mechanisms and bids evaluation

Contract design and risk sharing
- Legal-financial structure of the project
- Fee composition
- Characterization and allocation of risks
- Guarantees scheme
- Quality and standards of service

Project financing
- Financing structure
- Constitution and structure of the trust
- Private developers

Lessons learned

6.1 Introduction

Mexico's experience with public works concessions is extensive, but over time the results have been mixed. After encountering problems in the concessions awarded through the National Highways Program in the early 1990s, the more recent developments have been remarkably more positive. Indeed, Mexico is now one of the most active Latin American countries in attracting such private initiatives for the provision and financing of infrastructure and in project management.

Private sector participation in the Mexican concession model has a noteworthy history. The first project to be built under this scheme was the Mexico-Cuernavaca toll road in 1952. That was when Federal Roads and Bridges (CAPUFE) was created as a state agency in charge of managing toll roads. After that, however, the concession model was not used until a severe financial crisis in the 1980s revived the idea of getting the private sector involved in the provision of infrastructure due to the large budgetary constraints.

The need for more infrastructure capacity, coupled with the beginning of a new export-driven effort to revitalize the economy, led the government to commission the Banco Nacional de Obras y Servicios Públicos (BANOBRAS) to do a viability study with the aim of resuming the model of public works concessions. As a result, the National Highway Concession Program was approved in 1989. This led to tenders for the award of 5,500 kilometers of highways between 1987 and 1994 via a total of 52 concessions. It was one of the world's most ambitious programs of the kind at that time.

The financing for this program came exclusively from the private sector in the form of capital contributions and bank loans. The government considered subsidies only in those cases when sufficient profitability was not reached. Even so, problems were soon detected. Tolls were excessively high when concession periods were shorter, at a maximum of 12 years. The high tolls meant that traffic was well below forecasts. This situation, made worse by a financial crisis in December 1994, when the Mexican peso devalued and interest rates shot up, meant that many of these highways began to run into serious problems. As a result, 23 of the 52 highways had to be bailed out in 1997 by Mexican taxpayers at a cost of roughly USD 6 billion.

The problems in the National Highway Concessions Program led to a complete overhaul of public-private partnerships in Mexico, distinguishing between traditional concessions, service provision projects and asset utilization models.

Service provision projects (PPS), whose specific characteristics are discussed in greater detail later in this chapter, are designed to achieve a more efficient use of public expenditure on social infrastructure projects and the provision of public services. Financing doesn't have to come from the state budget in the case of service provision contracts. In addition, the public contractor is able to reduce the cost of the project by shifting part of the intrinsic risks onto third parties that are better trained to handle them and may also be required to meet certain levels of quality during the term of the contract. With these advantages for the public sector, the private partner can invest in a long-term project with limited risk.

The case discussed in this chapter shows the effort made by the Mexican public administration to incorporate innovative schemes such as service provision projects to any type of infrastructure or public works. Below, there is a description of the case of the administrative center and government building in Tlajomulco de Zúñiga, a municipality in the metropolitan area of Guadalajara, in the state of Jalisco.

The 2010-12 Municipal Development Plan aimed to substantially improve the provision of municipal public services "due to the precarious operation, attention and services provided by the responsible agencies in recent years." For this reason, it was decided to implement an improvement program that involved restructuring and reorganizing all areas and providing equipment for services, maintenance and infrastructure.

The goal of the Administrative Center project was to renovate government facilities, provide better services and offer more efficient management through economies of scale by concentrating all of the services in a centralized complex. The project also included the construction and maintenance of municipal sports centers and installations for Tlajomulco residents.

6.2 The demographic evolution and administrative needs of Tlajomulco

There were two reasons for going ahead with the project. First, population growth had made it necessary to address the higher demand for public services in Tlajomulco de Zúñiga. Second, the conditions and disperse locations of the offices of the different public services made it harder to provide efficient and good services to the population. These reasons led to the proposal of a project that would centralize administrative activities and improve the conditions and installations for the provision of services in one building. The state of municipal public finances and the budgetary restrictions would prove a key factor to opt for a model of private financing.

6.2.1 The socioeconomic context of the municipality and its administrative needs

Tlajomulco de Zúñiga is located in center of the state of Jalisco, 20 minutes from the metropolitan area of Guadalajara, the state's capital and most-populated city. Jalisco ranks fourth in terms of its contribution to the country's GDP (6.3% in 2009, according to INEGI). Tlajomulco ranks fifth among municipalities in Jalisco in terms of the size of its economically active population, according to the State Population Council (CONEPO). Tlajomulco is also one of the five municipalities in Mexico with the highest growth rates over the last decade. This growth is expected to continue in the medium term when taking into account

the statistics for construction approvals for new urban developments and the land still available for expansion, coupled with the fact that the municipality has become a "place to live" for people who work in Guadalajara.

Among the economic activities in the region, there is a bustling agricultural and livestock industry, forestry and an incipient manufacturing sector. The electronics industry has gained prominence in the municipality over the past few years. Infrastructure and skilled labor have been catalysts for new activity in the municipality. Industrial growth in the region has been helped by good air and road transport. Tlajomulco is less than 20 kilometers from the Miguel Hidalgo y Costilla International Airport.

According to Tlajomulco de Zúñiga's 2010-12 Municipal Development Plan, the municipal's population was 50,697 in 1980, 68,428 in 1990 and 123,619 in 2000, reaching 308,157 people in 2010. This means that there has been a 607% increase of its population over the past 30 years. Despite this, the public facilities and infrastructure at the time of the project's conception were the same as in the 1980s.

The Tlajomulco de Zúñiga Municipal Urban Development Program highlighted the growing demand for quality public services and social infrastructure, plus the limited capacity of the municipal authorities to resolve these problems. The gap between population growth and the public administration was widening. In addition, it is important to understand that there are still expectations for a substantial increase in the demand for services, as long as the growth of the metropolitan area of Guadalajara continues stretching south to Tlajomulco.

Table 6.1 **Evolution of the population and municipal employees of Tlajomulco de Zúñiga since 1995**

Year	Population	Municipal Workers
1995	100.797	398
2000	123.619	1.000
2005	220.630	1.640
2010	308.157	2.600
2015 (*)	750.000	3.800

(*) Estimates by the municipal government.

Source: Authors based on data of Tlajomulco de Zúñiga's Coordination of Strategic Projects.

Before the project, the facilities of the different public agencies and government offices were scattered throughout the municipality and lacked enough capacity. This made them inefficient. Likewise, citizens were demanding the centralization of administrative services in a single building for the management of all paperwork. Other problems also mentioned were insufficient parking and shoddy municipal offices. Municipal employees also demanded better conditions for storing documents and archives. Another essential aspect to be resolved was for the staff in the various municipal offices to have adequate facilities so they could work efficiently in providing their services on

a scale in line with the needs of the current population. All of this was a driver for the construction and operation of an Administrative Center, as well as the necessary road infrastructure to connect it with the municipal's first quadrant.

Along with discontent of citizens and workers, another concern was that rent for the offices that were not municipal property had been growing steadily. The costs of maintenance and for replacing furniture and equipment had also skyrocketed. Rents shot up 88% between 2007 and 2010 and the expenses for basic services rose 13.5% over the same period. To resolve the disparity of the administrative services, it was thought that the best way would be to unify all of these offices in a single Administrative Center. Due to the huge investment for this and the municipality's financial restrictions, which we will analyze below, a Public-Private Partnership scheme was considered to be the best option.

6.2.2 Public finances in the municipality

Tlajomulco de Zúñiga's financial situation was a deciding factor that tipped the balance toward a new model for public infrastructure. When the project was envisioned in 2011, the municipality's annual budget for income and expenses was as shown in Table 6.2.

Table 6.2. **Tlajomulco de Zúñiga's budget for income and expenses in 2011**

REVENUE		
Concept	MXN millions	Percentage
Financial stock	107.6	9.6%
Taxes	302.2	26.8%
Special contributions	0.0	0.0%
Duties	143.2	12.7%
Products	19.6	1.7%
Royalties	241.4	21.4%
Equity stake	201.8	17.9%
Federal contributions	110.4	9.8%
Total	1,126.5	100.0 %
EXPENSES		
Concept	MXN millions	Percentage
Personnel services	458.1	40.7%
Materials and supplies	48.3	4.3%
General services	166.0	14.7%
Subsidies and grants	101.4	9.0%
Real estate and property	20.3	1.8%
Public works	235.7	20.9%
Miscellaneous expenditures	11.1	1.0%
Public debt	85.2	7.6%
Total	1,126.5	100.0 %

Source: Authors based on data of the municipal treasury of Tlajomulco de Zúñiga.

Table 6.3 shows the bank loans the municipality had in June 2011. In 2005, debt services accounted for only 0.85% of total revenue. Following the implementation of the 2008-10 Infrastructure Program, the percentage increased to 5.08% in 2010. The increase in the municipal's indebtedness in 2009 and 2010 was due to the rise in spending to complete the works program. On June 30, 2011, the Secretariat of Finance and Public Credit reported that the financial obligations contracted by the municipality totaled MXN 16 million (roughly USD 1.23 million) due to debts contracted with commercial banks and a balance of MXN 337.6 million (about USD 26 million) due to debts contracted with development banks.

Table 6.3. **The municipality's bank debts as of June 2011**

Bank	Type of Credit	Authorized Amount (MN MXN)	Annual Amortization (MN MXN)	Balance June 2011 (MN MXN)	Date of Authorization	Term (Months)	Type of interest	Purpose
BANOBRAS	Simple	76.3	9.538	43.962	June 08	Up to 96	TIIE + 0.61	Refinancing
BANOBRAS	Simple	150	27.273	71.272	May 09	Up to 96	TIIE + 1.82	Public works
BANOBRAS	Simple	250	18.519	250.000	June 10	Up to 174	TIIE +1.60	Public works
BANOBRAS	Revolving Stand-by	20	20.000	0.000	April 11	360	TIIE +4.60	Liquidity (CAT)
State Government	Simple	1.52	0.380	0.590	Nov. 08	Up to 48	NA	Machinery
Financiera Bajio S.A de CV	Operating Lease	20	12.000	20.000	June 10	24 - 48	NA	Vehicles
Arrendadora y Factor Banorte	Active credit line	20	20.000	0.000	Started Nov. 11	-	-	Supplier Financing
HSBC México	Inactive credit line	40	-	0.000	Started Nov. 11	-	-	Supplier Financing
Total		577.82	107.709	385.824				

(*) TIIE: 28-day equilibrium interbank interest rate

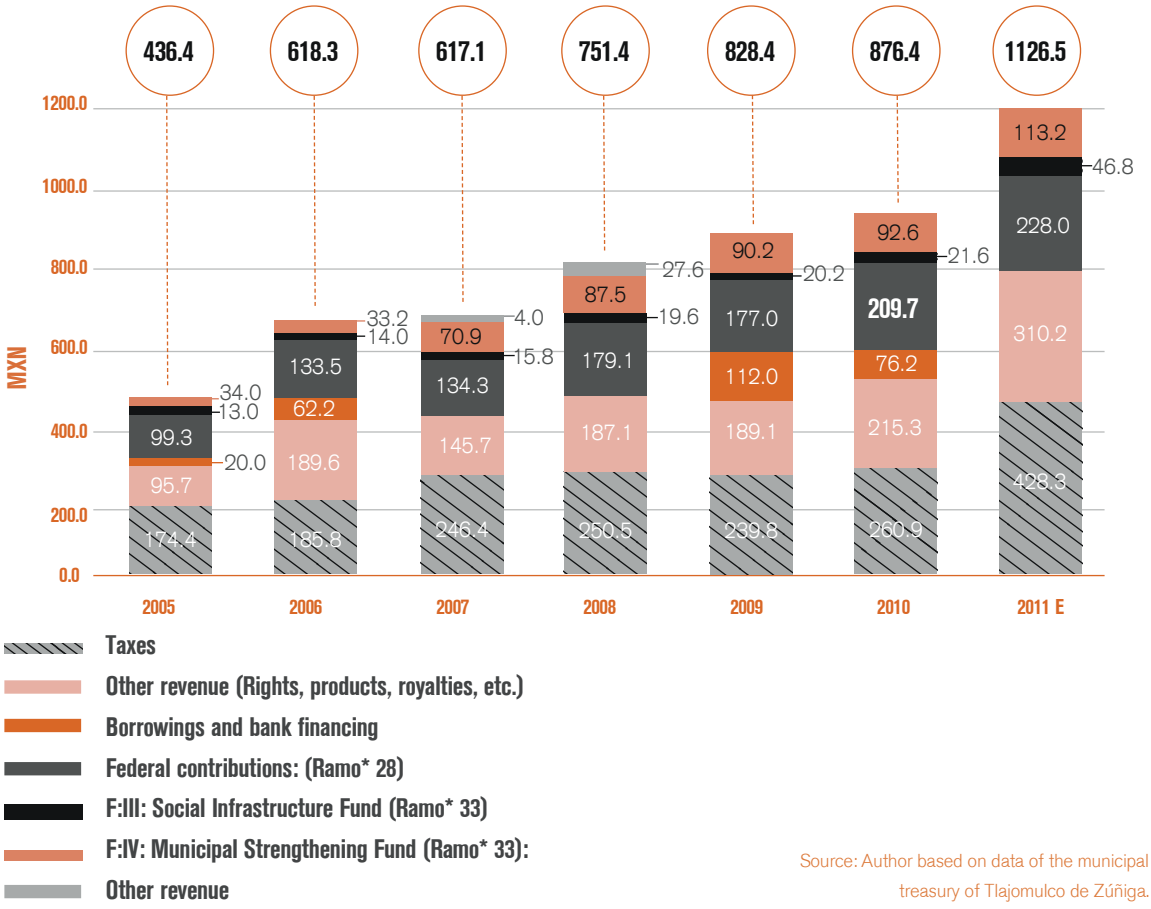
Source: Authors based on data of the municipal treasury of Tlajomulco de Zúñiga.

All of these loans are guaranteed by federal contributions. Figure 6.1 shows the increase in the allocation of federal monies and the greater effort made by the municipality in collections, rights and royalties between 2005 and 2011.

Another aspect to be evaluated is the credit ratings of the municipality of Tlajomulco de Zúñiga. To complete the project, the municipality's capacity to keep on top of its payments was evaluated by Fitch Ratings and Standard & Poor's. When the project was envisioned, Fitch Ratings had awarded the municipality an A + (mex) rating, while Standard & Poor's rated the municipality a mxA + with a stable outlook, both on a national scale.

National scale ratings are a measure of creditworthiness relative to the universe of issuers and issues within the same country. Both the global and national scales measure credit risk and, on the whole, reflect the same key rating factors and the same criteria. The critical difference is that national scale ratings are allocated on the basis that the best credit in the country is rated AAA, which is generally higher than those same credits may have on the global scale.

Figure 6.1. **Municipal revenue from 2005 to 2011. Increase in federal contributions.**



Source: Author based on data of the municipal treasury of Tlajomulco de Zúñiga.

In June 2011, Standard & Poor's downgraded Tlajomulco's long-term credit risk rating to mxA with a stable outlook, justifying its decision on the accelerated growth of the municipal's expenditures. In August 2011, Fitch Ratings downgraded the municipality to A (mex) with a negative outlook due to the increase in debt levels and the decrease in domestic savings. All of this hindered the municipality's ability to continue borrowing.

When designing the Administrative Center project, it was crucial to reconcile the necessary solvency of the municipality in making payments —so that investors would feel safe—with the need to not compromise the municipal's credit rating so that it could continue its activity and take on new financial commitments if necessary. The PPS model, which leaves the debt in the hands of the private sector, was seen as an appropriate way to make both of these objectives possible.

6.2.3 The budgetary feasibility of the project

In Mexico, investments made through Public-Private Partnerships (PPP) cannot enter as public debt at the time of execution, since the obligation to pay is not unconditional. This allows governments to take on major commitments that represent financial burdens in the future. In PPS contracts, the compensation paid by the granting authority is registered as a current expenditure of the dependency or contractor, which must make a budget forecast of the payment obligations contracted in the long term to demonstrate that it will have sufficient resources to cover it during the term of the contract.

The Tlajomulco Administrative Center (CAT) project, developed under the PPS scheme meant entering into a payment plan with the appropriate budget support. During 2011, a payment of MXN 6.2 million (USD 477,000) in compensation was made, due to the expectation of receiving monies from improved public roads and also because the administrative building would not be completed until the end of that year. In 2012, it was estimated that a payment of MXN 46 million (USD 3.2 million) would be made, including VAT. The payment would increase 5% in 2013, in line with expected inflation. At the same time, in 2012, a 15% increase in state and federal contributions was expected, due to the population growth in the municipality and a rise in online collection, compared to what happened in 2010. This increase in revenue would allow the cost of the project to be amply covered.

It is also important to note that construction of the Administrative Center would bring a reduction in spending of between MXN 8 million and MXN 10 million annually, given that the municipal government would no longer need to rent and maintain the premises occupied by the municipal offices up until that time. The estimated annual payment would be within the limits established in the Regulation of Investment Projects and Service Provisions of the Municipality of Tlajomulco de Zúñiga, as it would be less than 9% of the current expenditure of the municipality, based on 2010 figures, which is less than the authorized 20%. In addition, such annual payments would

account for using less than 30% of the margin established by the Federal Government in the criteria published by the Secretariat of Finance and Public Credit (SHCP) for this purpose.

Based on the provisions of Article 5 of the Investment and Services Provision Regulations of the Municipality of Tlajomulco de Zúñiga, the municipality set the financial ceiling at MXN 280 million (USD 21.5 million) for the project. In addition, the amount of the payments to be made each fiscal year was approved and authorized. Based on the sufficiency of the projected flows, as well as on the qualitative sustenance and the qualification of municipal agencies of Tlajomulco de Zúñiga—the primary source of payment, the Administrative Center construction project was accepted and, as will be seen, was found financing easily.

6.3 Legislative and institutional framework

This section describes the legislative and institutional framework underlying the project's development.

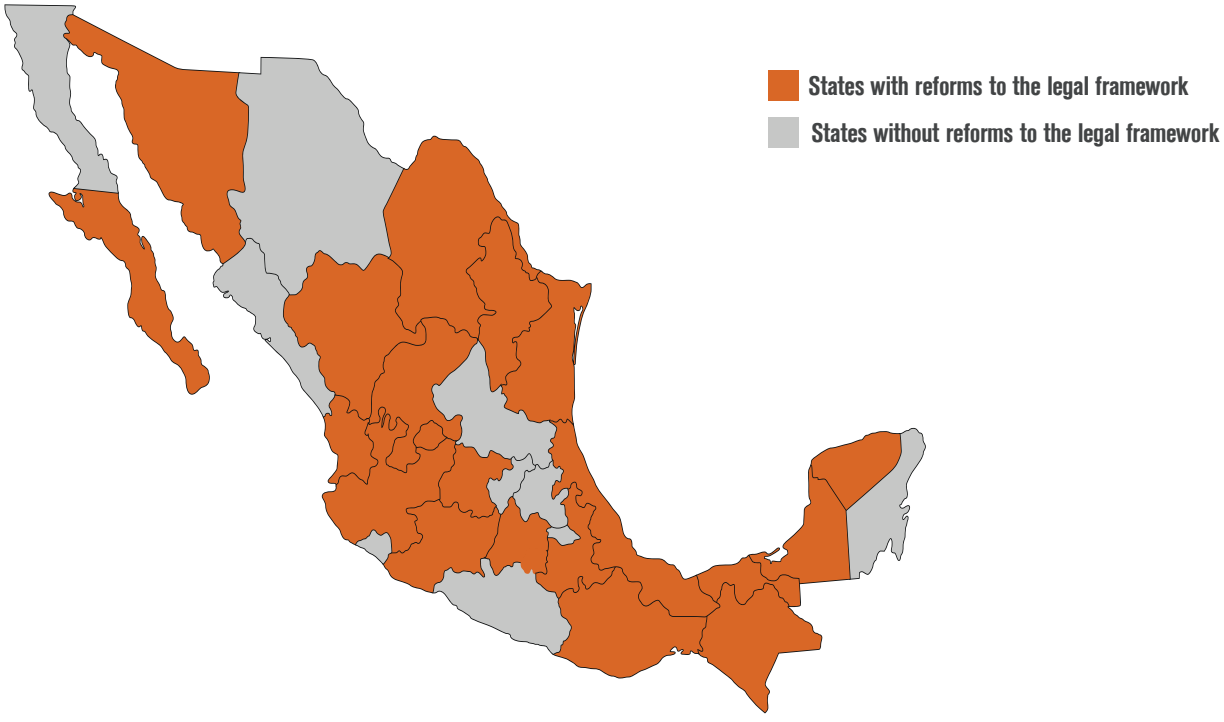
6.3.1 Evolution of Mexico's legislation for PPP

As seen in the introduction of this chapter, the legislation that regulates the PPP framework has been adapted to both the changing economic circumstances of the country as well as the social demands for quality public infrastructure. The legislative changes have not only begun to respond to problems that may arise but to the new needs and demands of society. The last of these changes occurred on December 15, 2011, when the decree approving the Public-Private Partnerships Law was enacted with the aim of transferring the inherent risks of any project managed by the private sector more efficiently, while allowing the same level of investment in infrastructure, with a lower budget commitment for the granting authority.

PPPs are not a new scheme for project development in Mexico. For decades, there has been a successful collaboration between both sectors, making it possible for infrastructure to be expanded in the country. As an example of these partnerships, productive infrastructure projects have been developed at the national level in the energy sector, and concessions have been awarded in the road and water sectors. As well, investment funds have been implemented to support public infrastructure projects, which are also backed with private investment such as FINFRA, FONCAR and FONATUR. In addition, long-term contracts for the provision of goods and services have been signed in various sectors. To provide a legal status to all these joint partnerships, Mexico in recent years has strengthened the legal framework for investment projects and service provision, both in the federal government and federal entities.

In so doing, the Secretariat of Finance and Public Credit issued the agreement establishing the rules for the fulfillment of service provision projects, published in the Official Journal of the Federation on April 9, 2004. Subsequently, at least 22 states of the Republic have created or reformed their legislation to carry out projects of this type, according to data of the Mexican Chamber of Construction. Image 6.2 shows the states that have created or reformed their legislation in this area.

Image 6.2. **Mexican states that have created or reformed their legislation on investment and service provision projects**



Source: Mexican Chamber of the Construction Industry.

6.3.2 Service provision projects (PPS)

The Investment unit of the Secretariat of Finance and Public Credit defines Service Provision Projects (PPS) as those in which "a private investor designs, builds, finances and operates support infrastructure to provide comprehensive services to government agencies and entities so that these in turn provide public services." At the end of the contract, the asset is turned back over to the public sector without any further payment. With this scheme, governments foster an efficient use of public resources, reducing delays in the development of public infrastructure in social sectors and improving the quality and coverage of public services. The payment scheme for these services is defined under the criteria of availability and use, linking them to performance-based standards that should be monitored and evaluated based on objective and specific indicators.

The PPS model has been established successfully and rapidly. The first project developed using this method was the modernization of the Irapuato-La Piedad federal highway, which was awarded in 2005. The model has also been extended to social infrastructure—education and health—and, more recently, in the case that concerns us here, to infrastructure related to the benefit of any public service.

Through PPS contracts, which are awarded at a public tender, the government entity in charge of the public works project awards the contract for a term of between 15 and 30 years. The private consortium is responsible for the design, financing, construction, maintenance and operation of the infrastructure. For the services provided, a periodic payment is paid to the private company based on available indicators, such as on traffic or use in the case of road infrastructure. For the project to be processed, the federal government's Secretariat of Communications and Transportation will demand a socioeconomic impact report on regional development to determine that it is both economically and financially viable, and that it can attract private investment and be approved by the Secretariat of Finance and Public Credit. At the same time, the efficient use of public resources should be studied using a value-for-money analysis to determine if the net social benefits are equal to or greater than those that would be obtained using a conventional public works scheme.

The PPS models tend to include a pre-qualification phase, which has as its goal to guarantee that the competitors meet the technical, financial and legal standards set forth in the rules of the public tender. Previous studies are provided, such as those of traffic in the case of highways. However, these preliminary studies are merely informative and do not entail any responsibility for the granting authority. Unlike the traditional road concessions in Mexico, where the government delivers a complete executive project to which the concessionaire must adhere, PPS provide a preliminary reference project (PRD) that can be modified and improved by the bidders, in line with the technical specifications already established. Before the infrastructure is returned to the granting authority, a series of financial contributions are made into an account specified in the contract for the potential replacement

of certain elements in order to ensure that the concession is delivered in good condition upon completion of the concession.

6.3.3 Contract legislation

Unlike other models in which there is reference legislation for the whole country, it is municipal regulation in Mexico that governs PPS contracts. This is the case even though there is a national regulation that is of a supplementary nature and is applicable when there is no specific regulation at the state or municipal level. The regulatory framework at the municipal level, which regulates the process for carrying out investment projects for the development of infrastructure and the provision of public services under the Public-Private Partnership model is the one that was used for the Tlajomulco de Zúñiga Administrative Center project.

In the state of Jalisco, Decree No. 22213/LVIII/08, issued by the State Congress, created the Law on Investment Projects and Provision of Services of the State of Jalisco and its Municipalities, which was published on May 1, 2008 in the state's official newspaper of record. It proposes a new model of participation and co-responsibility between the government and private sector in projects, under the model of Public-Private Partnership, for the development of infrastructure and the provision of public functions or services. It is a model based on the British experience with Public Private Partnerships, which has also been adopted by Chile and some European countries with successful results.

The decree-law mentioned above also amended section II of article 38 of the Law of the Government and the Municipal Public Administration of the State of Jalisco to read as follows: "The Municipality has the power to enter into agreements with public and private entities in order to carry out works of common interest, provided that they do not correspond to the state, and to arrange public-private partnership agreements for the development of investment projects in infrastructure or the provision of services or functions, in the terms established in the legislation that regulates the matter."

It is also important to point out that the aforementioned legislation, in observance of and respect for municipal autonomy, provided for in Article 115 of the Mexican Constitution, does not oblige municipalities to take into account the Law on Investment Projects and Provision of Services of the State of Jalisco to its municipalities, but it establishes the duty of the said municipalities to issue their municipal regulations of the Public-Private Partnership regime. If this is not done or if there is a lack of regulations for regulating projects and contracts under this regime, they must apply the state law on a supplementary basis.

In the case of Tlajomulco de Zúñiga, the Regulation of Projects for Investment and Services Provision of the Municipality of Tlajomulco de Zúñiga, Jalisco was approved on October 7, 2010 in an ordinary plenary session of the municipality's town council. The regulation, which served as the basis for

the contract of the Administrative Center, was published in the Municipal Gazette on October 11, 2010. After its approval on October 27, 2010, the Coordination of Strategic Projects of the Municipality of Tlajomulco de Zúñiga created the Administrator Group whose main goal is to organize the work required for the definition of the project, the preparation of the socioeconomic evaluation, the cost-benefit analysis, the preparation of the bidding rules, the structuring of the contract model and the definition of the award procedure.

The Administrator Group was created by an act signed on October 25, 2010. It is made up of a strategic project coordinator, who chairs the group; the director general of public works; the municipal president; the municipal comptroller; a representative of the Treasury; a representative of the General Administrative Coordination; and a representative of the Administration Coordination. At its first meeting, the Administrator Group approved plans to: 1) hire external consultants; 2) prepare an official statement indicating that priority would be given to this Project; and 3) authorize the General Administrative Coordination to carry out the necessary analysis for issuing a technical opinion.

The provisions of the Reference Regulation regulate the process of carrying out projects under the Public-Private Partnership model for the development of infrastructure and the provision of public functions or services by the municipality. The regulation is made up of 94 articles in a total of 18 chapters. Chapter II, on the attributions of the authorities, is consistent with the Law of the Government and the Municipal Public Administration of the State, developing and specifying the attributions of the Municipal Council, the president, the comptroller and the other authorities and dependents involved in the municipal's public administration. Chapter V establishes the content of the socio-economic evaluation of the projects and the value-for-money analysis. Chapter VII establishes that the Projects for Investment in Infrastructure or Services Provision, which is intended to be contracted under the Public-Private Partnership modality, must be authorized by the Municipal Council after obtaining the opinion of the corresponding building commissions as well as the information that the opinion must contain.

Chapter VIII establishes that the preliminary draft budgets of the municipality of each fiscal year shall indicate the payment obligations that are provided for in existing contracts, both for the corresponding fiscal year and for subsequent ones. It will take into account the contingent liabilities arising from such contracts, including early termination or the acquisition of assets under certain conditions. In addition to the multi-year payments to meet these obligations, the annual payment for all these projects is limited to 20% of the annual budget allocated to the current expenditure of the municipality.

In the subsequent chapters, there are details about everything related to the award process. This includes establishing the functions of the awarding committee and the procedure for awarding and evaluating bids, specifying the preference for public tenders. Finally, chapters XV and XVI focus on evaluation and follow-up. It is pointed out that the contracts must contain a section that establishes the mechanisms and formulas to evaluate the concessionaire and the social and economic profitability of the service

provision during the term of the contract, as well as the powers of the Treasury and the municipal comptroller in this regard. The Executing Agency shall submit quarterly reports to the Treasury and Comptroller's Office on the fulfillment of the project objectives.

6.4 Characteristics of the project

The administrative center project includes the design, construction, equipment, maintenance and operation of a municipal administrative complex. It also includes the investment, the rehabilitation work of the infrastructure for drinking water and drainage, the paving of several roads and the construction of complementary facilities for commercial and other activities for users of the services as long as they are compatible and useful.

6.4.1 Project goals

The Administrative center of Tlajomulco (CAT) project was developed in response to the problems previously outlined in this chapter: how to respond to the demographic evolution of the municipality and the increasing demand for administrative services. Along with the problems stemming from the dispersion of different offices throughout the municipality, there were the additional problems of increasing monthly rents and maintenance expenses. When the migration of municipal offices and services to the Administrative center of Tlajomulco (CAT) began in January 2012, MXN 300,492.59 (USD 23,115) in monthly rent were being paid by 27 departments. In May 2013, the 12 departments that had not been transferred to CAT were paying MXN 116,737.99 (USD 8,900) in rent, a reduction of more than 60% from January 2012. In May 2013, the Historical Archives, the Public Lighting utilities, the Federal Institute of Electricity, Social Communication, the Public Sanitation services, among others, had been transferred to the administrative center complex. In addition to these services, other municipal departments were also moved from other municipal properties to the complex. As such, most of the municipal departments of Tlajomulco were installed in the CAT, centralizing most of the municipality's administrative tasks. Only the departments of potable water, police, social programs and public spaces have not been moved. The Administrative center of Tlajomulco also has a room for holding plenary sessions, which had freed up the old presidential building for other purposes.

The municipal development plan has as a strategic pillar a policy for modernizing the government with the aim of combining public service and timely customer attention to substantially and decisively improves these services. The CAT investment project establishes a vital way to achieve this

goal: giving the municipal government a basic infrastructure that did not exist before but was essential to improve the provision of services and attention. The project also has a sports center, parks, gardens, bike lanes, jogging paths, squares and paths in response to the cultural and sports developmental needs of the municipal capital.

The end goal of the project was to create basic infrastructure for the government to run more efficiently, as well as to improve municipal services while providing people in the municipal with better-equipped public spaces. At the same time, the project was in line with the "Good Governance Objective," a State Development Plan of Jalisco for 2030. It is a plan designed to improve the quality of public management and strengthen state institutions.

6.4.2 Technical description of the project

The CAT project involved an investment of MXN 285 million (USD 22 million), VAT included. It comprises the design, construction, equipment and maintenance and operation for 30 years of the administrative complex under the scheme of Public-Private Partnership, including the rehabilitation of the road infrastructure for access to the municipal center. The CAT occupies an area of 3.2 hectares and consists of a building of 6,200 square meters. It has become the seat of the government and administration of the municipality. In addition, the project includes a 2,000-square meter sports center and the rehabilitation of six kilometers of public roads to more easily access the complex, with bicycle lanes and wide sidewalks, as well as hydraulic networks of potable water, drainage and sanitation The CAT also has 390 parking spaces, green spaces, squares, commercial areas, football pitches, bicycle parking and public lighting.

The project was competed on a tight schedule. The contract was signed on February 24, 2011 and the operation of the building began on January 16, 2012. Between those dates, the executive project was elaborated, the facilities were built and the access roads rehabilitated. Currently, the service provider is responsible for maintaining the functionality of the building and managing cleaning, maintenance and the modernization of technological management systems, as well as performing surveillance tasks. The service provider also has committed to return the infrastructure to the granting authority in optimum conditions.

Image 6.3 shows a perspective of the main building of the Administrative center of Tlajomulco. Image 6.4 shows the entrance to the main hall. Image 6.5 is a floor plan of the complex where you can see the main building as well as the commercial area and the sports facilities.

Initially, the start of the operation was set to take place on October 31, 2011. It can be considered a big success that operations started only two months later than this guideline date, given that there were no overcharges as a result. For this reason, it was not necessary to re-establish the economic balance of the original contract.

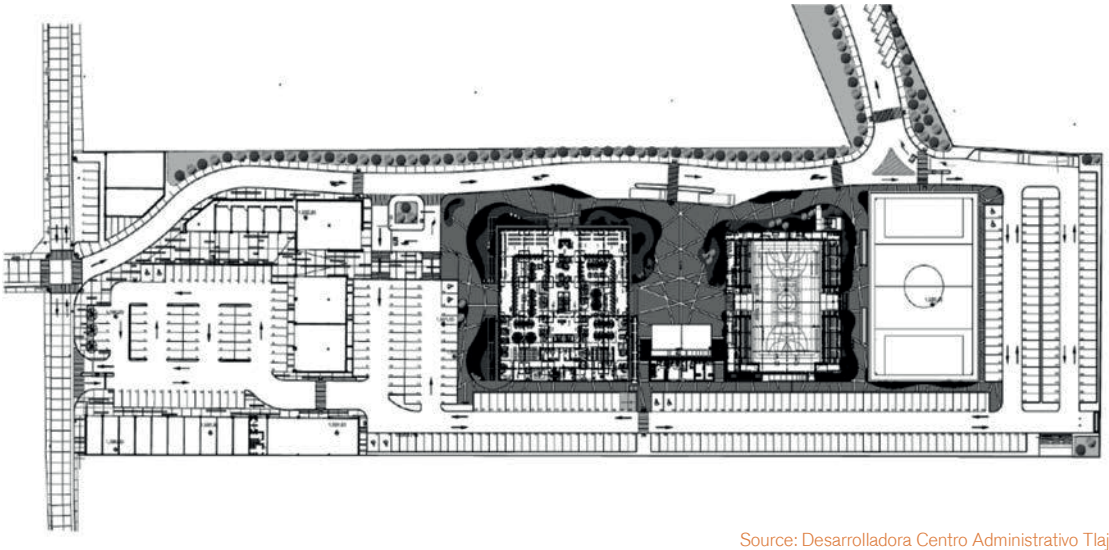
Image 6.3. **View of the new Administrative center**

Source: José Manuel Vassallo.

Image 6.4. **Interior hall of the Administrative center**

Source: José Manuel Vassallo.

Image 6.5. **Layout of the Tlajomulco de Zúñiga Administrative center**



Source: Desarrolladora Centro Administrativo Tlajomulco.

6.5 The decision to use the PPP model

The state of the municipal's public finances coupled with the speed required to execute the project led the municipality to turn to the PPS model. However, the final decision was taken in response to a value-for-money analysis that wound up tipping the balance to this model of Public-Private Partnership.

The municipality of Tlajomulco had no prior experience in provision of services contracts. However, the president of the municipality who proposed the idea was a modern-thinking person with a young team with excellent training, which undoubtedly contributed to the success of this project.

6.5.1 Project feasibility. The value-for-money analysis

The value-for-money analysis is an essential decision-making tool for deciding between a Public-Private Partnership (PPP) and a more conventional model for the provision of infrastructure. This analysis estimates the social gains provided by a PPP in comparison to a conventional scheme, allowing public money to be used in the most efficient way possible and irrespective of whether the public or private sector carries out the construction and implementation. Although the value-for-money analysis was first developed in a context of the Private Finance Initiative (PFI) policy in the UK, its use has spread widely to other countries. In Mexico, it has been established that it must be carried out as a preliminary step before a project begins that uses public resources.

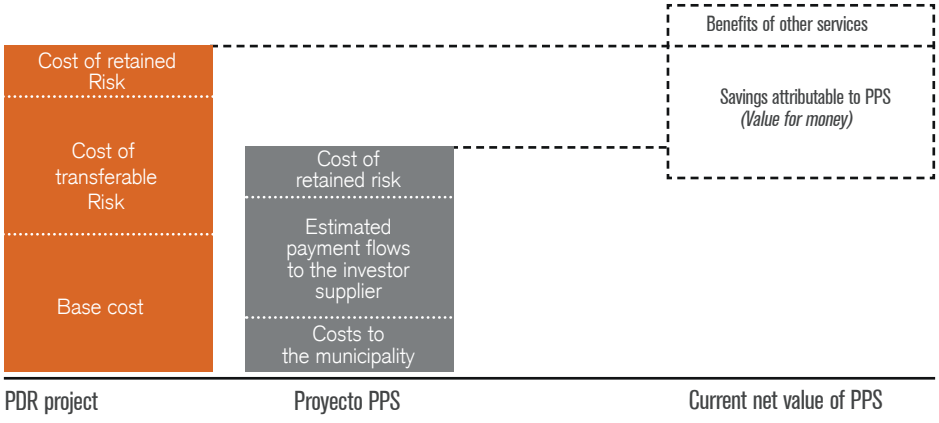
The guidelines for implementing this analysis and the development of its contents in the case of PPS were published on August 4, 2009 in the Diario Oficial de la Federación, Mexico's newspaper of record. The Investment Unit of the Secretariat of Finance and Public Credit published the *Guidelines for the elaboration of the cost-benefit analysis of the Projects for the Provision of Services* by their respectful agencies of the federal public administration. These standards establish the requirements that these public agencies must use when conducting value-for-money analysis for PPS to demonstrate that the project under this scheme generates net benefits for society and advantages above and beyond the Project of Reference (PDR).

To analyze the viability of a project under the public-private partnership scheme and the financial capacity of the Municipality of Tlajomulco de Zúñiga, support was requested from Latam Capital Advisors, a financial advisory company. At the same time, it was agreed to request technical opinion from Gatt Corona y Asociados S.C. on the project's legal feasibility and advice on the contract model structure.

The value-for-money analysis takes into account the supply and demand of the service under evaluation as well as the socioeconomic and demographic projections over the course of the project. In addition, the analysis looks at how the PPS model provides the service and assesses the risks associated with its execution, quantifying the scenario of non-implementation of PPS with the PDR option.

In the annexes of the *Guidelines for the elaboration of the cost-benefit analysis of the Projects for Provision of Services*, calculation formulas are established to avoid arbitrary or biased analysis. This provides uniformity to the studies of different infrastructure projects. The discount rate for this analysis is set by law at 12%, unless otherwise stated. Thus, the estimated payment flows in a PPS, according to the basic model provided by law, include the cost of design, financing, construction, equipment, operation and maintenance, the cost of transferable risks and the expected profit of the investment group.

Figure 6.6. **Comparison of the PDR project and the PPS project**



Source: Diario Oficial de la Federación.

The basic model for estimating the net present value of a PPS is as follows:

$$VPN_{PPS} = \sum_{t=0}^{n} \frac{(C_{Ft} + \gamma_t + \Gamma_t)}{(1+i)^t} - \sum_{t=0}^{n} \frac{(P_{PPSt} + C_{Rt} + \Gamma_t)}{(1+i)^t} + \sum_{t=0}^{n} \frac{(\Psi_{PPSt})}{(1+i)^t}$$

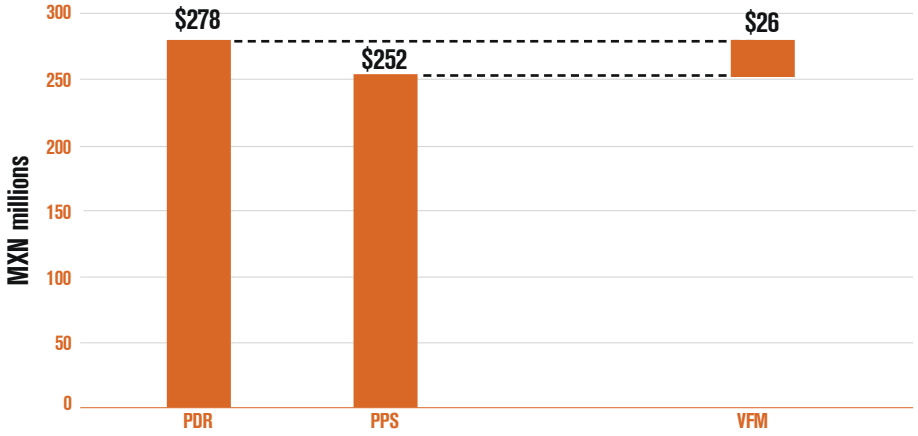
Where:

VPN_{PPS} = net present value of PPS scheme
C_{Ft} = base cost of the Reference Project in period t
Γ_t = cost of transferable risks in period t
Γ_t = cost of retainable risks in period t
I = discount rate applicable to the public sector
P_{PPSt} = estimated flows of payment to investor in period t
C_{Rt} = base cost which, if applicable, would be the responsibility of the contractor in period t
Ψ_{PPSt} = value of the additional benefits attributable to the PPS scheme in the period t
n = number of years of the evaluation horizon
t = year, year 0 being that of the start of project activities

In order for PPS to be an alternative, the analysis must show that it generates net benefits equal to or greater than those that would be obtained if the services were provided through the execution of a reference project for a traditional public works project or any other through which the problem at hand was resolved in the most efficient manner. The value for money is the difference between the net present values of both proposals.

The following figure shows the application of this methodology for the Tlajomulco Administrative Center (CAT). It can be seen that the project under the terms of provision of services would generate savings in terms of net present value of approximately MXN 26 million (USD 2 million) compared with the reference project (PDR). That's equivalent to approximately 10% of the investment.

Figure 6.7. **Comparison of the PDR project and the PPS project. The project's value for money**



Source: Latam Capital Advisors.

On the other hand, the analysis shows that in a scenario when the investment amount is MXN 300 million (USD 23 million) and the annual payment of up to MXN 50 million (USD 3.8 million) plus VAT, the net profits generated would be 3% more than would be obtained from the PRD. Payments greater than this amount would generate a negative net profit compared with the PRD, while lower payments would increase the earnings. Finally, the table below presents a summary of the range of expected annual payments, under each of the scenarios analyzed. This makes it possible to establish a relation between the estimated investment amount and expected annual payment range.

Table 6.4. **Expected annual payment ranges under different scenarios**

Expected range of annual payment for each scenario and consolidated (with VAT)				
Investment Amount	Conservative Scenario	Base Scenario	Optimistic Scenario	Consolidated range of Expected annual payment
200	40 a 45	35 a 37.5	32.5 a 32.5	32.5 a 45
210	42.5 a 45	37.5 a 40	32.5 a 35	32.5 a 45
220	42.5 a 47.5	37.5 a 42.5	35 a 35	35 a 47.5
230	45 a 50	40 a 42.5	35 a 37.5	35 a 50
240	45 a 52.5	42.5 a 45	37.5 a 37.5	37.5 a 52.5
250	47.5 a 55	42.5 a 47.5	37.5 a 40	37.5 a 55
260	50 a 55	45 a 47.5	40 a 42.5	40 a 55
270	50 a 57.5	45 a 50	40 a 42.5	40 a 57.5
280	52.5 a 60	47.5 a 52.5	42.5 a 45	42.5 a 60
290	55 a 62.5	47.5 a 52.5	42.5 a 45	42.5 a 62.5
300	55 a 62.5	50 a 55	45 a 47.5	45 a 62.5

Source: Latam Capital Advisors.

6.6 Award mechanisms and bids evaluation

Before beginning the tender process, measures were taken with the aim of providing a legal status to these types of projects within the municipal framework of Tlajomulco de Zúñiga. In October 2010, the Regulation of Projects for Investment and Provision of Services of the Municipality of Tlajomulco de Zúñiga, Jalisco was approved. That same month, the Administrator Group was set up and made responsible for the definition of the project, the socio-economic evaluation, the cost-benefit analysis, the preparation of bidding rules, the structure of the model contract and establishing the allocation process. On November 17, 2010, the project was approved

under the Public-Private Partnership scheme, setting a maximum financial ceiling of MXN 290 million (EUR 22.3 million).

On November 23, 2010, the call for bids in the national public tender was published. The main reasons for excluding foreign companies were the size of the project and the timetable. Because the bidding times were tight and because the project was not that large in terms of investment amounts, it was thought that doing an "international" public tender would only make the process more complicated without attracting additional offers from foreign consortiums. Mexican subsidiaries of foreign companies could participate.

Four consortiums registered for the presentation and opening of technical and economic bids: 1) Operadora Audaz in association with Promotora Vale de Vivienda and Fuerza de Apoyo Constructiva de Occidente; 2) Concesionaria de Proyectos de Infraestructura; 3) Promotora del Desarrollo de América Latina; and 4) Acciona Infrastructura México. However, in the presentation only the first consortium made a bid. The rest of them presented a brief where they declined their participation or simply did not appear. The reasons why three of the four contestants finally decided not to participate are unknown.

The technical bid of the consortium headed by Operadora Audaz was the only one that was evaluated. The initial investment of this consortium's offer was MXN 249,369,098.00 (EUR 19.2 million) and the monthly payment of MXN 4,384,249.87 (USD 337,200), both without VAT.

A solvency assessment of the proposal was carried out in compliance with the Regulation of Investment Projects of the Municipality. A prequalification process was not included, even though minimal experience was required from the bidders. The evaluation procedure included the verification of compliance of the delivery of the additional documents as well as a review of the financial capacity and experience of each bidder and its subcontractors through a "meets or fails-to-meet" criterion. Subsequently, an evaluation of the technical and economic offers was carried out using a criterion of "points and percentages."

The bidding rules established the minimum scores that a bid had to reach to not be rejected by technical insolvency. At least 70% of the scores for the technical solution categories for preliminary activities and operations were to be achieved. In the offer, the preliminary draft according to the specifications provided by the municipality was provided, together with a descriptive report with details of the full operation of the CAT as well as the proposed equipment and facilities. The economic bid should provide an estimate of the total cost of the infrastructure, operations and maintenance costs, estimates of the replacement of assets, an economic-financial forecast and, based on it, the amount of the monthly fee in line with the technical approach presented. One of the key aspects in the valuation was the requested compensation. The lowest present value of the total payment for the services would obtain the maximum score of this subcategory, which was weighted at 40% of the total points.

In terms of the allocation of points, 25 were granted to the general aspects of the technical approach, with special weight given to the quality of the conceptual design and its compliance with the service standards and the equipment proposal. Another 25 points were awarded to the operational technical aspect.

The amount of the counter-fee was 40 points and the coherence between the technical and economic proposal received 10 points. The characteristics of the companies did not provide a higher score, although it is true that, as mentioned previously, the bidders had to meet the minimum criteria of experience and financial solvency to participate.

In the technical assessment, the bid by Operadora Audaz got 46 of the 50 possible points. In the economic assessment, it received 48 of the remaining 50 points. The overall combined rating was 94 out of 100 possible points, a sign that the appropriate solution was proposed and took into account the compliance with the specifications required in the reference terms and conditions. In the absence of other offers, the contract was awarded to the consortium.

Even so, in the technical review some items in the bidders' draft project were detected and it was decided to delete them for different reasons. The bid included a treatment plant, a heliport and a multipurpose emergency room. However, these were considered unnecessary and scrapped, once it was determined that they would not impact the correct operation of the administrative center. This made it possible to reduce the investment and, therefore, the operational and maintenance costs as well as of the fee to be paid to the consortium by the granting authority. The proposed fee was also reduced, since the maintenance of the roads that would be rehabilitated within the project would be the direct responsibility of the municipality and not of the concessionaire. After these modifications, the total cost of the infrastructure without VAT was MXN 245,748,098.00 (USD 18.9 million). With these changes, the composition of the fee was as shown in the following table.

Table 6. 5. **Components of the fee accepted in the awarded bid**

Components of the monthly fee (without VAT)	Pesos	Percentages
T1: Investment fee	3,124,892.52	76.4%
T2: Maintenance fee	757,342.48	18.5%
T3: Fee for variable operating costs	207,750.00	5.1%
Total monthly fee	4,089,985.00	100.0 %

Source: Authors based on data from Invex Infraestructura.

In the evaluation of the bid, it was concluded that the bid complied with the criteria established in the bidding rules and in the Regulations for Investment Projects and Services Provision of Tlajomulco de Zúñiga, Jalisco, as well as in the State Public Works Act of Jalisco. The bidder had guaranteed its financial and technical solvency for the execution and operation of the complex. In

addition, the quality and safety presented with the draft project were higher than the proposed standards. As a result, the Strategic Projects Coordination of the General Directorate of Public Works definitively awarded the contract on January 25, 2011. Work began in April 2011 and concluded in December that year.

It is important to emphasize how quickly the project was implemented. This can be attributed both to the urgency of the private sector to start receiving the payment for the use of the project as soon as possible, and to the collaboration of the public sector to do everything in their power to make this happen.

6.7 Contract design and risk sharing

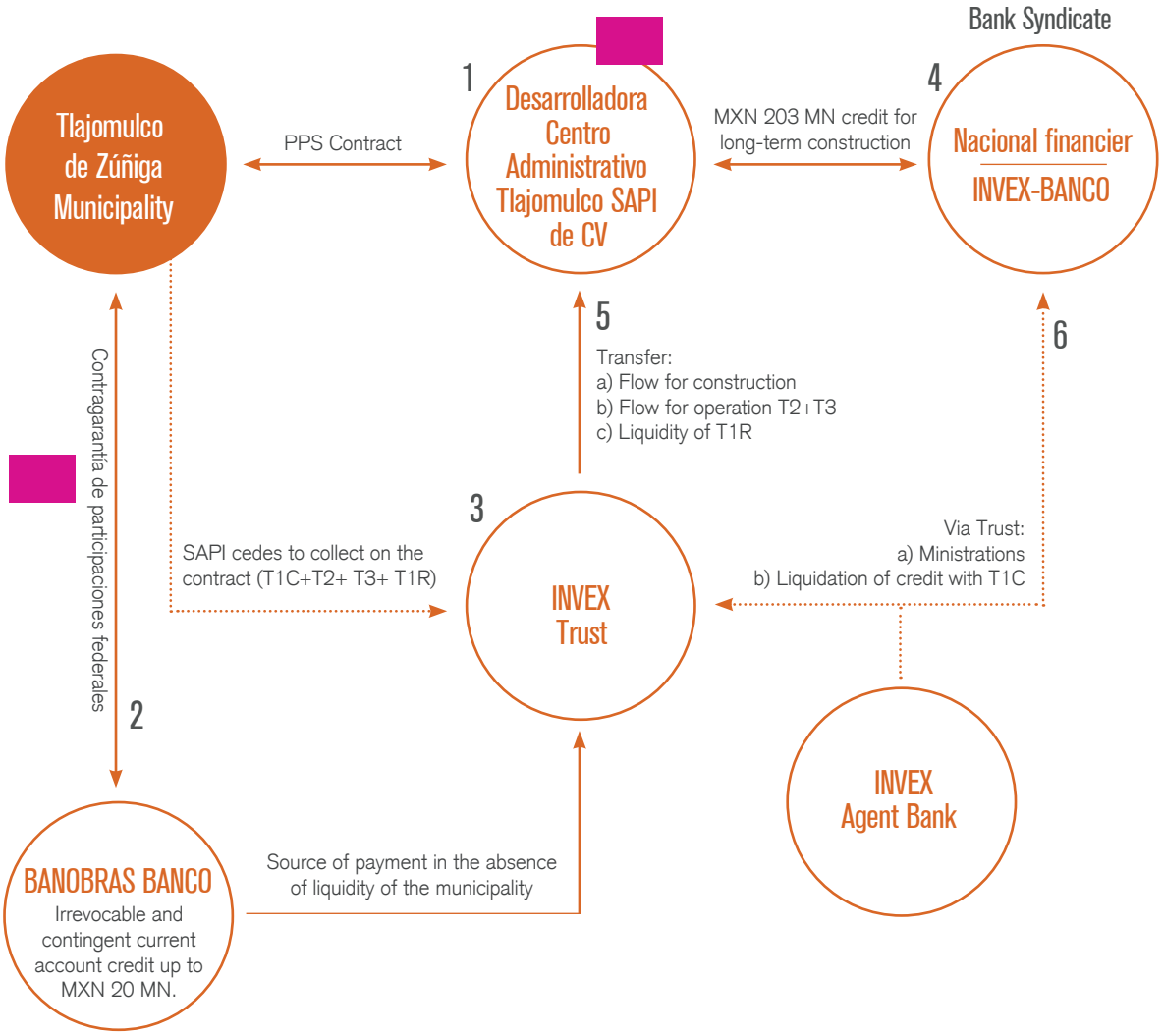
6.7.1 Legal-financial structure of the project

Following the tender and the awarding of the project, the winning consortium proceeded to set up a "Stock Market Variable Capital Investment Corporation" (SAPI). This type of company, included in the Mexican Securities and Exchanges Law of 2006, offers advantages related to the management of corporate governance and the flexibility to receive and withdraw capital from investors. After the signing of the service provision agreement, a management and payment trust was established to which the collection rights derived from the project were transferred.

Once the complex was built, the Tlajomulco SAPI signed a credit agreement for MXN 203 million (EUR 15.6 million) with a syndicate of banks to finance the part of the project that it did not cover its own resources. The repayment of this credit has a source of income through what is called the rate T1c, which will be explained in more detail below. This fee represents a corresponding fraction of the monthly fees paid by the municipality to the SAPI. In the event that, for any reason, the municipality did not comply with its commitments, a contingent line of credit that would be provided by the Ministry of Finance of the State of Jalisco. The specific features of this contingent line will also be discussed later in this chapter. The rights of the line of credit were ceded to the trust to increase the security of flows to investors.

The contract guarantees that, in the event of the cancellation of the concession, for a reason attributable to either party, the loan creditors would secure the full and total payment of the T1c fee component by the municipality. The payment corresponds to the investment financed with third party resources. Figure 6.8 outlines the structure of this mechanism.

Figure 6.8. **Legal-financial structure of the project**



Components of the monthly fee established by the municipality

Where:
T1C: Monthly fee for credit payment
T2: Monthly fee for operating and maintenance costs
T3: Monthly fee for variable costs
T1R: Monthly fee for payment of risk capital

Source: Invex.

6.7.2 Fee composition

The Variable Capital Investment Corporation (SAPI) in charge of developing the Tlajomulco Administrative Center has the right to receive a monthly payment from the Municipality of Tlajomulco for the services provided. Part of this fee is fixed and the other is variable, depending on the performance by the CAT developer in regard to its contractual commitments. With the authorization of the municipality, the multi-year expenses to meet the obligations of the project are included in each year's budget.

The operation of the CAT started on January 16, 2012. The initial monthly fees paid by the municipality of Tlajomulco were divided into the three tranches as shown in Table 6.6. The municipality is to pay the T1c fee for 349 months to the SAPI, from the start of the operations of the administrative complex. The T1r fee is to be paid monthly up to the month number 360, which is calculated from when the contract for the provision of services took effect, and is to begin to pay as of start of operations of the administrative complex.

Table 6.6. **Fees paid in January 2011**

COMPOSITION OF THE MONTHLY FEE (Without VAT)	MXN
T1c: Covers the amortization of the investment made with credit	2,344,000
T1r: Covers the amortization of the investment made with its own resources	781,000
T2: Covers maintenance, operation and maintenance costs	757,000
T3: Covers variable operating costs	23,000
Total monthly fee	3,905,000

Amounts do not include VAT and are based on January 2011 prices.

The amount of T3 in the table is indicative, given that the monthly fee for the payment of variable operating costs is calculated month by month.

The figures are updated monthly based on variations in the National Consumer Price Index (INPC), except for the T3 component.

Source: Authors based on data of Invex Infraestructura.

The T1c fee is designed to be a guarantee to foreign lenders of the repayment of their loans, so it will be paid no matter what, even if the project is completed. The T1r fee guarantees a certain return to shareholders, although it has a higher risk than T1c. In the event of early termination of the contract for the provision of services during the period of operation of the project, due to causes attributable to the private operator, the municipality will continue paying the full T1c fee, with its respective actualizations, as well as the T1r fee with its respective actualizations, corrected by a factor coefficient that depends on the year in which the termination takes place. If maturity were to come in the first five years, a coefficient of 0.3 would be applied, which would increase to 0.8 if the contract ended in the last five years.

The T2 and T3 fees, however, are much more associated with the private management of the CAT, so they can suffer deductions in accordance with the provisions of the service provision contract to the point that the Tlajomulco SAPI may not receive any resources from them, if the maintenance and operation of the services is not provided in an appropriate manner.

6.7.3 Characterization and allocation of risks

The team of external consultants carried out an identification of the main risks associated with the project in the initial value-for-money analysis. In addition, it determined that the allocation of the risks to achieve the most efficient financial structure. The transfer of risks is one of the most relevant factors to reduce the cost of a PPS with respect to the ordinary provision systems in which the municipality retains all these risks.

The matrix in Figure 6.9 identifies the project's main risks. Their classification establishes that they can be retained, meaning those that remain in the municipality, or shared, meaning those by their nature are shared between the municipality and the private partner, or transferable, meaning those that are assigned to the private partner under the modality of the PPS contract.

Figure 6.9. **Risk allocation matrix**

	Reference Project			PPS		
	Municipal/ Retained	Shared	Supplier/ Transferable	Municipal/ Retained	Shared	Supplier/ Transferable
Construction						
Permits and authorizations	√			√		
Land clearing / land use	√			√		
Detailed design	√					√
Construction overcharges	√					√
Construction delays	√					√
Archaeological findings	√			√		
Operation and maintenance						
Demand / use of property	√			√		
Over costs in operation and maintenance	√					√
Costs of replacing equipment and furnishings1/	√			√		
Hidden defects	√					√
Force majeure	√				√	
Change of law	√				√	
Protests	√				√	
Inflation (annual payment)				√		
Financing						
Financing interest rate	√					√
Refinancing risk	√					√

As indicated from the start, the municipality would take care of the replacement of equipment and furnishings over time. Finally, this risk was assigned to the private operator.

Source: Latam Capital Advisors.

The risk of use of the project - the use and occupation of the facilities and related services - was assumed by the municipality. That is, the private operator does not receive a higher or lower income based on the use of the CAT. However, the risk of construction, i.e. the possibility of incurring overcharges and delays not based on reasons considered excusable under the contract, was the responsibility of Tlajomulco SAPI.

The operating risk was also assumed by the Tlajomulco SAPI. This refers to non-compliance with the performance parameters contemplated in the contract, as well as operating and maintenance overruns, or the interruption of the operation by actions or omission attributable to the private partner and for reasons not considered excusable under the contract. Also, the financial risks of the exchange rate, interest rate fluctuation and refinancing were left to the private sector.

Events beyond the control of the parties caused by natural disasters that are insurable under the contract were assigned to the private sector. However, events of force majeure – which are beyond the control of all parties - caused by natural disasters, including war, armed conflict and nuclear pollution, were shared between both sectors.

6.7.4 Guarantees scheme

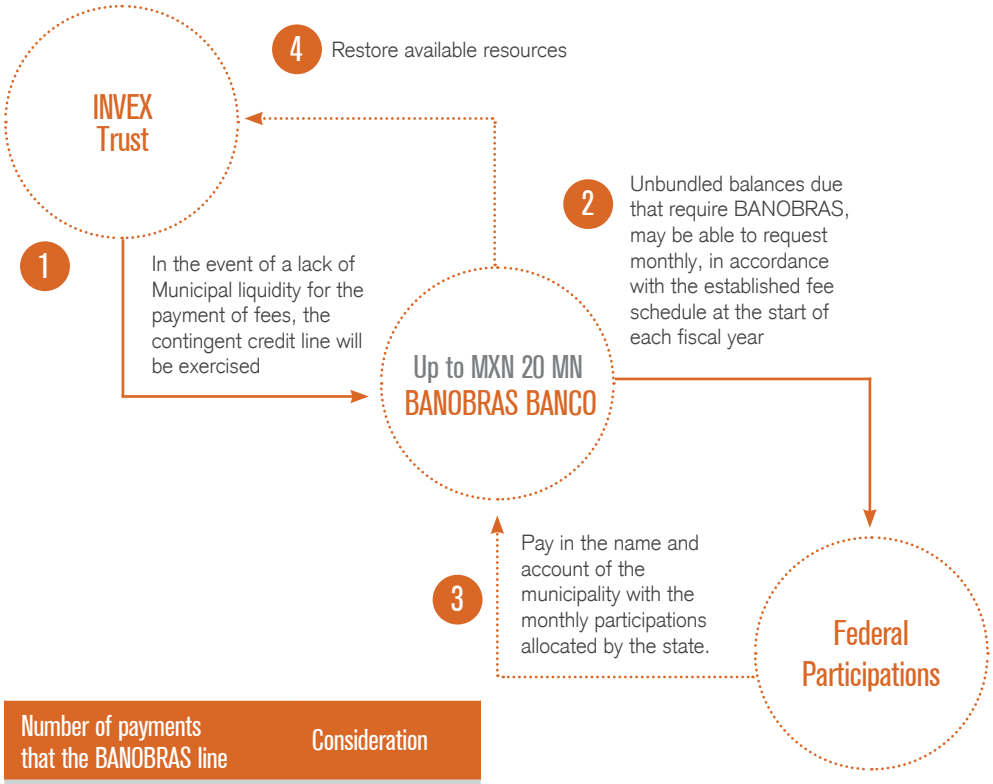
One of the main risks perceived by the financiers of this project was the possibility that the municipality of Tlajomulco de Zúñiga would be unable or unwilling for political reasons to comply with the commitments made when making payments to the operator of the project. In fact, one of the most complex risks to manage was the political risk given that the Partido de la Revolucion Democrática and Partido Acción Nacional - in opposition at the time the Tlajomulco Administrative Center was built - agreed that they would not continue paying the CAT lease for 30 years if they came to power. They also stated that they would use it for new uses, such as a university center linked to the University of Guadalajara, and would return to the former municipal offices.

To mitigate this risk in order for investors to feel sufficiently secure, the Municipality of Tlajomulco de Zúñiga contracted a contingent credit facility with the Mexican National Bank for Public Works and Services (BANOBRAS), a Mexican financial institution whose mission is to financially support works for the creation of public services. This line of credit was defined in such a way as to be supported by the present and future federal contributions to which the municipality is entitled. Consequently, if the municipality ceased to pay, it would lose its rights to the federal contributions, sparking the payment of the BANOBRAS credit.

In the municipal financing system of Mexico, municipalities receive monthly contributions in the form of federal participations. Therefore, the contingent line of credit, being renewable and having a maximum amount of MXN 20 million adjustable for inflation, covers more than five monthly payments of the agreed fee. The automatic renewal of the line of credit with

the fee of federal participations ensures that the contingent line of credit always has the resources to cover the project's fees in case of non-payment by the municipality. This fact was relevant in facilitating the closing of the financing since, in the worst-case scenarios, the private investor, and if necessary the creditor of a refinancing or equity placement, would continue to receive, for the entire duration of the contract, the full T1c fee and at least 30% of the T1r component. Thus, for creditors, the risk of default was, in practice, a risk of default by the government. The allocation of federal shares to the contingent, revolving and irrevocable line of credit of BANOBRAS allowed the cost of financing to be lower than if structured otherwise. Figure 6.10 graphically shows the warranty.

Figure 6.9. **Risk allocation matrix**



Number of payments that the BANOBRAS line	Consideration
1	$ 3,904,985.00
2	$ 3,904,985.00
3	$ 3,904,985.00
4	$ 3,904,985.00
5	$ 3,904,985.00

Source: Invex.

In summary, what makes this a guarantee is that it uses the federal participations that Tlajomulco de Zúñiga is entitled to as a guarantee mechanism for private lenders. The municipality signed the agreement to open current, irrevocable, contingent and guarantee accounts with BANOBRAS for an amount of MXN 20 million in order to face a scenario of a lack of liquidity in the municipality and so could pay the monthly fee.

In the event that the municipality does not budget the payments, the contingent line of BANOBRAS will be activated, which, being guaranteed by federal participations and being irrevocable and revolving, converts the risk of the lowest possible payment into the worst of the scenarios—T1c + 0.3 * T1r—at a practically federal risk. The municipality of Tlajomulco de Zúñiga was the one who was constituted as direct debtor of BANOBRAS. The credit line was registered with the Public Reputation of Public Debt of Jalisco, as well as in the Register of Obligations and Borrowings of Federative Entities and Municipalities, administered by the Ministry of Finance and Public Credit. As guarantee, the federal participations to which the municipality was entitled during the validity of the project were established.

6.7.5 Quality and standards of service

One of the main objectives of the construction of the CAT, as compared with previous alternatives, was to substantially improve the quality of service standards offered to both citizens and the workers who used their facilities. This change of image made it possible so that citizens could enjoy air-conditioned rooms, reduce their waiting times and save time by doing all their chores in a single building and even have a much more positive attitude toward officials. In the interviews that the author of this book held with CAT officials, he was told that citizens dressed better when they had to carry out official matters there, in response to a center that offered them a much better facade.

As discussed previously, the contract includes part of the remuneration to the contractor based on compliance with a set of service standards. These do not refer to the assistance that the workers of the administrative center provide to the citizens, but refer to the fulfillment of a set of maintenance standards. The developer of the project has the obligation to comply with an annual maintenance plan, in which the activities to be developed are established along with their periodicity. This plan includes refrigeration and air-conditioning systems, hydro-sanitary systems, fire-extinguishing systems, electrical systems and communication systems.

Each quarter, an independent engineer certifies compliance with the standards set in the manuals and, depending on them, establishes the level of the T2 fee to be charged by the project developer according to their performance.

The T2 fee is calculated, according to Annex 9 of the contract, as follows:

$$T2_n = T2 \times FAI_n \times (1 - DFD_n)$$

Where:

$T2$ = Monthly fee without VAT, in Mexican pesos, to pay fixed operating costs (fixed in the contract at 757,342.49 pesos per month in January 2011).
FAI_n = Inflation adjustment factor calculated in the month "n" as stipulated in the contract.
DFD_n = Deduction for performance failure.

The deduction for performance failure is calculated on the basis of the result of the registration cards that will take into account all the faults that have been notified and that have not been corrected within the relevant rectification periods. Each performance standard will be scored in order to establish a weighted index that serves to establish the performance failure deduction indicator.

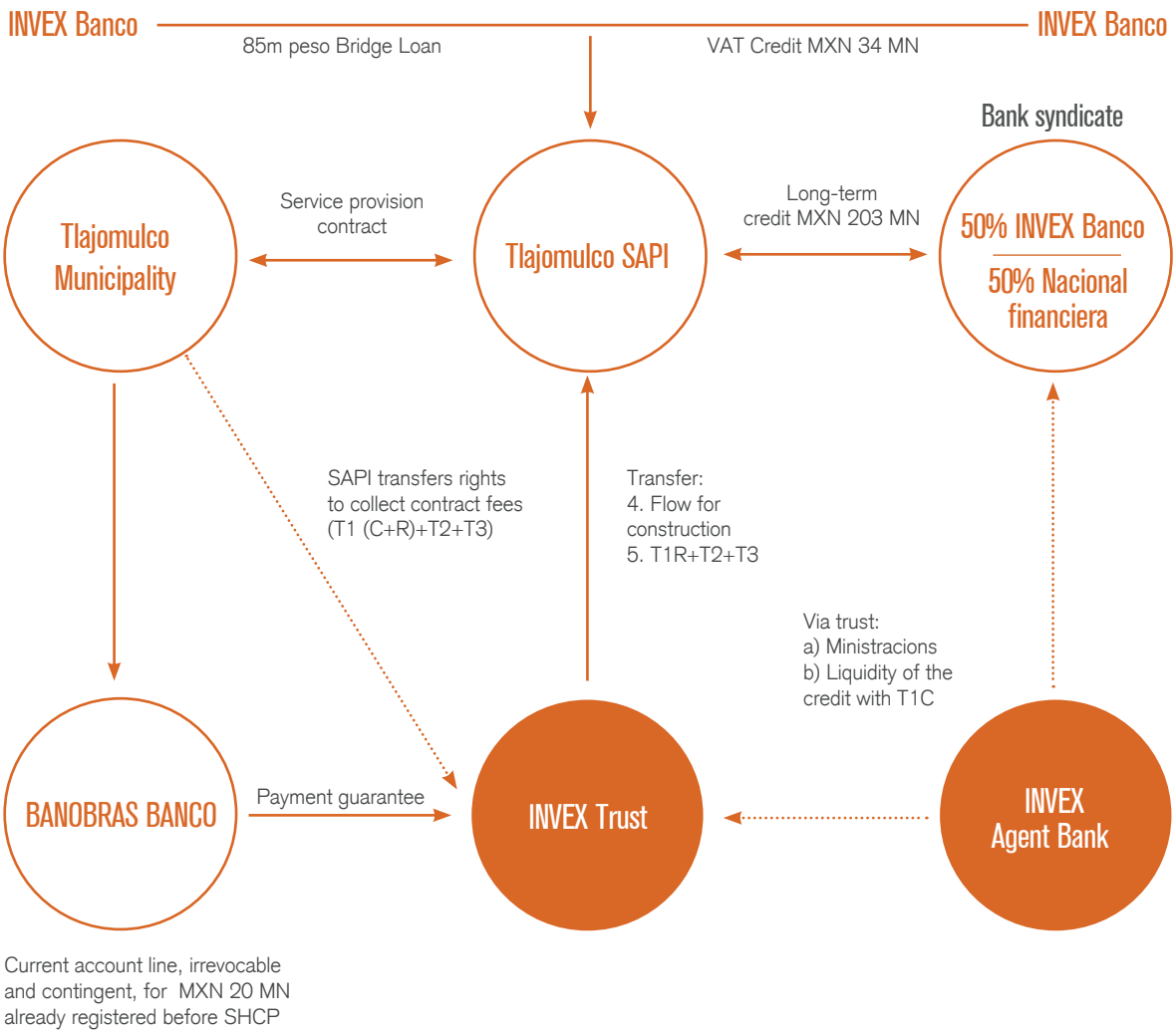
6.8 Project financing

This section describes in greater detail the project's financial structure and its evolution over time, as well as the composition of its partners.

6.8.1 Financing structure

The project was financed in two stages, as shown in Figure 6.11. Before the CAT started operations, the works were financed with initial shareholder contributions amounting to MXN 26.46 million, and with a series of subordinated credits granted by SAPI shareholders. Invex Infrastructure 2 contributed MXN 22.64 million, Facosa contributed MXN 27.29 million, Operadora Audaz MXN 6.18 million and Promotora Vale MXN 0.54 million. In addition, on March 29, 2011, Invex Bank authorized a bridge loan up to MXN 85 million for the CAT to cover the initial expenses of the project, including advances and work requirements. Invex also granted a loan for MXN 34 million to finance the VAT. The VAT credit had a net spread of 350 basis points, with an opening commission of 1%. VAT was 16%.

Figure 6.11. **Financial flows of the project**



Source: Invex.

Once construction was completed, resources were obtained from a syndicated loan, granted by Banco Invex, which acted as an agent bank, and by Nafin Banca de Desarrollo. The volume of credit was MXN 203 million. The net long-term credit spread on the 28-day TIIE was 380 basis points. Fifty percent of the debt was provided by Invex Banco and the remaining 50% by Nafin. The term for the amortization of the loan is 15 years, with a grace period of 16 months. As an administrative and payment vehicle, an irrevocable trust fund was established, a source of payment and guarantee, which will be explained in more detail below. Table 6.7 shows the amortization profile of the syndicated loan. Box 6.8 summarizes its main features.

Table 6.7. **Percentage of credit amortization**

YEAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Annual amortization (%)	3,15	3,46	3,81	4,19	4,61	5,07	5,58	6,13	6,75	7,42	8,16	8,98	9,88	10,87	11,95
Monthly amortization (%)	0,26	0,29	0,32	0,35	0,38	0,42	0,46	0,51	0,56	0,62	0,68	0,75	0,82	0,91	1,00
Monthly amortization (MXN thousands)	543	597	656	722	794	874	961	1057	1163	1279	1407	1548	1703	1873	2060

Source: Authors based on data provided by the Desarrolladora Centro Administrativo Tlajomulco SAPI de CV.

Table 6.8. **General conditions of the syndicated loan**

Condition	Features
Commission by agency	MXN 300,000 plus annual VAT. The annuity will be paid in advance. The first payment will be made in the first installment and annually thereafter.
Opening commission	2.50% plus VAT over the total amount of the credit, to be paid in the first installment.
Commission not available	0.50% plus VAT annually over unspent balances, payable quarterly.
Interest	Monthly over the base of TIIE 28 days.
Amortization	Monthly based on predetermined percentages over the next 15 years.
Voluntary prepayment fee	1.0% if the prepayment is made from months 1 to 24 of the credit term. 0.75% if the prepayment is made from months 25 to 48 of the credit term. 0.50% if the prepayment is made from months 49 to 72 of the credit term. 0.30% if the prepayment is made from months 73 and onward of the credit term.
Advance payments of required principal	• When there are remnants of flows from T1C. They will be used to pay the principal of the credit. • When there are surpluses arising from the execution of insurance contracts, once their objective has been met. • Any additional payment to the monthly compensation established in the PPS contract. • When there are resources derived from securities issues and / or cash flow refinancing.
Interest on arrears	Ordinary interest rate multiplied by 2.

Table 6.8. **General conditions of the syndicated loan**

Condition	Features
Construction reserve fund	Up to MXN 3 million for associated risks at rate and term differentials that affect the payment of expenses during the period of construction.
Contingency fund	Up to MXN 1 million to cover any debt or contingency that could arise during the operation of the project.
General conditions Prior to availability	• Secure the conformity of the municipality to transfer its collection rights for the PPS contract. • Arrange for the municipality to transfer to the trust the ownership of the disposal rights of the contingency line. • Signing of the Irrevocable Administration Trust, Source of Payment and Guarantee. • Secure the detailed independent engineering report that, among other things, shows that the project complies with the technical requisites and the opinion on the works carried out. • Municipal authorization for the start of project construction.
Guarantee	Those that establish the trust contract recognize that the totality of the trust's assets Serve as a guarantee for all of the guaranteed obligations. The trust's assets will conform to: • All the resources that can be contributed. • Securities and investments made by the trustee on any asset on any asset that is part of the escrow. • Right to collect the PPS contract. • Right to collect the project contract. • Rights to receive amounts from the collection of insurance. • Right to collect the operating contract. • Any warranty that suppliers have under the operating contract or any other contract awarded by the developer. • Shares representing the social capital of the developer

Source: Authors based on information provided by the Desarrolladora Centro Administrativo Tlajomulco SAPI de CV.

6.8.2 Constitution and structure of the trust

In Mexico, it is common practice to require a project developer to set up a trust fund for the administration of project revenues, according to the established priority of payments. The constitution of a trust fund is based on a contract, whereby the trustee transfers assets or rights, present or future, to the fiduciary to administer them for its own benefit or for the benefit of a third party. After a term or condition has been fulfilled, the trustee transfers the assets and rights deposited in the trust to the trustee, the beneficiary or the trustee.

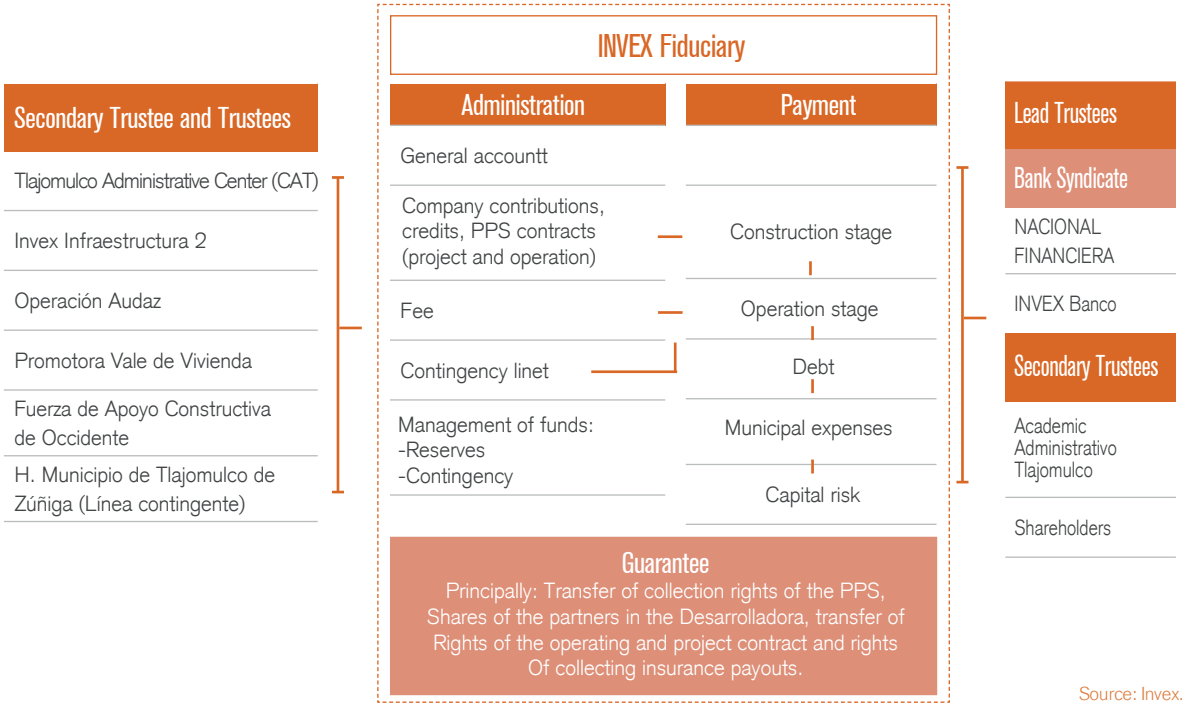
Management trusts, such as the one set up for the management of this project, have the advantage that the assets assigned to them cannot be pursued by creditors, neither the trustee nor the fiduciary, nor those affected by the bankruptcy of either them. This figure is legally defined in Mexico and is taken into account in the Securities and Exchanges Law, the Law on Credit Institutions, the General Law on Securities and Credit Operations, among others.

The right to collect the contract, "the monthly fees for services" to which the Tlajomulco SAPI is entitled, are transferred to a trust that will serve as guarantee for the payment of the syndicated loan. In accordance with what is established in the contract (PPS), the developer may transfer or otherwise dispose of his rights under the contract, with the prior consent of the municipality, on the understanding that the latter cannot deny consent for the transfer or fee to be made to the management trust out of the project flows.

Figure 6.12 shows the structure of the "Irrevocable Trustee of Administration, Source of Payment and Guarantee," in which both NAFIN and Invex Bank are first-class trustees, thus occupying a first priority over the assets of the trust until their debts are covered. Consequently, the purpose of the trust is to ensure that project revenues are primarily devoted to meeting credit obligations.

In the event that the project developer does not make the payment of the benefit to the trust, the fiduciary can request resources from the contingent line of credit that the municipality previously ceded to the trust, and make the payment of the amortization of the credit with those resources. This payment can be made, since the contingent line granted by Banobras to the municipality is conditioned to the rights of availability of the credit and the resources derived from the exercise that is assigned in a management trust constituted for the management of all the resources related to the financing of the project. According to clause 2 of the contingent line contract, the destination of these resources will cover any lack of liquidity of the municipality's payment obligations to the developer of the project, derived from the consideration of the PPS contract.

Figure 6.12. **Structure of the trust fund**



Source: Invex.

NAFIN and Invex are trustees of the trust, so that, in the event of a cause of anticipated maturity of the loan, they may request the "execution of the trust," so that the trustee initiates the procedure for the execution of the trust fund as is established by Chapter II of Title Three-Bis, Book Five of the Commercial Code, or instruct the trustee to proceed to adjudicate the assets in favor of the trustees in the first place. The assets of the trust are composed of the collection rights of the PPS contract and the contingent line disposal rights, which supply the trust with a cash flow.

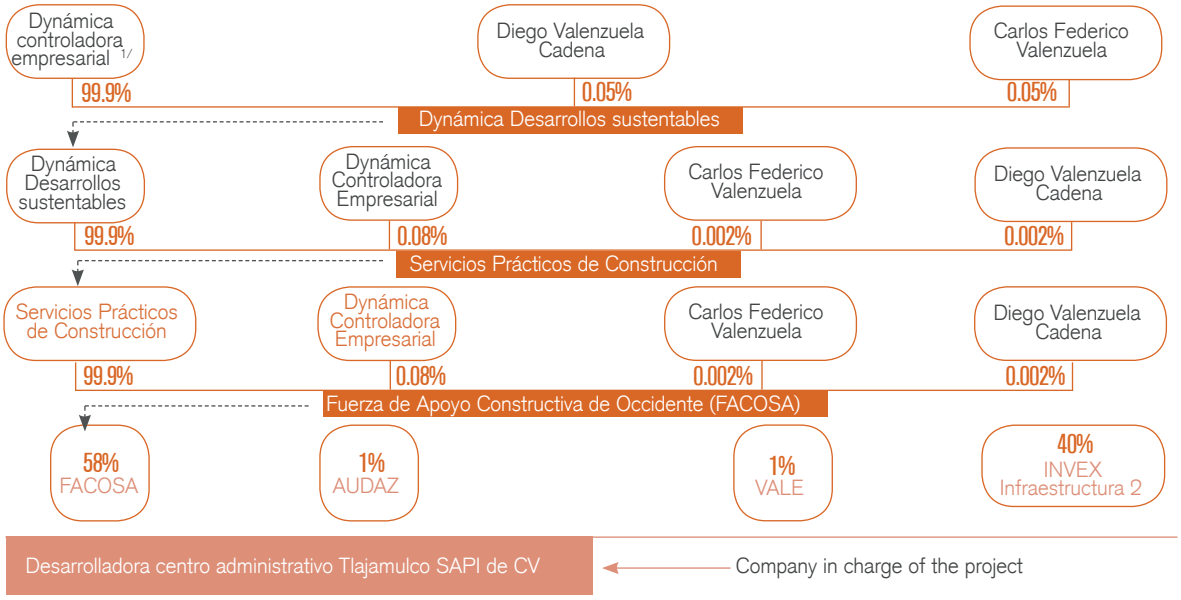
6.8.3 Private developers

Figure 6.13 shows the current shareholder composition of the consortium awarded the Tlajomulco de Zúñiga Administrative Center project. Its capital is owned by two partners: an industrial partner, Dynámica, through an interposed company called FACOSA, and a financial partner, INVEX Infrastructure 2.

Dynamic is a real estate company founded in Guadalajara in 1994 and operates in the cities of Guadalajara, Puerto Vallarta, Manzana, Morelia, Tepic, San Luis Potosí and Monterrey. Invex Infraestructuras, in turn, is the infrastructure investment division of the Invex holding company, which also played an important role in financing the project's external resources.

For its part, the syndicated loan was granted by Invex Bank and Nafin. Banco Invex is the banking division of the Invex holding company, which has a group of companies that offer different types of financial services. Nafin (National Finance Corporation, National Credit Society, Development Banking Institution) is a public entity created by the Mexican federal government to provide financial resources and guarantees, with the objective of promoting economic development.

Figure 6.13. **Current shareholders of the consortium awarded the CAT**



Source: Desarrolladora Centro Administrativo de Tlajomulco SAPI de CV

6.9 Lessons learned

The Tlajomulco Administrative Center Service Provision Project was one of the first times a Public-Private Partnership was used as a mechanism to build municipal facilities in Latin America. Although the experience is still very recent, it can be viewed positively. It has succeeded in improving the life quality of its citizens, whilst avoiding the budgetary problems many local authorities are subject. It also improved efficiency in the granting authority's management, resulting in benefits for the citizens of Tlajomulco de Zúñiga, both in terms of the quality of services and their costs.

It is worth highlighting the gains in efficiency, given that all of the Tlajomulco de Zúñiga's municipal offices were moved to the same building, providing improved control of internal departments while also facilitating and streamlining paperwork. Additionally, from an urban and aesthetic perspective, the improvement of the municipality has brought benefits to inhabitants by offering cultural, sports and recreational facilities.

Furthermore, it shows that even a municipality with little experience in PPP may be able to promote complex management systems in a wise way if it collaborates with the private sector. This case demonstrates that a successful use of the PPP model is not something inaccessible to medium-sized municipalities, but it is necessary to have an experienced and creative government, as well as legislation to support the model.

This project demonstrates that complex financial structures are not reserved exclusively for mega investment projects, but also have a place in smaller municipal initiatives. It also shows that the joint work of the government and their backers can make this type of structure a reality. It has also been proven that different agencies—the Municipality of Tlajomulco, a local real estate development company (Dynamics), a financial company (Invex) and a national development bank (Nafin) —can come together to make a project a reality.

Despite the success of this project, there are some improvements to consider for future endeavors. One area for improvement is competition in the bidding process. A single consortium was presented to the Tlajomulco Administrative Center Service Provision Project, suggesting that it could have been more efficient if there had been more competition. To increase competition, it is important identify and provide information from the very beginning to both national and foreign investors who may have an interest in the project.

A second aspect of the municipal PPS up for debate is the limited transfer of project management risk to the developer because it was only T2 and T3 fees, which are the least relative and also depend on the performance of the

private operator of the project. This suggests that the design of this initiative has been more oriented to improving the perception of the financiers, who want the least possible risk, than to spur improvements in management. Looking ahead, it would be advisable for the risk transfer to take into account both the financial aspects and the incentives in the management of the project.

A third point to consider is the definition of performance standards. In the current contract, these standards are exclusively conventional, leaving the private operator little room for innovation in management when providing certain services. It would be good for future contracts to design quality guidelines based on the quality perceived by the end user, which would allow the private sector to apply its capacity for innovation to reduce costs when offering services.

7

Concession of Chilean prison facilities

Introduction

Penitentiary Infrastructure Concessions Program

Legislative and institutional framework: the experience of concessions in Chile
- Legal framework for group 1 concessions
- Current legal framework
- Key features of the concession system

Description of the Rancagua prison case study

Contract tender and award
- Documentation required from bidders
- Award system

Contract design and risk allocation
- Contract milestones
- Concessionaire's income
- Services under concession
- Risk allocation

Contract management and economic balance
- Contract governance
- Economic balance
- Impact on public opinion

Project financing by private parties

Conclusions and lessons learned

7.1 Introduction

In the early 1990s, prisons in Chile were overcrowded and inmates lived in poor conditions. The government attempted to address this situation by turning to the private sector to finance and manage the construction and operation of new prison facilities. Even though the overall experience was positive, the project was controversial all the same. This chapter will delve into the case study of prison concessions in Chile.

In addition to this brief introduction, this case study is divided into eight sections. The first one includes a brief description of the Penitentiary Infrastructure Concessions Program. Section two describes the legal framework governing this program. Section three covers the case study details, followed by an explanation of the relevant tender and award mechanisms. Section six addresses contract design and risk allocation. The discussion next focuses on concession contract management and economic balance with a look at financing details, including private project investors. In the last section, the conclusions and lessons learned from this case study are analyzed.

7.2 Penitentiary Infrastructure Concessions Program

In the early 1990s, Chile was facing a substantial infrastructure deficit, particularly in the transport sector (intercity highways, urban highways and airports). However, the state could not bankroll the huge investments needed. To alleviate this situation, Chile's Ministry of Public Works (MOP) decided to seek out private funding through infrastructure concessions and, in 1995, the General Coordination Department for Concessions (CGC) was established as a MOP agency. Its mission was to draft the necessary tender documents and to manage and supervise the planned works.

Under the concession system, the idea was to allocate risks to the agents best suited to manage them. However, in the case of infrastructure that could

be profitable but were not be financially viable, the government would offer certain guarantees or risk coverage so that facilities could be developed as a concession. Therefore, public resources would fund socially necessary infrastructure that could not be financed with the payment of a user tariff or toll. In response to this need, the Chilean government implemented a concession model that, although originally based on the experience of other countries, over time developed its own unique features largely due to the efforts made by CGC members, through the progressive remediation of errors from past experiences.

The first concession program launched after the CGC was established aimed to improve intercity highways, particularly Route 5, Chile's backbone highway. However, shortly afterwards, the CGC decided to implement its concession model to develop social infrastructure, including sports centers, courts, prisons and hospitals. The program for prisons described in this chapter began in early 2000 and was one of the country's most important concession schemes. Subsequently, social infrastructure concessions were extended to hospitals, where the model has played a predominant role since 2009.

After addressing the country's main transport infrastructure deficiencies, the Chilean state focused on improving the living conditions of incarcerated inmates and providing the country with a quality prison network aligned with economic growth. Considering the highly positive results achieved by the implementation of this concession system to develop different types of public infrastructure, the government decided to apply the same system to improve prison infrastructure. The main reason supporting the introduction of private capital in Chilean correction facilities was the poor living conditions for inmates, arising from the inability of the state to manage the physical capacity of prisons to respond to a large increase in the incarcerated population. From 1985 to 2005, the number of inmates rose 232%, according to figures provided by Chilean border police.

Therefore, it is easy to imagine that new problems arose related to infrastructure management and the harsh living conditions of inmates, characterized by overcrowding and promiscuity. Other important problems included (Interamerican Development Bank, 2013):

- Impossibility to implement rehabilitation and social reintegration programs.
- Insufficient trained staff for the penitentiary service.
- Deteriorated infrastructure due to lack of repair and maintenance of existing prisons.

Within this context, the Undersecretariat of Justice set a goal to move toward a more efficient system that could guarantee security to citizens based on a genuine effort to reintegrate a large portion of the incarcerated population in line with international standards ensuring the fundamental rights of inmates (Arellano, 2003).These objectives are consistent with many relevant arguments found in the literature in favor of privatization, associated

to higher efficiency, improved security and better conditions for inmates in connection with social reintegration and human rights standards.

Thus, the concession law for public infrastructure issued by the MOP was applied so that the public budget would not be drained. This model aimed to reduce overcrowding, improve the quality of life of inmates, reduce criminal recidivism and the outlay of public funds required to maintain prisons. In April 2001, the first phase of a concession program for prisons was implemented. It called for the construction of 10 new prisons with a total estimated capacity for 16,000 inmates and an investment of USD 280 million. Originally. the construction was planned in four successive stages to be completed over a two-year period (2005 to 2006). In addition, the call for tender would be international to attract the best private bids.

The tender for the first group of concessions included an USD 80 million investment to build two high-security prisons (Alto Hospicio and Rancagua) and one medium-security prison (La Serena). In all, the three buildings would add 133,000 m^2 to the Chilean penitentiary system and slightly more than 5,000 new beds for inmates. In April 2001, the tender for this first group was awarded to the BAS Consortium, whose members were Besalco (Chile), Astaldi (Italy) and Sodexo (France), which committed to deliver the newly built prisons by May 2005.

The second group of prison concessions was tendered a few months after the first group and was awarded nine months after the first one. Similarly, to the first concession package, the second group included the construction and maintenance of high-security prisons in Antofagasta and Concepcion. Again, the winning consortium was the BAS group, which agreed to deliver both prisons by July, 2005. The total planned investment was USD 50 million. The two prisons would add 66,000 m^2 and 2,350 beds to the penitentiary system. Therefore, by mid 2005 the penitentiary system would increase its installed capacity by 199,000 m^2 with 7,350 new beds for inmates, which would allow the system to absorb part of the deficit and offer a partial solution to the overcrowding and quality of life issues suffered by the incarcerated population.

This concession program further included the construction of a third group of new penitentiary facilities: two medium-security prisons in Valdivia and Puerto Montt and one high-security prison in the Metropolitan Region for a total investment of USD 80 million. The winning group of this tender was Vinci Construction Grands Project. The planned date for the start of operations was July 2006. In just 23 months, eight prisons in all were awarded under concession. The features of this concession model for the Rancagua prison (Group 1) are described below. Figure 7.1 shows the location of these prisons in Chile.

Figure 7.1. **Distribution of penitentiary facilities under concession**

Source: developed by CAF based on data provided by works inspection authorities

7.3 Legislative and institutional framework: the experience of concessions in Chile

7.3.1 Legal framework for group 1 concessions

Chile is the country with the longest track record of infrastructure concessions. In 1991, Decree Law DFL 164 called "Basic Law," the first concessions norm, was enacted. It established the legislative framework for all public works and stages of infrastructure, such as construction, repair, maintenance and operation, throughout a project's service life. This led to the creation of a flexible tendering and contracting system.

Later, in 1993, Law No. 19252 introduced amendments that were deemed necessary based on the experience gained through the tender processes carried out up until then. Finally, in 1996, Law No. 19460 was enacted, containing provisions regarding private initiatives, tender schemes, the perfection of public works concession contracts, and the regulation of the special pledge on public works, among other rules. In addition, the country's president issued a supreme decree to reflect the merged, coordinated and organized text of the concession law for public works (DS MOP No. 900 from 1996), under which prisons from groups 1, 2 and 3 were tendered. In 1999, a set of rules was developed to expand on certain basic aspects of this law.

Pursuant to the legal framework in place, the MOP is required to carry out the preliminary formalities necessary to tender a concession. However, the legal framework also establishes that any individual or legal entity can propose public works projects for tender by the MOP to be executed under the concession system. If the proposed infrastructure works is eventually carried out, the bidder's proposal will be entitled to a reward, which will be taken into consideration in the evaluation of the proposal. (The reward needs to be specified in the tender rules or documents.) If the concession is awarded to a third party, then the winning bidder shall reimburse the state for the reward paid as set forth in the tender documents (Vassallo and Izquierdo, 2010).

Regarding consortia that participate in tender processes, the law sets forth that they can be integrated by domestic or international companies. In fact, the winning consortium for groups 1 and 2 in our case study is formed by domestic and foreign companies. The tender is awarded to the best bid among those evaluated as technically viable. The concessionaire receives, as the sole payment for the rendered services, the agreed price, subsidy or rate and any other additional benefits that may have been specifically stated (tourist services, convenience stores, advertising or other).

Regarding the MOP's power to oversee compliance with the concession contract terms, it should be noted that the MOP can enforce the penalties under the contract in the event that a concessionaire defaults on its obligations during the construction or operation phases. The MOP can also change the features of the contracted works or services on public interest grounds. In this case, however, if the concessionaire is negatively affected by these works or improvements, it will be entitled to compensation.

Under no circumstance may the life of the concession extend beyond 50 years. Upon completion of this term, the MOP will issue a new call for tenders for the maintenance, repair, expansion or operation of the works, either individually, separately or integrated with other works. Any controversies or claims arising from the interpretation, enforcement or performance of the concession contract will be referred to a conciliation committee formed by a MOP-appointed professional with a university degree, an individual with a university degree appointed by the concessionaire and a third professional mutually agreed upon by the parties, who will chair the committee. This committee can suspend the effects of the MOP's resolution brought forth in the claim. In addition, the law establishes the possibility of creating a special pledge or a special guarantee on the public works concession, which may be agreed upon by the concessionaire and its private financiers, to endorse the issuance of debt securities by the concessionaire company. This guarantee may be provided through the concessionaire's entitlement to a public works concession under the contract, payments committed by the government to the concessionaire under the concession contract itself or the revenues of the concessionaire company.

In addition to the concession law, the Chilean government amended the regulations in force at the time to eliminate all existing barriers to infrastructure project financing. This includes an amendment to the general banking law, which led to an increase in loans to concessionaire and building companies. Amendments were also introduced to laws governing pension fund administrators, insurance companies, investment funds and foreign capital investment funds so that these entities could participate in concession financing. Finally, the securities law was also reviewed to incorporate future concession cash flows to the assets of a securitization fund. In addition, some tax laws were amended as well.

7.3.2 Current legal framework

In 2010, the concession law and regulations for public works were passed, which remained in force at the time of writing this book. However, the legal framework that applied to our case study was based on concession laws and public works regulations dating back to 1991 and 1996.

The rationale for the above legislative reform was the government's decision to introduce some changes in light of the conclusions reached by a group of experts that the old legal framework encouraged contract revisions that benefitted concessionaire companies to the detriment of the common good.

To illustrate this point, it will suffice to mention that of the 47 projects in operation in 2009, 36 had signed a supplementary agreement, i.e. an agreement between the MOP and the concessionaire that revised some of the original terms of reference applicable to the concession. This is a clear example of this kind of contract revision. To avoid renegotiations, the new law passed in 2010 restricts the possibility of reaching agreements that exceed the scope of the original contract and limits the causes that can be used by concessionaire companies as grounds for compensation. Along these lines, this law sets forth that new investments may not exceed 15% of those originally planned. However, this restriction does not apply to new investments fully financed by the concessionaire that cannot give rise to compensations.

Similarly, the law dictates that under no circumstances may potential renegotiations increase the profitability of the original project. Renegotiations must be supervised by an independent technical panel and accepted by a Concession Council formed mainly by independent, non-government experts. This council is chaired by the MOP and composed of other five council members, who can be freely appointed and removed by the ministry. Four of these five members must be experts with a university degree in civil engineering, economics, business administration, law or architecture, respectively. The council member with a degree in architecture must have studied or majored in urbanism. The institutional certification held by each expert must have been awarded at least four years before his/her appointment to the council pursuant to Law No. 20129.

The purpose of this measure is to split the double role played by the MOP as tender issuer and auditor. It also establishes more serious penalties and streamlines the mechanism for the MOP to terminate the concession on the grounds of default. Finally, the new law enables the possibility of enforcing service standards for concessions comparable to other countries, such as Spain and the United Kingdom. It especially highlights the fact that potential bidders may have to fulfill requirements for multifunctional infrastructure works with a high degree of complexity, such as prisons, hospitals or urban highways.

7.3.3 Key features of the implemented concession system

Most concession projects in Chile fall under the BOT scheme (Build, Operate, Transfer), where the works belong to the state at all times and, therefore, may not be offered as a guarantee for creditors. Although widely

used, this is not the only mechanism implemented in Chile. For example, the concession model for this case study is DBOT (Design, Build, Operate, Transfer), including the design, construction, operation and service provision as defined in the tender documents, and the transfer of works to the state upon completion of the concession term. It is important to highlight that, unlike highway concessions, where the concessionaire collects a fee (toll) from users, in this case, the Chilean state pays the concessionaire a subsidy or fee (canon) for works construction and operation, including infrastructure maintenance and the provision of any necessary equipment.

The risk allocation mechanism is based on the assumption that the private sector has to take on the risks that the market can manage or diversify, while the public sector will assume the risks that cannot be controlled in any way. The public sector, however, cooperates with guarantees that help the project be managed by the private sector under reasonable profitability and risk conditions to avoid excessive financing costs.

Under the Chilean concession system, a project initiative can originate in either the public or private sector, although, in any case, the concession needs to be awarded by public tender. Normally, the MOP issues a public call for prequalification to generate a public shortlist with a reduced number of candidates. Then, the Ministry announces a call for tender in the Official Gazette, which is also published on two occasions in a national newspaper. After that, a term opens up when potential bidders can send written questions to the MOP regarding the contents of the tender documents. In order to ensure equal opportunities for all shortlisted candidates, the MOP publishes all of the questions received and the relevant answers in circular letters.

After bids are submitted, the mechanism is as follows: first, technical proposals are evaluated first to decide whether bidders meet the required technical conditions. Then, price bids are opened at a place and on a date established in advance. Before opening the price bids, the technical evaluation committee announces the results of the technical bid evaluation and then opens the price bids only for the technical bids that were accepted as qualified.

This process requires the coordinated efforts of the MOP and the Ministry of Finance and, if necessary, the ministry governing the public works—in the case of prisons, the Ministry of Justice through the Chilean border police. This coordination activity is specifically reflected in the preparation of the tender documents, the prequalification of candidates under the above procedure and the tender award. In addition, the concession award decision must be signed by both ministers. After ratification of the winning bid, the contract earns a status of “decree” and is signed by the ministers of public works, finance and the country’s president, and is published in the Official Gazette. The Comptroller General of Chile (Contraloría General de la República) is responsible for overseeing the correct contract execution.

7.4 Description of the case study of the Rancagua penitentiary facility

The previous sections first introduced the Penitentiary Infrastructure Concessions Program, and then described the legal and institutional frameworks that govern this concession. Now, we will describe the highlights of the "Penitentiary Infrastructure Concessions Program, Group 1," including Alto Hospicio, La Serena and Rancagua prisons. In 2001, the Chilean government launched this program, which was the first experience in Chile with social infrastructure concessions. This concession program includes the execution of health care, education and law enforcement infrastructure works. As a first attempt in Chile, it has had a truly innovative character.

It is important to remember that this concession program originated in the huge penitentiary infrastructure deficit, inmates' living conditions and the high costs incurred. Along these lines, during the 1980s, the population confined in correction facilities grew at an average annual rate of 5.69%. Over the course of a decade, the total number of inmates rose by almost 10,000 prisoners, up from 15,270 in 1980 to 25,134 in 1989, showing a 64.6% increase. This gradually worsened several problems associated with an excess occupancy of the installed capacity of prisons. Therefore, toward the end of the 1980s, the Chilean penitentiary system was characterized by overcrowding, a limited capacity for rehabilitation and the social reintegration of inmates, and a complex socio-organizational structure that reproduced the power relations typical of the criminal world and fostered criminal behavior (Rojas, Bonifaz and Guerra-García, 2012).

In an attempt to address these problems, the Chilean government decided to increase the number of pardons granted to lower-risk prisoners, which led to a decrease in the prison population by 16.5% in 1992, compared to levels in 1989. This reduction brought some relief to the prison system. This prison population growth control mechanism had already been used on several occasions by the military régime during the 1980s; although eight pardons had been granted over the decade, the rate of natural increase of the prison population could not be slowed. In addition, the aim of reducing the prison population led to a flexibilization of the requirements for the granting of intra-prison benefits, along with probation and parole. However, from 1995 to 2009, the rate of growth in the number of inmates continued to rise at a pace of 5.86% per year. The prison population then grew from close to 23,000 inmates by mid 1990s to slightly less than 35,000 in 2003 and almost 51,000 by the end of 2009.

There are two distinct stages in the increased capacity of Chilean prisons. During the first half of the 1990s, the prison infrastructure did not undergo any significant development changes and it grew faster than the number of inmates. During the two-year period from 1996 to 1997, the installed capacity of the penitentiary system increased significantly with the construction of two new public prisons in Arica and Valparaiso, adding 51,826 m^2 to the system. This helped afford the gradual increase in the incarcerated population, which had restarted in 1993.

However, after 1997, the situation worsened, with a clear deterioration in the ratio between prisoners and system capacity. From 1997 to 2005, infrastructure increased by 29,591 m^2 (7.9%) and the prison population increased by 34.8% (9,172 inmates). Thus, the system had 11.4 m^2 per inmate in 2005, down from 14.3 m^2 per inmate in 1997. The rise in the number of prisoners had been steady since the start of the XXI century, and became even stronger in recent years. To illustrate this point, it should be noted that 20,000 new inmates entered Chilean prisons from 2000 to 2010, which led to a jump in the ratio of total inmates to every 100 thousand inhabitants from 220 to 318, almost 50% more.

According to Dammert and Díaz (2005), there were 38,000 individuals residing in facilities designed to accommodate just 24,000 inmates by the end of 2004; the overcrowding rate in prisons exceeded 50% and the level of criminal recidivism ranged from 50% to 60%. Only 1% of the budget for the Chilean border police was used for criminal rehabilitation programs, and the system was known for the unsuitable living conditions of inmates and the unsatisfactory employment conditions of border police officers. Therefore, extreme overcrowding and the growing trend of the prison population demanded a response from the government.

A new penitentiary management model was devised to tackle this problem. Prisons were built under a public-private partnership. Thus, the overarching goal of Group 1 of the Program for the Concession of Prison Facilities was to improve the unsatisfactory living conditions of inmates in traditional penitentiary facilities and make them suitable for the implementation of criminal rehabilitation actions. Therefore, this program comprised the construction and operation of Alto Hospicio, La Serena and Rancagua prisons, which was opened at the end of 2005 and in early 2006.Of the different PPP modalities, the DBOT model (Design, Build, Operate and Transfer) was implemented, the main aspects of which are:

- Design, construction and operation of the facilities is handled by the concessionaire
- Control and surveillance services are provided by the state through the Chilean border police
- Design and quality standards are set by the MOP
- Operation service standards are set by the MOP
- The concession term is 20 years

In exchange for the operation of prison facilities, the state pays the concessionaire. These payments will be described in detail in other sections of this chapter.

As can be inferred from the above description, within the framework of this new model, the state retains the non-transferable power to restrict the rights of individuals, exercised through the Chilean border police, and in turns allows for the participation of the private sector to manage and operate the new buildings, such as infrastructure construction, funding and maintenance; standard and security equipment maintenance; and the provision of some penitentiary services

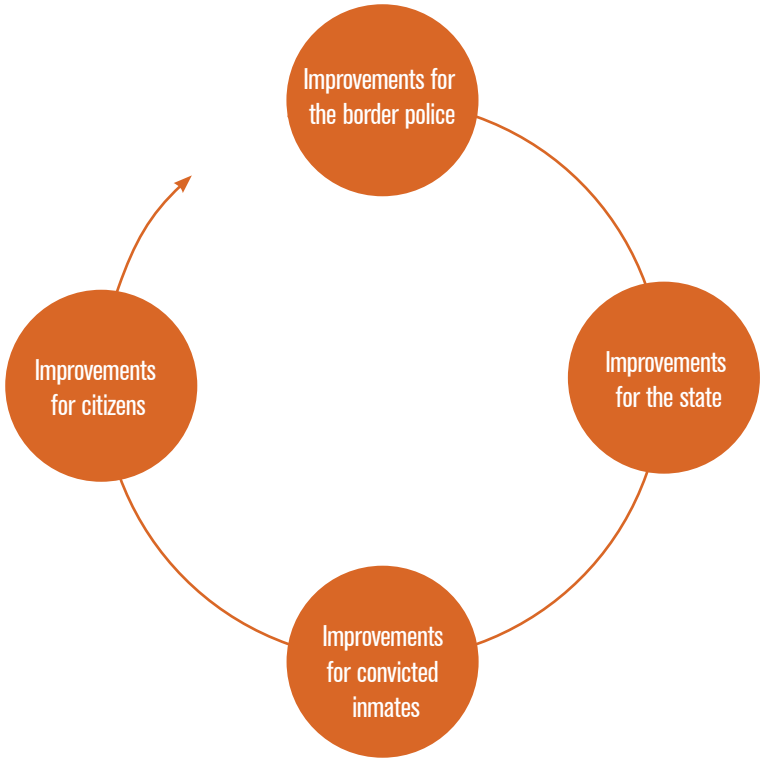
(catering, health care, laundry, social reintegration and prison commissary or canteen). Thanks to this program, prison management has been modernized, security and living conditions in penitentiary buildings have improved, the Chilean border police has become better integrated with local communities and the quality of life is better for inmates and border police personnel.

Among the functions and duties of each party, it is important to highlight that prison management and the granting of prison benefits remained in the hands of the state, along with the provision of security and protection. In addition, through the Chilean border police, the state remains the highest-ranking authority within the penitentiary system. In regard to the supervision of the activities entrusted to the private sector, MOP inspectors oversee compliance with the concession contract and tender conditions. This inspection comprises a centralized inspector's office and delegated offices in each penitentiary building.

The advantages of the concession program can be classified for each of the agents involved in the concession. The benefits obtained from the penitentiary system under concession by each of these agents generates a virtuous circle with the lion's share going to the general population. A breakdown of these benefits is shown in Figure 7.2.

The main improvements for the Chilean border police are enhanced employment conditions for border police officers, on a par with civil servants from other sectors.

Figure 7.2. **Virtuous circle thanks to the concession of penitentiary facilities**



Source: developed by CAF based on data provided by works inspection authorities

The intended benefits for convicted inmates comprise several aspects, the most remarkable of which is the condition created by this model that increases the chances for criminal rehabilitation and social reintegration. This is possible thanks to the efforts of areas specialized in psychosocial issues, education, sports, training and employment, which are leading to a high ratio of target achievements. However, whether these are the right policies to attain social reintegration is a question that remains to be discussed. Inmates are further supported by multidisciplinary teams that act so that low criminality inmates are not influenced by prisoners who have been convicted for more serious crimes; all inmates are provided with a healthy and balanced diet and have access to health care; and assistance is delivered to lactating mothers and their babies. Finally, it is worth noting that paid jobs have been created for inmates. This is one of the key elements that foster social reintegration after sentence completion.

After an analysis of the improvements for convicts, it is worth noting that the implementation of this novel system has brought advantages for Chilean citizens. The better infrastructure and services of penitentiary centers is bringing prisoners and society closer. In addition, new jobs are created to oversee the concessionaire. Citizens can rest assured that the rights of inmates will be respected and that, therefore, compliance with legal and constitutional rules that guarantee the rights of people living in prison confinement conditions will be upheld.

Finally, prison concessions have brought benefits to the state. First, public resources can be used more efficiently. In addition, prisons have come to function as rehabilitation centers that help eliminate the vicious circle of criminality by creating conditions leading to the prevention or reduction of criminal recidivism. Along these lines, the new model has put into action an unprecedented effort. Another advantage of penitentiary facilities under concession is that they are less overcrowded. Last, this situation enables compliance with international treaties on human rights, which greatly improves the international image of the state.

Table 7.1 below lists the services to be provided by the private concessionaire, which covers practically all of operational needs. This is in line with the principles of the Chilean concession system, which states that risks should be allocated to the actors best suited to manage them.

Figure 7.1. **Services provided by the concessionaire**

Basic services	Prison services
• Infrastructure maintenance • Standard equipment maintenance • Security equipment maintenance	• Social reintegration • Health and environmental care • Food for inmates and Chilean border police staff • Laundry • Cleaning and pest control • Prison commissary or canteen

Source: developed by CAF based on data provided by works inspection authorities

The concessionaire company that was awarded the first three prisons was BAS S.A. The concession would extend over a period of 20 years and is currently being managed by SIGES CHILE S.A., the operating partner. The concessionaire company, BAS S.A., designs, finances, builds and provides the contracted services through its partner—the operator Siges S.A. (Sodexo). Alto Hospicio, La Serena and Rancagua penitentiary facilities were tendered under the same contract. Table 7.2 shows the main features of the three penitentiary facilities.

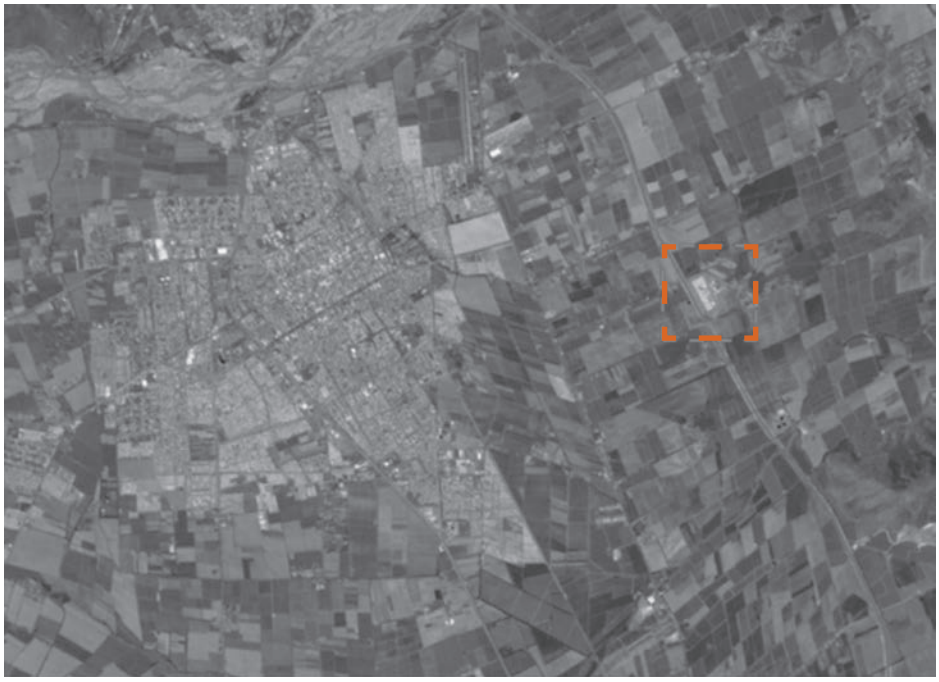
Table 7.2 **Features of Group 1 prisons**

Group 1	Rancagua	Alto Hospicio	La Serena
Security rating	High	High	Medium
Total design capacity	1,689	1,679	1,656
Maximum number of inmates admitted (120%)	2,026	2,014	1,987
Overnight prison population as of April 30, 2014	1,900	2,187	1,841
Percentage of occupancy of penitentiary establishments	112.49%	130.26%	111.17%
Date of transfer of first inmates	Dec. 6, 2005	Jan. 6, 2006	Jan. 11, 2006
Gender classification	Men and women	Men	Men and women

Source: Follow-up report from April, 2014

The table above shows that these prisons have 20% excess capacity for occupancy as compared to the total design capacity. However, this 120% total capacity has been exceeded at Alto Hospicio, reaching slightly more than 130%. It is important to note that the contract provides for an additional payment to be made by the state to the concessionaire, per prisoner, if the prison capacity is exceeded by a number equal to or higher than 20%. Therefore, this is an important incentive for the state's prison management to avoid overcrowding and, thus, higher costs. In addition, monthly records show that a great effort has been made to reduce overcrowding and stay below the 120% capacity level. Finally, the two figures below illustrate the current situation and distribution at the Rancagua prison. Figure 7.3 shows the location of the penitentiary facilities within the city landscape.

Figure 7.3. **Location of the Rancagua prison**



Source: picture provided by Consortium BAS.

Figure 7.4 shows the distribution designed into different modules for the Rancagua prison.

Figure 7.4. **Image of the Rancagua prison**

Source: picture provided by BAS Consortium.

7.5 Tender process and contract award

The tender process and contract award for Group 1 included three prisons: Alto Hospicio, La Serena and Rancagua. Under the Chilean concession system, a concessionaire can submit a bid if it has first been shortlisted based on its technical and financial capacity to perform the works and adopt the necessary management actions during the service life of the infrastructure.

In this case, shortlisting was carried out jointly with the tender process. The bidder with the highest score and technically acceptable bid would be declared the winner. Concessionaires' technical bids were submitted to MOP in two tandems: first, all the documentation that substantiated the concessionaire's general background and experience, followed by a technical bid for the infrastructure works. Next, before the final contract award decision was made, concessionaires presented their economic bid.

7.5.1. Documentation required from bidders

The three blocks of documentation required and the sample used to award the contract are described below:

GENERAL COMPANY HISTORY. This included documents No. 1 through No. 4, which were necessary to participate in the tender. These includes documents of a more administrative nature, including the certificate of registration with REI (a special MOP record for international bidders), bid bank guarantees, the notarized appointment of a concessionaire's representative and, finally, a statement of the bidder's intention to establish a concessionaire company.

TECHNICAL BID. This included documents No. 5 to No. 10, which are described below.

Document No. 5. Draft project for each penitentiary establishment including draft projects for the architecture; structures; electrical, sanitary and gas installations; climatization; mechanical facilities; security facilities; signage; landscaping; access paths and parking; waste treatment and disposal system; and a structured cabling system. These draft projects had to be accompanied by detailed information as to quantities and budgets, and a detailed description of the proposed architectural program. An investment budget and schedule, both stated in index-linked units called UF (*unidad de fomento*), excluding VAT, were also mandatory.

Before we continue describing the documentation and requirements established by the MOP, it is important to explain what a UF or *unidad de fomento* is. A UF is just a unit of account used in Chile that is annually adjusted to the inflation rate. For example, at the end of 2010, the UF value was CLP 21,455; by the end of 2013, it had rose to CLP 23,309. Finally, tender documents state that the indicated investment budget has been included just

as a reference and that the concessionaire company has to bear the cost of performing all the necessary works to provide the service and security levels required under the tender documents.

The MOP only required that bidders' draft projects meet a few minimum conditions ensuring a minimum area for the facilities, a minimum number of prisoners per penitentiary establishment and all the works necessary for the penitentiary facilities to be connected to existing highways and a launch of operations without any type of supply problem. Works had to be broken down into modules, such as the staff or the access to control areas. These requirements gave bidders considerable leeway as they did not impose the manner how bidders should address them, but stated the eventual concessionaire's obligation to fulfill them.

Document No. 6. For each penitentiary building, a description of standard and security equipment. In line with the architecture, structure and specialty draft projects delivered with document No. 5, bidders had to submit a complete list of the standard and security equipment deemed necessary for the correct and safe operation of the facilities. This equipment had to be defined along the lines of the operating report stated in document No. 7 and the basic service provision program outlined in document No. 8. The proposed equipment, its unit value stated in UF and the overall budget had to be included as well.

Document No. 7. Operating report of each penitentiary establishment clearly explaining how the prison would work. This document was divided into six parts. Part one described how the penitentiary establishment would operate, including procedures for daily activities. Part two described the main areas of circulation, with criteria for their arrangement; a description of how inmates would move around inside the establishment, as well as staff, the different categories of visitors and the different services; fuel flows; food; health care services; waste; and so forth. Part three introduced the mechanisms and technologies available for the security systems, such as lock systems, keys, door and window operation. In addition, the procedures, organization and operation of the security systems had to be explained, i.e., perimeter surveillance and detection, alarm systems, CCTV and video recording, mechanisms to activate security openings and access controls. In part four, the operational plans for emergency systems had to be described, including automatic fire extinguishers, power generating sets, sectioned fluid networks, among others. Part five estimated the monthly and annual consumption of solid or liquid fuels and of any other supply required by each prison for full operation.

The bidder also had to submit a breakdown of the methodology, assumptions and calculations performed to estimate each of these volumes of consumption. Finally, a solid and liquid waste treatment, cleaning and disposal plan had to be presented in regard to waste to be generated by the operation of the penitentiary establishments, particularly as a result of eating, health care and personal hygiene activities. The concessionaire had to provide a waste treatment and disposal system ensuring prison cleanliness and hygiene.

Document No. 8. A basic service provision program describing how each service required in the tender documents would be provided. This document consists primarily of an infrastructure maintenance program including maintenance, repair and replacement actions to the infrastructure built by the concessionaire. It also had to include a standard equipment maintenance program, similar to the previous one but regarding standard equipment and/or equipment provided by the concessionaire. The security equipment maintenance program was the third document, while the fourth and last program was a detailed description of each of the penitentiary services included in the tender documents.

Document No. 9. A work plan showing the construction systems to be used and an activity schedule.

Document No. 10. Staff scheduling and planning. This document should include scheduling and planning for the proposed Chilean border police officers and the concessionaire's personnel. The aim was that each penitentiary establishment achieved their best operational performance with minimum efficient and effective staffing by the Chilean border police for surveillance and administrative tasks. This would make it possible to use the human resources from the Chilean border police more efficiently, along with enhancing the capacity of the penitentiary establishment to operate safely, under control and consistently with its intended goal. The document had to include a description of the role to be played by each border police officer in each prison. Jobs had to be aligned with the criteria laid down by the "Minimum design and construction guidelines for penitentiary establishments" ("*Pautas Mínimas de Diseño y Construcción para los Establecimientos Penitenciarios*"). Finally, it should be noted that this was a reference document, as the Chilean border police itself would determine its own staff volume and planning.

7.5.2 Award system

The award system was the following:

- The winning bid will be the one with the highest score (P, for its initial in Spanish) among the submitted bids selected as technically acceptable, according to the tender terms and conditions.
- In the event of a tie, the concession will be awarded to the bidder with the highest score for its technical bid.
- If there is still a tie, the concession will be awarded to the bidder with the best score in Document No. 5 of the technical bid, i.e., the document including the different draft projects.

This evaluation also evaluates three tender factors that each bidder had to request, namely:

- Fixed operating subsidy. The amount to be paid to the concessionaire every six months from the date of final commissioning of the works and requested as fixed operating subsidy (FOS).
- Fixed construction subsidy. The amount to be paid to the concessionaire every six months from the date of final commissioning of the works and requested as fixed construction subsidy (FCS). Given the investment needs involved, in addition to the FCS, the concessaionaire will have to get financing to build the facilities.
- Variable payment indicator. The amount to be paid to the concessionaire every six months per inmate originating in the provision of the basic services described in the tender documents. It is identified as a variable payment indicator (VPI) and should be stated in UF with two decimal digits.

Therefore, bidders had to establish the value of the fixed operating subsidy (FOS) payment in their price bid, as well as the value of the fixed construction subsidy (FCS) and the variable payment indicator (VPI), all stated in UF, excluding VAT. These values must be equal to or lower than the maximum values indicated in the tender documents. Bid score (P) is calculated by rounding each figure to five decimal digits for each bidder according to the formula below:

$$P = -\left\{\sum_{j=1}^{20}\left[\left(\frac{SFC}{500.00}\right) x \frac{1}{(1+r_{PTA})^{j}}\right] + \sum_{j=1}^{40}\left[\left(\frac{SFO}{500.00} + \frac{IPV}{100}\right) x \frac{1}{(1+r_{PTA})^{j}}\right]\right\} x\ PNOT$$

Where:
r_{PTA} is the six-month discount rate, whose value was set at 0.0583.
$PNOT$ is the technical weighted passing score, calculated according to the table below:

Table 7.3. **Calculation of the technical weighted passing score**

Sorting factor beta ß	Technical weighted passing score
400 – 450	1,000
451 – 500	0,995
501 – 550	0,988
551 – 600	0,978
601 – 650	0,965
651 – 700	0,950

Source: Tender documents

Where:

$$ß = (N - N_{min}) \times \frac{300}{N_{max} - N_{min}} + 400$$

With:

N: Technical bid passing score

N_{xxx}: Minimum technical bid passing score among technically accepted bids

N_{xxx}: Maximum technical bid passing score among technically accepted bids

Technical passing scores were calculated by applying the weighting factor cited below to the relevant documents considered for scoring:

Three consortia submitted a bid for this call for tender: Consortium Torno Mendes Junior, Consortium OHL and Consortium BAS.

Table 7.4. **Technical bid weighting**

Document	Weighting factor	Document type
N°5	35%	Draft project
N°6	15%	Proposed standard and security equipment
N°7	15%	Operating report
N°8	20%	Basic service provision program
N°9	5%	Work plan
N°10	10%	Staff scheduling and planning
Total	100%	

Source: Tender documents

7.6 Contract design and risk allocation

The functions and obligations of each party have already been presented and will be developed more in depth in this section, including contract milestones, concessionaire payment mechanisms, services under concession, service performance oversight and risk allocation among the different actors involved.

7.6.1 Contract milestones

The tender process includes fourteen contract milestones in all. They will be described in order below:

1. Term for the incorporation of the concessionaire company: 60 calendar days counted as from the publication in the Official Gazette of the Supreme Executive Decree awarding the concession contract.

2. Recordation of contract in book of notarial records: 60 calendar days counted as from the publication in the Official Gazette of the Supreme Executive Decree awarding the concession contract.
3. Registration with the office of the superintendent of securities and insurance: within 60 days of the incorporation of the company.
4. Furnishing of construction bonds within 30 days before commencement of works.
5. Furnishing of operation guarantees: to be submitted along with an authorization request for temporary commissioning.
6. Information during construction:
    - Building permits issued by local works agencies and environmental impact assessments or statements, before commencement of works, if applicable.
    - Monthly works construction progress report, to be submitted within the first 15 days of the following month.
    - Quarterly environmental management progress reports regarding compliance with the requirements in the environmental qualification documents and resolutions. To be submitted within the first 15 days of the following quarter.
    - Quarterly and annual audited financial statements of the concessionaire company in a format established by the Ministry of Economy within 5 days after submission of the financial statements to the office of the superintendent of securities and insurance.
7. Terms of reference and final projects: these must be submitted no later than 75 days from the date of publication in the Official Gazette of the Supreme Executive Decree awarding the concession contract. The concessionaire must submit a document to the works inspector showing the terms governing the development of the final architecture, structures and specialty projects, including a detailed schedule of deliverables and progress stages. Acceptance of the final projects my not take more than 180 days counted as from approval of these terms of reference for final project development. Within the 30 days following approval of the final projects, the concessionaire shall deliver the General Directorate of Public Works an endorsement letter undertaking to complete the project.
8. Electronic sketch. Upon approval of all the final projects, the concessionaire will have 60 days to deliver an electronic 3D sketch of each penitentiary establishment, including animation along the interior and exterior routes across the most relevant areas.
9. Self-monitoring plan. This document should describe the control procedures and types ensuring the quality of works during the works execution phase to be implemented by the concessionaire within a term not to exceed 60 days before the commencement of works.
10. Works execution program. For each prison, the concessionaire must submit an execution schedule to the works inspector. The date for delivery has been set at 45 days before commencement of works.

11. Land delivery by MOP to the concessionaire. Land delivery must take place over a term not to exceed 60 days counted from the incorporation of the concessionaire company.
12. Authorization for temporary commissioning. The maximum term is 850 days counted as from concession initiation.
13. Construction drawings. Within 60 days after each temporary commissioning of works date, the concessionaire company shall submit the drawings of the executed works to the works inspector along with description reports.
14. Information to be submitted during concession operation:
    - Financial statements for the concessionaire company in a format established by the Ministry of Economy within five days after submission of the financial statements to the office of the superintendent of securities and insurance. Financial statement notes should point out operating income, breaking down the different subsidies received, payments for optional services and payments for additional services or other collected monies accepted by the MOP. Likewise, operating and maintenance costs shall be broken down.
    - Environmental reports.
    - Six-month prison management and operation report, including basic and supplementary services: a description of provided services and any service changes with a breakdown of services provided by the concessionaire and subcontracted services; total income received from services provided by the concessionaire and subcontracted services; cost details; supplementary service rates; management indicators, among other elements.

7.6.2 Concessionaire's revenue

The concessionaire company can finance infrastructure thanks to payments received from the government, from which, naturally, it expects to derive economic profitability. This series of payments are established in a special contract chapter dealing with the concessionaire's rights. The first one of these is the right to operate, effective from the temporary commissioning authorization for the works up to the end of the concession, pursuant to the tender documents. Second, the right to provide supplementary services along the lines of the procedure described in the tender documents. Finally, the right to collect payments by the government, specifically the Ministry of Justice. These can originate from up to five headings, namely:

- Construction subsidy. Every six months, the concessionaire will receive a subsidy for the construction of each penitentiary establishment for a total amount to be determined along the lines of a proposal made by the awardee. In the case of Group 1, the maximum full six-month term as per the tender documents for the three penitentiary establishments is 282,000

UF. Payment of this subsidy will start after final works commissioning and will remain in force for ten years.

- Operating subsidy. This payment will also be made every six months. It is a fixed subsidy to prison operation for an amount to be established in the tender documents. In the case of Group 1, the maximum six-month amount established by the tender documents was 217,300 UF. This payment will start after final works commissioning and will end the six-month term following completion of the concession term; the estimation is for 40 calendar six-month terms. The 20% of this subsidy will be adjusted to the variation of the minimum monthly income against the minimum monthly income applicable in the year when the price bid was submitted.
- Variable payment. This payment will also be received by the concessionaire on a six-month basis and it will be a variable payment equal to the amount resulting from the average of committed inmates at each penitentiary establishment over the previous six-month term times the variable price indicator requested by the bidder in its price bid. For Group 1, the maximum variable price indicator established in the tender documents was 12.5 UF.
- Additionally, if requested and unforeseen additional works exist that were performed over the previous six-month term, the concessionaire will receive payments too.
- Finally, the concessionaire will receive a payment to offset prison overcrowding for each penitentiary establishment, provided the number of inmates exceeds 120% of the establishment's capacity. This offsetting per prison equals 100 monthly tax units for each day of overcrowding.

The structure of income to be collected by the concessionaire company for each penitentiary establishment is summarized in the formula below:

Payment to be collected per prison
= Fixed six-month construction subsidy
+ Fixed six-month operating subsidy + Variable six-month payment +
Payment for additional works + Overcrowding compensation

Similarly, although this has already been mentioned, it is important to highlight that the contract establishes that the concessionaire must fulfill several economic obligations in the benefit of the MOP and the Chilean border police. The concessionaire is required to pay for contract inspection and control activities on an annual basis, an amount will be set for the works construction term with a different one for operation. The concessionaire must pay for the consumption of water, electricity, gas and heating at the penitentiaries under concession managed by the Chilean border police.

For Group 1 case, a payment to the MOP was established under the heading contract inspection and control for 49,200 UF per year during the construction term (or any applicable portion at a rate of 4,100 UF per month) and 15,000 UF during operation (or any applicable portion at a rate of 1,250 UF per month). In January, during the last construction year under the

contract, the concessionaire shall pay an amount equivalent to the full year (49,200 UF). The amounts for water, electricity, gas and heating consumption have been established under the contract and are broken down as follows: water (195 UF), electricity (135 UF), gas (20 UF), fuel used for heating (the amount indicated by the works service rules).

As to the different bonds to be furnished by the concessionaire, it should be highlighted that the construction bond for each penitentiary establishment in Group 1 is worth 40,000 UF and will remain in force for 17 months. This guarantee will be furnished within the 30 days prior to the commencement of works construction and will replace the bid bond, which will be returned to the concessionaire after acceptance of construction guarantees. In addition, this guarantee will be reduced as work progresses. Thus, upon certification of 30% of the performance of each prison work, the construction guarantee will be replaced by a bank guarantee for a total value of 28,000 UF. Similarly, upon completion of 50% of the works, this bond will be exchanged for another one for a total value of 20,000 UF. Finally, upon completion of 70% of the works, the concessionaire can redeem these bonds and replace them with new bank guarantees for a total value of 15,000 UF.

During the operation phase, the concessionaire company will also need to furnish a guarantee. The general director of public works will not issue the temporary commissioning authorization for the penitentiary establishment if no operation guarantee is furnished. Furthermore, when 24 months remain for expiration of the concession term, the concessionaire shall deliver four bank guarantees for each prison, each for a value of 2,500 UF. This additional guarantee will remain in force for three years to ensure fulfillment of the conditions under which the MOP should receive the facilities.

7.6.3 Services under concession

As described in the preceding paragraphs, most of the services needed for the operation of a prison will be rendered by the concessionaire. However, they have not yet been thoroughly described. Similarly, some of the indicators that control the satisfactory provision of these services consistently with contract provisions will be explained. The concessionaire will provide seven services in all, comprising from infrastructure maintenance up to social reintegration.

Infrastructure, standard and security equipment maintenance (annual program)

Under this service, the good physical and functional condition of infrastructure is assured throughout the prison operation term up to contract expiration. It involves having equipment and furniture in optimal conditions as well as a surveillance system in good shape, including electronic and antidrug systems, CCTV and security areas. These services will be delivered along the lines of the maintenance plan approved by the works inspection. It will cover any necessary repair jobs and adjustments to

allow for normal prison operation. Considering that in 2014 these facilities had only remained operational for eight years, most of the reports written on this topic described just small conventional maintenance jobs. Regarding security equipment, reports show very good results, which has translated into minimum intervention.

Catering service

The main objective of this service is daily food delivery by the concessionaire company (three times a day) adequate for the full prison population, the Chilean border police officers who are working during eating hours, the children of female inmates younger than 2, and, finally, a menu description. The aim is to offer a balanced diet aligned with the nutritional requirements of each target group, including any special diet under medical requirements and the conditions in the tender documents, which indicate minimum weekly foodstuff. In order to verify the satisfactory performance of this service and the good quality of the diet offered to prisoners, lab tests will be regularly performed on inmates to check for their health condition.

In order to provide this service, the concessionaire may count on the participation of inmates hired by the concessionaire as food handlers, who will cooperate across all the stages of the productive process. These workers will receive training in food preparation and safety, including general training for this job, basic quality and risk prevention concepts, among other topics.

Laundry service

Under the tender conditions, the laundry service is required to ensure a maximum of 2.5 kg of dry clothes per week per inmate, along with clean towels and bed sheets on a weekly basis. Laundry is then classified as personal, works and bed clothes, with quotas that can be claimed both weekly and annually. After clothes are sorted, they are washed. As per reports available by early 2014, the amount of current laundry is small, even scanty.

Prison commissary or canteen

The purpose of this service is to provide safe food and supplies to inmates, officers, administrative staff and visitors. For safety purposes, foodstuff and supplies must be authorized by the Chilean border police and the works Inspection. Maximum prices to be charged may not exceed 10% of market price.

Inmates will have a large variety of products available for purchase, among which the sale of tobacco (40%) stands out, followed by groceries (14%) and soft drinks (14%). However, no measurement indicators were defined in the tender documents, so the adequacy of goods is assessed based on the availability of supplied products, frequency, working hours, and fulfillment of the product price and list authorization procedures. In other words, there is no established criterion to determine what is the minimum standard of satisfaction.

Cleaning and pest control

Cleaning is performed daily to keep facilities in good conditions. Daily cleaning activities do not include jail cells, which are cleaned and disinfected once a month. This service also includes the daily removal of solid waste and the treatment of sanitary waste, pursuant to the regulations issued by the Ministry of Health.

Health care service

According to the concessionaire company, BAS S.A., the purpose of this service is to "deliver integral primary medical care, along with secondary and tertiary medical care in coordination with other penitentiary establishments and medical care delivered by the public system." Thus, inmates will be kept in good health and will receive respectful and humanitarian treatment. At the same time, the number of visits to external hospitals will be reduced, indirectly minimizing the risk of prison breaks. This service includes lab tests for admission records, and examining inmates to check for lesions and to determine burden of disease. As to the indicators described in the tender documents, the concessionaire is solely required to perform some medical examinations, such as HIV testing, and hire medical staff.

Social reintegration service

This may be the most important service under the concession contract, as it has the highest number of indicators for service assessment. The concessionaire will design, implement and monitor social reintegration programs, which should be oriented toward meeting the policies defined by the Chilean border police. Therefore, all programs must be authorized by the works inspector.

This service features a chief of service and three heads of area (psychosocial, training and employment, and educational). The team of professionals is composed by psychologists, social assistants and teachers, along with occupational therapists, sports and recreation leaders, among other specialists. This program is divided into eight subprograms. The first one is only developed when required by the population of inmates. Along these lines, the main requirements by the administration are, first, to be adequately staffed and, second, that 100% of the different subprograms are completed upon reaching the fourth year of prison operation, gradually moving up from 50% completion over the first year.

Subprogram for the lactating children of female inmates

For prisons with a female inmate population with lactating children.

Subprogram for the social care of inmates

The aim of this subprogram is to support inmates through instruments that facilitate their social reintegration into the community. A social diagnosis is made of the convicted population, including home visits. In the case of unconvicted prisoners, social care is less comprehensive and consists

of a "basic diagnosis" pivoting around a general social and psychological evaluation. In addition, social reports are produced for prisoners released on parole, intra-penitentiary benefits and special visits, as required by the Chilean border police, and socioeconomic reports requested by the judiciary.

Psychological care for inmates' subprogram

This subprogram emphasizes three types of action:

- Development of psycho-criminal diagnoses
- Psychological reports about the parole process and other petitions from the Technical Area
- Psychological intervention workshops for already diagnosed population. Pro-social, group psychotherapy and personal development workshops are among those that stand out from the rest.

One of the main characteristics of this model is that the social or psychological diagnosis and treatment functions, which will be managed by the concessionaire, are split from the power to grant leave permits, which will be in charge of the Chilean border police or penitentiary administration. This eliminates a potential source of corruption and of self-evaluation that was implicit in the older system.

Treatment subprogram for drug and alcohol-dependent inmates

It operates in line with the intervention model prepared by the National Narcotics Control Commission for Chile's penitentiary establishments.

Sport, leisure, arts and culture subprogram

It focuses on arranging sport, leisure, artistic and cultural "events," which are considered "benefits" of the subprogram. These include workshops by sports instructors, artistic events or sports competitions.

Education subprogram

In the case of Group 1, it is run by the Social Rehabilitation Corporation, a specialized educational advocate with experience in penitentiary establishments. The courses are based on the reform of adult education implemented by the Ministry of Education in 2007 (Martínez and Espinoza, 2009).

Job training subprogram

The main goal of this program is to develop the technical skills, management skills, behavior and work habits of the inmates to empower or foster their insertion as employees or self-employed workers.

Employment subprogram

The goal of this subprogram is for inmates to work regularly within the prison in jobs offered by the penitentiary service or third-party companies. There also is the possibility for them to become micro-entrepreneurs, self-

employed workers or craftspeople. The concessionaire encourages inmates to take advantage of employment opportunities, in particular under its supervision, by creating jobs in different positions. Some of the most prominent jobs are food handlers, janitors for cleaning activities, maintenance workers and gardeners, etc. For the concessionaire, this offers an alternative source of workers for which they must meet a series of obligations, among which it is to provide an "employment contract." The inmate's salary is deposited in a pension plan, from which an amount is deducted for a healthcare plan offered by the National Health Fund (FONASA). In addition, a savings account is opened and 15% of the inmate's monthly salary is deposited in it to build a fund for their reentry into society.

While this model is working well, one of the main problems the concessionaire faces is a high turnover of inmates. It is also necessary to explain that contracts are controlled by monitoring a series of indicators. However, as noted above, these are not as extensive when compared with other concessions. To get an idea of the importance of social reintegration, it is enough to point out that there is a total of 38 indicators for the evaluations. However, in the case of the Rancagua prison, additional indicators are taken under consideration because it is a more complex establishment. Table 7.5 shows some of the indicators evaluated in the Rancagua prison.

Table 7.5. **Prison monitoring indicators**

Prison Services	Indicator
Food	Portions
Laundry	Laundry per kilo
Health care	Number of visits by general physicians
	Number of visits by medical specialists
Social reintegration	**Indicator**
Inmate care	Social diagnosis
	Psychological diagnosis
	Home visits
Education	Enrolled in learning institutions
Job training	Training courses
	Career counseling and diagnosis
Jobs	Concessionaire employees
	Third-party employees
	Craft workers
DRAC	Participants in activities

Source: Authors based on information provided by the works inspector.

To control these indicators, a series of measurement and monitoring tools are created, such as control charts, reports and audits. These are accompanied by onsite controls performed daily, every two weeks and/or monthly, depending on the indicator. As a result, a series of documents are produced, such as a

memorandums or reports showing whether each indicator has been met or not. If the evaluation is negative, a requirement is sent to the concessionaire to correct the situation.

Based on the information supplied by the concessionaire, the fulfillment of the required indicators established in the contract is very high. It should be noted that the following achievements were made as of October 2013:

- Global contract compliance close to 98%.
- 100% of convicted inmates are diagnosed and have an individual intervention plan.
- 67% of inmates receive career counseling and assessment based on their needs and interests.
- 1,270 inmates work in some type of employment, and 560 inmates have a work contract.
- 12% have access to the banking system with savings accounts that they can use on their release.
- 27% of inmates enroll to improve their education.
- 1,440 are trained in a recognized trade.
- 100% of inmates participate actively in sport, leisure and cultural events.

7.6.4 Risk allocation

Before describing risk sharing, the main characteristics of the public construction and operation of penitentiary establishments in Chile should be compared against the concession model. Table 7.6 shows the main differences of each model in the allocation of tasks.

Table 7.6 **Comparison of both models**

	Public Model	Public-Private Partnership
Administration	Chilean border police	Chilean border police
Surveillance and security	Chilean border police	The Chilean border police provides surveillance. The concessionaire provides the technology and security systems.
Management	Public	Public-Private
Financing	Public	Concessionaire (with state subsidies)
Social Reintegration	Chilean border police	Concessionaire
Infrastructure maintenance	Chilean border police	Concessionaire
Standard and security equipment	Chilean border police	Concessionaire
Basic Services	Chilean border police	Concessionaire

Source: Rojas, Bonifaz and Guerra-García (2012)

Based on the characteristics described in the model as well as each service provided by both the concessionaire and the public administration, a risk matrix can be produced. The following table shows the allocation of the main risks among participant agents. It should be noted that the two main risks of the case study, namely design and construction, are assumed solely by the private sector.

Table 7.7 **Allocation of main risks**

Concept	Responsible Party
Design	Concessionaire
Construction	Concessionaire
Project changes	Shared
Overcrowding	State
Interest rate variations	Shared
Food cost	Concessionaire
Cost of energy and water	State
Cost of inspections and contract controls	State
Cost of materials	Concessionaire
Labor costs	Concessionaire
Maintenance and replacement costs	Concessionaire
Costs of cleaning agents	Concessionaire
Pest control costs	Concessionaire
Social reintegration	Shared
Project bankruptcy	Shared

Source: developed by CAF.

In terms of shared risks, the risk of changes in the project is shared because if the changes are required by the works inspector, the risk lies with the MOP, which is what happened in this case. Variations in interest rates affect both parties: the concessionaire because its reference rate is tied to interest rates, and the government because it is the one that pays in the end.

Social reintegration is also a shared risk, but this mostly affects public administrations. The private sector is only affected by the development and monitoring of social reintegration plans. However, these must be approved by a works inspector, so the responsibility of their success or failure is shared. In addition, if these plans are ineffective, there may be inmates who on the completion of their sentence commit a crime again. This results in a greater number of prisoners, with the consequent costs and risks of the overcrowding of the Chilean prison population, which undoubtedly harms the public sector.

Finally, bankruptcy is a shared risk that will affect one or the other party, depending on the reasons for terminating the concession. In terms of the possibility of terminating a contract, the tender documents establish three reasons. First, there is the fulfillment of the term of the concession. Second, there is a serious breach of contract by the concessionaire, and, third, by mutual agreement between the MOP and the concessionaire in accordance with the concession law in force. Some examples of a serious breach of contract are an unauthorized delay in construction of more than 180 days, a reduction of the concessionaire's equity below a certain minimum, turning in inaccurate information with malicious intent, failure to purchase the required guarantees or unauthorized for final commissioning delays.

7.7 Contract management and economic balance

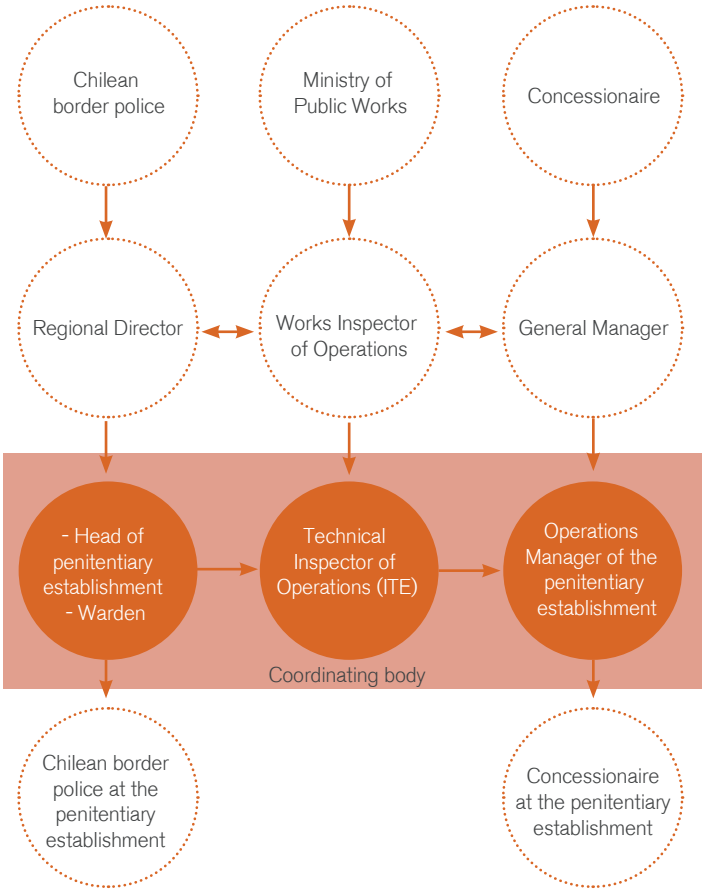
Now that the design of the contract and the risk allocation between the different parties have been analyzed, the contract management and economic balance of the concession is detailed in this section. In particular, the examination will focus on contract governance, contract revisions due to different causes, and, finally, the impact of this model on public opinion.

7.7.1 Contract governance

To better understand contractual management, it is necessary to understand the concession scheme. It is worth mentioning the collaboration between the MOP, the Chilean border police and the concessionaire in the first phase, involving construction and design, as well as in the second phase, including operation. Figure 7.5 shows the connection between the most important parties involved in the concession. This scheme can be divided between the top and the bottom, differentiating between the central level and the regional level. It should be noted, too, the role of the works inspector, whose main functions are to:

- Oversee and enforce the terms of the concession contract in regard to the provision of services, plans, economic conditions, etc.
- Oversee and ensure compliance with the legal, accounting and administrative issues originating in the contract.
- Analyze the concessionaire's background.
- Propose fines when merited.
- Inform the General Director of Public Works about contract fulfilment.

Figure 7.5 **General scheme of the contractual management of the concession**



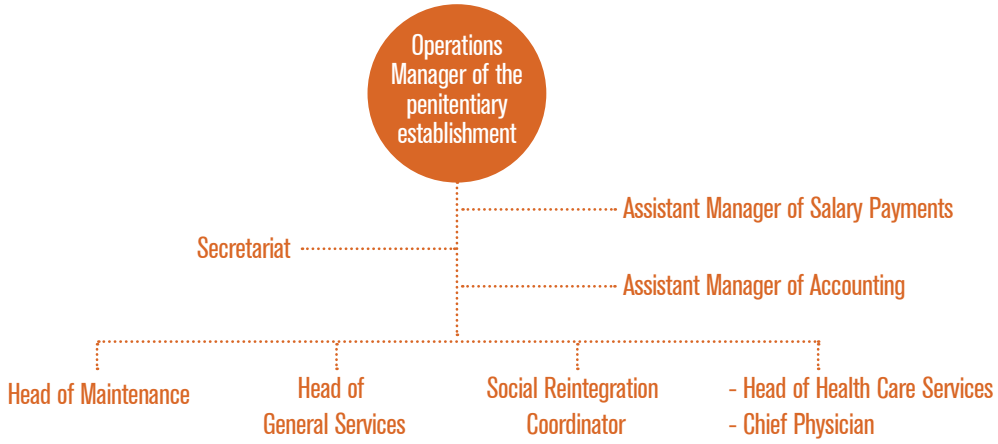
Source: Graph provided by the BAS Consortium

The contract also establishes an advisory service to assist and support the works inspector with audits to determine compliance with the technical standards of the operation, equipment and services of each prison during the operational phase. In each of these areas, there is a Technical Inspection of Operations (ITE), which represents the works inspector. In the case of Group 1, the consulting company is formed by the Axioma-Cipsa Ingenieros Consultores consortium. The consulting firms serve for a period of two to three years. At the end of this period, the MOP will hold a new tender for the consulting contract, giving it an opportunity to establish additional or different requirements for participation.

There is a level of coordination for each penitentiary establishment that brings together the warden of the Chilean border police, the MOP's technical inspector of operations and the concessionaire's operations manager. This level manages issues for which it is necessary to make joint decisions in the day-to-day running of services.

The people shown in Figure 7.6 report to the operations manager of the concessionaire for each prison.

Figure 7.6 **Organizational chart of the concessionaire for each penitentiary establishment**



Source: Graph provided by the BAS Consortium

For the concessionaire, the job of the social reintegration coordinator is key, so too are the tasks performed by the head of health care services and the chief physician. This is because they are responsible for implementing changes that improve the inmates' quality of life. Each penitentiary establishment has 110 live-in employees, 105 off-site employees and 30 professionals.

7.7.2 Economic balance

Described below are the economic balances redressed during the operation of the project. The contract establishes that the state can request additional works or an expansion of the prison's capacity, making it necessary to sign a supplementary agreement in that case. In addition, the concessionaire may request that new investments be made. To do this, it must provide evidence that the project is inadequate and then establish the value of the new investments as well as the possible impacts on the terms and economic aspects of the contract.

According to information on the website of Chile's General Coordination Department for Concessions, there have been a total of four revisions to the concession contracts on public interest grounds in regard to the projects and services. Of these, the two most important ones originate from the final sentence of the Contract's Arbitration Commission in the cases ROL 2120-J, 2129-J, 2130-J and 2134-J, issued by this commission and notified in May 2007. This ruling established that the MOP must extend the term of the concession by 295 days and pay a sum of UF 2,467,085.13 to the concessionaire with the applicable interest. The lawsuit that gave rise to this sentence was filed by

the concessionaire for damages caused by the MOP-Chilean border police. The reason for this ruling was that the works inspector conceded substantial improvements to the characteristics of the original project. However, it is true that the novelty of the project, and the fact that there were two public entities involved—MOP and the Chilean border police—led to project changes, with the agreement of all parties, which the concessionaire later claimed as higher costs.

The MOP appealed to this decision twice and finally reached an agreement with the concessionaire through conciliation. The agreement, reached on July 2, 2008 was a reduction of the amount on account of the unplanned works of UF 2,467,085.13 to 2,162,500, less than 12.35% of the cost ruled by the arbitration commission. The concession period of 295 days was also maintained, meaning that the concession is to terminate on January 4, 2026. This amount involved a cost overrun of 77.64% relative to the initial bid investment, which provides a very good idea of the magnitude of the changes to the final project as compared to the project draft. In addition, this amount had to be paid by the MOP and, consequently, by all Chileans. As mentioned earlier, this project together with others triggered the amendments to concession legislation in Chile.

The other two changes didn't bring about any significant consequences. In 2004, resolution 1621 granted a 90-day deadline extension for the submission of the third work progress certificate, which accounts for 70% of the works. This extension, however, did not entail the modification of any other contract deadline. In addition, resolution 1621 emphasized the services involved in the provisional and final project commissioning. The other change dates back to 2006. Through resolution 4006, the bidding rules were modified in the standard sense of the penitentiary service. The provision of food, health care and vehicle maintenance services would now require more involvement by public sector officials. Despite that, the resolution emphasizes that these changes do not alter the economic balance of the concession.

7.7.3 Impact on public opinion

The impact of this concessionaire program on public opinion has been huge because it entailed a radical change of the model as compared to the traditional method for the construction and running of prisons. Obviously, cost overruns and the delay in starting the service have not helped alleviate the debate, and the polemic decision of the Conciliation Commission about the concession contract has done little to help. In fact, on April 22, 2010, the arbitrator of the Arbitration Commission for the concession contract was declared ineligible to continue performing his duties. The judge on the case declared that the impartiality of the arbitrators as a standard of due process has been affected.

Furthermore, the other major criticism that these services have received is that the cost has been higher than if the system was totally public. In particular, in 2011, according to information provided by the Ministry of Justice, the monthly cost per inmate in prisons managed by the border police was 319 Chilean pesos against the 417 Chilean pesos that cost in the system under concession. However, it is necessary to note that the average square meters per inmate in the concessionaire system is 28.7 compared with 23.7 in public prisons. What's more, the construction costs of public prisons were larger than for private establishments (46.4 UF/m2 vs. 43.3 UF/m2) (Carmach, 2013). On the contrary, Dammert (2006) establishes that the daily cost per inmate in the public system is 330 Chilean pesos as compared with 1,050 pesos in the public-private system. The disparity of data reveals the intense controversy that has been generated around prison concessionaires in Chile, which in turn has made these concessions a source of political fighting between supporters and detractors.

7.8 Project financing by private funders

To conclude this case study, we will look at the composition of the different partners of the winning consortium, as well as the financial structure of the concession. The concessionaire BAS S.A. was awarded the concession contract. This company is jointly owned by Sodexo Chile, Besalco Concesiones and Sociedad de Concesiones Chile. Sodexo Chile S.A provides expertise in prison infrastructure management. For its part, Besalco Concesiones S.A. and Sociedad de Concesiones Chile contribute experience in the construction, maintenance and operation of public works. The company is managed by a six-member board nominated by the shareholders. The main characteristics of the consortium can be seen in Table 7.8.

Although the bidding rules did not require the consortium to have any company with experience in the sector, they did state that the professionals working in the different establishments must have minimal experience in the tasks performed. On the whole, that minimum experience was set at five years.

On January 9, 2003, Sociedad Concesionaria BAS S.A. and the banking syndicate, formed by BBVA, Banco del Estado de Chile, BCI, Corpbanca, Security and Banco del Desarrollo, signed an agreement to open four lines of credit, mainly to finance project costs, VAT payments, reserve accounts (which are part of the same contract) and the issuance of the guarantees required in the bidding rules. The lines of credit were called tranches A, B, C and D.

Table 7.8 **Characteristics of the concessionaire company**

CONCESSIONAIRE	SOCIEDAD CONCESIONARIA BAS S.A.
Award decree	DS MOP No. 618 of March 28, 2002
Start of the concession	June 15, 2002
Concession term	40 semesters
Completion of the concession	January 4, 2026
Concession area	Alto Hospicio: 487,502 m2 La Serena: 192,850 m2 Rancagua: 210,385 m2
Scheduled commissioning	Alto Hospicio, Res. DGOP (E) N° 3042, October 10, 2005 La Serena, Res. DGOP (E) N° 3042, October 10, 2005 Rancagua, Res. DGOP (E) N° 3042, October 10, 2005
Definitive commissioning	Alto Hospicio, Res. DGOP (E) N°029, January 6, 2006 La Serena, Res. DGOP (E) N° 111, January 11, 2006 Rancagua, Res. DGOP (E) N° 3917, December 16, 2005
Definitive commissioning Group 1	RES. DGOP No 237, January 25, 2006
Initial investment offer	UF 2,800,000
Actual investment made	UF 2,785,105
Contract revisions	D.S. 271, September 13, 2013
Shareholders and their stakes	Sodexo Chile S.A. 33.33% Besalco Concesiones S.A. 33.33% Sociedad de Concesiones Chile 33.33%
Works inspection advisory	Consorcio Axioma Cipsa Ingenieros consultores Ltda.

Source: Follow-up report of April 2014

The main characteristics of the awarded credit were as follows:

- Type: syndicated line of project financing.
- Amount: up to UF 4,000,000, broken down into four tranches of different amounts and duration.
- Term: 12.5 years from the date of signing the agreement for opening the lines of credit.
- Amortization: semiannual and increasing, as of the third month of the end of the disbursement period.
- Payment of interest: half-yearly.

The four tranches were defined as follows:

- Tranche A: to cover the costs of construction, administration, financing and start-up of the company, excluding VAT. This tranche has the following characteristics:
  - Reference interest rate: TAB-360 (Rate of the Association of Banks and Financial Institutions of Chile) with a maximum limit of 8.5%.
  - Applicable margin: a fixed 1.6% during the construction phase and ranging from 1.3% to 1.6% depending on the fulfilment of cash flow hedges.

- Tranche B: to cover the VAT of the aforementioned expenses.
- Tranche C: to finance the reserve account for the debt service and the reserve account for the payment of operating expenses. These reserve accounts are designed to cover any deficits the project may have during the term of the credit, either to cover debt servicing or operating expenses.
- Tranche D: for the issue of the bank guarantees.

7.9 Conclusions and lessons learned

BAS Consortium has been running Group 1 of the Chilean prison system —comprised of Rancagua, Alto Hospicio and La Serena prisons—since the beginning of 2006. Its main obligations are to build, maintain and provide penitentiary services in the three prisons in exchange for a series of payments by the government. The main objective of this concession is to reduce overcrowding and improve inmates' living conditions, as well as to create an appropriate working environment for the Chilean border police prison officers and improve management efficiency.

Based on the results after eight years of operations, it can be said that most of these main objectives have been fully fulfilled. However, some aspects could be improved in future experiences. The main problem with this concession were the concessionaire's cost overruns for the additional works recognized by the awarding entity and quality items conceded by the works inspection with respect to the amount stated in the draft project used for the bidding. These cost overruns led to significant additional payments by the government, in addition to the extension of the concession for nearly one year. This opens up several issues for reflection. The first is the fact that a concession is being offered at tender on a pre-project basis that is not fully defined. The second is to rely too much on the works inspection when making decisions that may end up having important economic repercussions in the future.

In addition, owing to the discussion that has arisen in Chile and the escalating controversy between the supporters and detractors of both systems, it would be good to carry out an open and transparent comparative evaluation, quantifying the costs and benefits of each decision, without basing it on ideologically contaminated arguments. Along these lines, it should be stressed that this is a system with higher costs, but also higher quality.

On the other hand, this system has introduced important improvements in prison governance. In the public model, management and supervision tasks are handled by the same authority, meaning there was little incentive for quality and transparency. The concession model has separated these two activities, which has allowed the public sector to have a supervisory role and the private sector to handle the management. This has allowed for greater control, which has brought transparency to the system and which provides information for continuous improvement.

8

Lessons learned and future challenges for Latin America

Introduction

Lessons from experience

Do PPPs improve the quality of the services rendered? Are PPPs more expensive?
What does a government need to implement a PPP successfully?
How can the uncertainty in forecasts be addressed?
How to generate real competition in the bidding process?
How can cost overrun claims be avoided in the construction process?
What is the best way to manage renegotiations?
How to overcome the problems of social acceptance? How can the risks be distributed in a balanced manner? How to manage the financial closing?

The 12 challenges in Latin America

8.1. Introduction

As seen in the case studies analyzed in the previous chapters of this book, public-private partnerships (PPPs) have led to an improvement in the quality of public infrastructure in many countries, improving associated services directly linked to the population's standard of living. However, over the course of some contracts, some problems have been encountered, for example, the difficulty of making long-term projections, the imperative need for many governments to develop new infrastructure quickly and the complexity of some of the projects underway, all of which would have had a lesser impact if they had been taken into account from the start.

In light of the case studies examined in the previous chapters, this final chapter tackles two main objectives. On the one hand, it aims to extract some experiences that can be applied to all Latin America, so governments can incorporate them into their decision-making processes to improve the PPP projects that they are currently working on. On the other hand, it seeks to list a set of challenges for the correct implementation of this model that are still pending in Latin America. This chapter is divided into two sections. The first proposes lessons of experience in response to a set of questions that a public decision-maker may face, such as: Do PPPs improve the quality of the services rendered? Are PPPs more expensive? What does a government need to successfully carry out a PPP? How can the uncertainty in forecasts be addressed? How can real competition be generated in the bidding process? How can cost overrun claims be avoided in the construction process? What is the best way to manage renegotiations? How can the problems of social acceptance be overcome? How can the risks be distributed in a balanced manner? How should the financial closing be managed? After answering these questions, the second part proposes a series of challenges that Latin America will have to face in the future so PPPs are truly an attractive option for economic growth and an enhanced quality of life.

8.2 Lessons from experience

After reviewing the five case studies, the conclusions and lessons learned can be of use to Latin American governments in the development of their PPP programs. This section addresses a series of key aspects that emerge from the experience of those case studies. The lessons are proposed as a response to a series of questions that emerged from the analysis of the experiences.

8.2.1 Do PPPs improve the quality of the services rendered?

One of the first questions that needs to be addressed is whether PPPs improve the quality of services rendered. The answer to this question, in the light of the experience to date, is without a doubt: Yes. The case studies analyzed are clear. The Moncloa interchange hub in Madrid led to substantial mobility improvements for users of the urban public transportation system, with shorter travel times and better connections between modes of transport. The Tlajomulco Administrative Center (CAT) in Jalisco (Mexico) improved the quality of the provision of municipal services, in addition to the efficiencies generated thanks to the concentration of different services, which were spread out and scattered, in a single building. The perception of users of this municipality was extremely positive.

Something very similar can be said about El Dorado airport in Bogota, which significantly reduced passenger lines and improved the quality of airport user services, as well as contributed to generating a more positive perception of the city among foreign visitors. The San Jose-Caldera highway also produced a complete change in the mobility conditions along the corridor that unites the country's capital city with the Pacific Ocean. Thus, there was rapid growth in demand and greater traffic. The model of prisons tendered in Chile is, without a doubt, one of the examples in which infrastructure has served to shift how inmates are treated in that country, contributing to the promotion of human rights.

All these improvements would have been barely possible without resorting to private financing systems due to the considerable restrictions and limited flexibility of public budgets. A first lesson, therefore, is that PPPs are useful instruments to produce a radical change in the endowment of infrastructure and in the quality of service that infrastructure provides a society.

There are several reasons for this, as the analysis of the different experiences in the region shows.

1. The first—which has already been highlighted—has to do with the fact that these projects allow governments to develop infrastructure while avoiding budgetary problems, at least in the short term. Although it is certain that projects where the government pays for the project services (such as the Tlajomulco CAT or the prisons in Chile) require long-term public commitments, the public decision-makers perceive that these commitments will be actually implemented at a much later date, which leads to the decision to undertake projects that would not have been launched with conventional procedures.
2. A second reason is that the supervisory role is kept separate from management in PPPs, while in public projects these two roles tend to be played solely by the government. This separation ensures the implementation of clear and transparent monitoring measures that define a set of contractual requirements that must be complied with in all cases. Because a private agent understands that the public sector will be monitoring all services rendered to ensure that

they are adequate, the maintenance and operation of infrastructure is usually better in the case of a PPP than in a public project.

As a result, it can be inferred that the use of PPPs leads to the implementation of more ambitious projects, which most likely would not even be proposed with public resources. In the same regard, once the projects are built, their operation and maintenance are of much better quality.

8.2.2 Are PPPs more expensive?

A second question, which is directly tied to the essence of PPPs, is if they are more or less expensive than public projects. It is precisely one of the most heavily weighed aspects in the literature written to justify PPPs. These will garner meaning to the extent that they make it possible to reduce the costs of the project cycle, compared to its public alternative. Many governments are imposing this analysis, called value for money, as a requirement demanded to ensure the acceptability of PPPs.

Unlike what occurred with the quality, where the improvement represented by PPPs is unquestionable, in this case, it is difficult to uncover empirical evidence based on the case studies. First, the information available about the total project costs is incomplete. Secondly, it is difficult to find cases in which this comparison is feasible in practice.

What is clear is that the valuations carried out in the analysis of value for money do not correspond exactly to the reality. In many cases this is due fundamentally to project cost overruns, especially in their construction. Moreover, in many cases, the end users of the infrastructure or the country's taxpayers are the ones who end up paying for those higher costs through contractual changes.

The case study of the prison system in Chile analyzed in this report provides evidence of PPP project costs, compared to similar public projects. Some studies indicate that the PPP ended up costing more than government-managed projects, which is due partly to project cost overruns, which were higher than the original forecasts and in part, because the quality of service offered was much higher in the prisons in concession compared to the public penitentiaries.

In the rest of the cases analyzed—except for Tlajomulco Administrative Center—there were significant construction cost overruns, which casts a doubt as to whether the mechanism of PPPs is in practice transferring greater efficiency to society.

The conclusion that can be drawn based on this section is that PPPs are not necessarily less expensive than public projects. However, this analysis is usually conducted without weighing other relevant aspects such as the major benefits derived from the improvements in quality that they represent.

One of the suggestions that may be worth posing for the future is the need to carry out a new methodology, an alternative to the Value for Money, which,

based on the available information from previous projects and including new aspects to be considered, such as the better quality of service provided, could be used as an alternative for evaluating projects before and after.

8.2.3 What does a government need to implement a PPP successfully?

Other important questions are: What does a government need to be successful in a PPP project? Is it key that the team have experience? Is it important to have a specialized unit? Is it necessary that this unit be an expert in the type of project that it wants to develop?

In the case of analyzed studies, we found very different results and situations. The Regional Consortium of Transportation for Madrid, for example, did not have any experience in concession tenders or management when it launched its first interchange initiative, although it is true that the concession model had been used in Spain, especially by the central government, for other types of infrastructure on a regular basis. In addition, Spain had a strong concession law that was applicable to all types of infrastructure.

Whereas in Costa Rica, the launch of the first concessions was preceded by an important preparation. On the one hand, a specific unit was created called the National Concessions Council (CNC) specialized in the development of these types of projects. On the other hand, a law based on other successful experiences like the one in Chile was drafted. However, despite these efforts, Costa Rica ran into other obstacles that ended up causing problems in the projects. These include expropriation legislation, which gave tremendous power to land owners, and a decision-making tradition that demanded a consensus between different levels of the government and the society.

The municipality of Tlajomulco, in turn, did not have any experience in promoting service-provision projects. That said, it did have experience in other aspects that outweighed this limitation. On the one hand, the municipality's mayor was very motivated to carry out the project and also chose a government team with very good preparation. On the other hand, the municipality of Tlajomulco had a model—a national framework for service provision projects (PPS)—, based on which it was able to structure the contract.

The Civil Aviation Authority of Colombia (AEROCIVIL) had some experience in procurement and management of concessions for airport projects, although not of the dimensions of El Dorado airport. It should be noted that the institutional framework underwent improvements throughout the process, for example, with the creation of a National Infrastructure Agency and a new legal framework for PPP projects. In Chile, the General Coordination Department for Concessions, a specialized unit of the Ministry of Public Works (MOP) was responsible for structuring the concession for prisons within Group 1. The unit has extensive experience in structuring concessions and tenders, although at the moment of the penitentiary program's launch it did not have experience in this type of infrastructure. However, the close collaboration of the MOP with

Chile's border police, the national entity responsible for the country's prisons, helped alleviate these problems.

As illustrated by the case studies, the success of a project is not linked just to the country's experience and the strength of its legislative framework. Countries such as Chile and Costa Rica, which have a specific unit dedicated to concessions and a solid legislation that has proven very consistent, had major problems in the development of projects analyzed in previous chapters of this book.

In the case of Costa Rica, the problem might have been that the CNC did not have enough backing or power to overcome a series of obstacles that led to severe complications in the development of the concessions, such as the difficulty of securing land rights for the concessionaire and the lack of competition in the bidding process. The delays caused generated cost overruns, which fueled the unpopularity of concessions, leading to the government's decision to suspend the San Jose-San Ramon concession.

In the case of Chile, the experience of the CNC with the supervision of projects did not prevent major cost overruns in the construction of the Group 1 prisons. In this case, the cause might have been that the MOP was faced with a type of project that was completely new to the entity, which was aggravated by the fact that, in this case, another public entity, Chile's border police, which had a very different point of view from that of the MOP regarding the project's definition, weighed in heavily.

In the case of Colombia, the country also had specific legislation and experience in concessions. However, the problem faced with El Dorado airport was the sheer size of the project, of substantial importance to the country with considerable uncertainties regarding demand growth and, consequently, design capacity and income generation.

In the cases of Madrid and Tlajomulco, the situation is completely different. In both cases, regional and local governments without experience in the development of PPPs were able to implement models that proved surprisingly successful. However, the key in this case was that both governments had enthusiastic, well-prepared project teams and, even more importantly, the governments put their full support behind the implementation of the model. In addition, the fact that Spain and Mexico had a legal framework in place was critical, as was their tradition in the application of the model, which proved to be key in providing these municipalities with something that they could rely upon in spite of their little experience behind.

The lesson learned is that an institutional framework and experience are important to the success of PPP projects, but they are not sufficient to ensure their success. This is because this type of models, especially the largest and most innovative ones, always include unexpected aspects to be faced. Meanwhile, enthusiastic, well-prepared governments with support from all levels are able to do so much more than what one may initially think possible, although, in any case, they need a tradition or legal framework on which to structure these new projects.

8.2.4 How can the uncertainty in forecasts be addressed?

One of the aspects that has emerged with the analysis of the case studies is that for those projects where the risk of demand is transferred to a greater or lesser extent to the private sector, it is very complicated to make accurate predictions. This situation generates a certain randomness in the private sector's profits and losses, which can result in turn in infrastructure capacity issues or pressure to renegotiate contracts.

Case studies that incorporate risk of demand, the Moncloa interchange hub in Madrid, the El Dorado airport in Bogota and the highway concessions in Costa Rica show very dissimilar results in this regard. In the case of Madrid, the impact of the economic crisis that hit Spain, starting in 2008, led to a 30% drop in the projections of expected demand for the Moncloa interchanger hub. The transport consortium mitigated the problem, establishing a guarantee of minimum revenue that secured demand up to a certain level.

In the case of El Dorado airport in Bogota, the situation was entirely different. The Master Plan of 2001 included a forecast of traffic based on projections tied to predictions of socio-economic variables, but they did not accurately assess the value that the impact of the improvements would have in positioning Bogota as an international hub; likewise, they did not account for the influence of TACA's merger in 2010. Thus, airport underwent, that year, twice the originally anticipated traffic, which motivated that a redesign of the airport terminal be agreed, once the concession had been already awarded. In the case of the San Jose-Puerto de Caldera highway, estimates did not take into account the significant growth in traffic that the improved highway conditions would bring about.

This situation highlights the need to foresee how to handle the uncertainty in demand provisions. History has shown that it is very difficult to predict, despite the greater sophistication in transport models. The solution is based on greater flexibility in contracts from a double perspective. On the one hand, the infrastructure should be defined so that concessionaires can increase their capacity to the extent that is necessary. For example, the design of the El Dorado airport could have been projected originally with a modular design, so that based on certain traffic volumes, the government could have demanded that the concessionaire expand the airport. In this way, investment needs would have been adjusted to the generation of project income. Moreover, in the case of infrastructure where an expansion of the capacity is not possible, the recommendation may be to apply mitigating mechanisms to the risk of demand as minimum or maximum bands of income, or mechanisms of flexible deadlines, to achieve a certain value present in the income.

Similarly, due to the limited influence of the private operator on the generation of income in many infrastructure projects, it is increasingly more common to see models in which there is a separation between the collection of the income, which is managed by the government, and payments made to the concessionaire, which are based on criteria that it controls, such as quality or availability indicators.

8.2.5 How to generate real competition in the bidding process?

One of the key elements of any PPP is to generate the sufficient competition in the bidding process so that the benefits are transferred to users and society, instead of staying in business. In PPP contracts, competition has traditionally been generated through the bidding process, aimed at choosing the consortium of companies that, in practice, can offer an optimum price-quality combination for society, keeping the contract from being awarded to reckless bidders.

The analyzed experiences show us that attracting competition in the bidding processes has been a serious problem. In the case of the Tlajomulco Administrative Center, Mexico, although several consortia showed their interest in the project, in the end only one contestant presented a bid. The reasons why the rest of them decided not to bid were unknown. The case of the San Jose–Caldera and San Jose-San Ramon highways in Costa Rica is similar, where only a single contestant presented a bid, the same one that was eventually awarded the contract.

Bidding processes with limited competition are problematic. In the first place, the government will never know for sure whether the winning consortium's bid represents the most favorable deal for society or if a competitor could have presented a more beneficial deal. Secondly, this situation gives the bidding company considerable power over the government in the event of a renegotiation.

Improved competition in the tender process is achieved through a series of measures. Firstly, it is essential that the contract receives sufficient publicity in order to open it up to as much competition as possible. It is also key that the government provide good project studies to the interested parties, and allow enough time for the bidders to prepare and submit suitable proposals. The government should avoid creating situations doomed to drawing only one single bidder, for example, by restricting funding to national banks when they do not have sufficient capacity to generate enough competitive bids.

Another one of the aspects is to consider clauses drafted to avoid reckless bids. This is the situation that arose in El Dorado airport in Bogota, for example. In the tender, it was established that the consortia with an economic bid 11% higher than the average would be disqualified. This led to the disqualification of one of the bidders, Sociedad Futura El Dorado Nuevo Milenio, whose bid included a remuneration of 49.52% of income, when the winning bid offered 46.16%, only three percentage points less. This situation highlights the need to define what is the suitable range for a submitted bid to be considered disproportionate or abnormal. There is still a lot of work needed in academic circles and in the practical arena to correct this problem.

8.2.6 How can cost overrun claims be avoided in the construction process?

One of the clearest aspects that has surfaced in the analysis of these case studies is the problem of cost overruns in the construction phase which, ultimately, tend to result in contractual revisions that involve higher costs for users or all of society, paid for with tax increases. The reasons for cost overruns are varied. Sometimes it is the government that realizes that the original design does not meet society's needs, requiring that the concessionaire make changes to the already approved project, which implies higher costs. At other times, as in the case of the Chilean prisons, cost overruns arise due to changes suggested by the concessionaire, which are ultimately accepted by the project supervisors. In other cases, the concessionaire files claims for cost overruns, linked to increases in the prices of materials, labor and supplies.

In general, PPP contracts transfer the construction risk mainly to the private sector, which should incorporate that risk into its bid. Only in some cases, when the construction uncertainty is very high, for example due to geological uncertainty at the site, some risk-sharing measures may be defined.

The fact that there are cost overruns in PPP contracts over the limits set in the contracts does cast doubt on the true efficiency of this model, which is based on the premise that the private sector is more efficient when allowed to manage the entire project (design, construction, maintenance and operation).

The case studies in this book show several examples of the abovementioned. The Moncloa public transport interchange hub had cost overruns above anticipated levels at the beginning, because, on the one hand, there were some environmental problems not contemplated at first, and, secondly, the Regional Consortium of Transportation for Madrid imposed some changes on the already approved project.

El Dorado airport underwent a radical change in its conception, proposed by the concessionaire and accepted finally by the government, once the project had already been awarded. This change was due in part to the fact that the original design could not accommodate the growth in traffic. The additional investment was around 35% of the costs originally anticipated in the contract.

In the case of the highway projects in Costa Rica, the delay in the approval of the projects due to the administration's failure to secure the land, combined with subsequent contractual assignments and government-required changes to the projects, led the concessionaires of the two highways to file claims for substantial cost overruns against the government. Cost overruns around 60% of the value of the initial investment were recognized in the case of the San Jose-Caldera highway. In the case of the San Jose–San Ramon highway, the increased investment requested by the concessionaire was the equivalent to 143% of the original project contract, which made the concession unviable.

The case of the prisons of Group 1 in Chile is one of the most paradigmatic projects in terms of cost overruns. The tender was conducted based on a preliminary plan not completely defined. Once the contract was awarded, the

concessionaire proceeded to draft a final project plan. Even though there was a project against which the supervision could be conducted, in the end, cost overruns of about 77% of the total initial investment were recognized. The cost overruns can be attributed to three main factors: the novelty of the project; the involvement of two entities—the Ministry of Public Works and Chile's border police—in the definition of all prison project requirements; and the works inspector's laxity in accepting amendments proposed by the concessionaire.

The cases described demonstrate that the problem of cost overruns in construction is one of the most important aspects to address in PPP contracts in Latin America. It is impossible to defend the advantages of PPPs over other conventional tender models, until it is shown that these cost overruns are substantially limited.

Some measures that can help to alleviate the problem include:

1. Governments must make an effort to improve and expedite prefeasibility studies, technical specifications, demand studies, etc.
2. Governments should make sure to handle all actions under their jurisdiction expeditiously—such as land expropriations or licenses—to avoid causing any delays in the private contractor's work because this could result in a claim for cost overruns, which end up in a more expensive project. In the case of expropriations, the government must tender a project only once it has successfully expropriated the land.
3. In terms of the bidding, it should be clearly stated that the construction risk belongs to the private sector, and that the Government will only authorize cost overruns on grounds of public interest. The government must then have the legal and moral strength so that in the event that the winner of the tender does not fulfil its commitments, it can be quickly replaced by the consortium that came in second place in the tender proceedings.
4. Project changes requested by the state administration for reasons of public interest should be corroborated by a committee of independent experts. Similarly, when there are substantial project modifications, there must be some guarantee of competence in the implementation of the works, in order to keep changes from costing society more than what they should.

8.2.7 What is the best way to manage renegotiations?

Another aspect that has come to light in the majority of the case studies under analysis is the important number of contractual changes that occur in projects, which, in practice, end users or society pay for through their taxes. In many cases, these contractual changes are associated with aforementioned cost overruns recognized by the government, or to problems of imbalances in real demand stats against the projected demand.

In the case of the Moncloa interchange hub in Madrid, the increase in construction costs, coupled with lower-than-expected actual demand, led the

Regional Consortium of Transportation for Madrid to introduce guarantees of minimum revenue, not provided for in the original contract, which, at the time that it was approved, was higher than the income generated by the interchange hub. It was therefore an implied subsidy granted by the community of Madrid, so, indirectly, local citizens ended up contributing through taxes to pay part of the costs of the facilities.

In the case of Costa Rican highways, the problems were similar. The contractual changes experienced by the successive delays attributed to the government led to much higher toll fees than originally planned. In the case of the San Jose–San Ramon highway, the substantial changes sparked user protests, in response to which the government revoked the concession.

In El Dorado airport concession in Bogota, Colombia, the increase in investment as a result of the project's design changes forced the government to approve a flow of payments from public funds for USD 195 million. Once again, the Colombian people were the ones who had to pay for the increase in project costs.

Something very similar happened in the case of the prisons in Chile. The government compensated the concessionaire for allowed investment overruns through a direct payment of 2 million index-linked units (known as UF), in addition to a one-year extension of the concession term. Consequently, the cost overruns will also be paid by the Chilean people.

There are several lessons that emerge from the case studies. First, it is necessary to restrict the reasons for modifying contracts to public-interest matters. In this regard, it would seem reasonable that contractual changes must be endorsed by a panel of independent experts, an amendment that has been included in Chile's latest legislation. On the other hand, contracts should contemplate in advance a procedure to compensate the concessionaire in the event that a contractual change is inevitable, in order to reduce any arbitrariness as much as possible.

8.2.8 How to overcome the problems of social acceptance?

If PPPs are to be successful, it is important that society understand the advantages that these contracts offer over other alternatives. The case studies discussed in this book reveal significant differences in relation to the social acceptance of projects, although, in general terms, it can be concluded that people tend to oppose projects when their cost is not justified or is too high.

In the case of the Moncloa interchange hub in Madrid, public opinion was very positive, although it is true that the majority of users perceived a very significant increase in the quality of service that they did not have to pay more for, since, as discussed, the higher fares were absorbed by the bus operator because the interchange generated savings in the operating costs associated with their vehicles. Also, public subsidies, although they do exist, were barely perceived by Madrid's taxpayers because they were implicit through a guarantee of minimum revenue.

In regard to the highways in Costa Rica, the social acceptability was different in each of the two concessions analyzed. The San Jose-Caldera highway substantially improved accessibility at an affordable price for users, while free alternatives for circulating in private vehicles remained available. However, in the case of the San Jose-San Ramon highway, the substantial increase in the toll fee over the value originally announced to users sparked a social response so great that the government was forced to revoke the concession, which has damaged considerably the credibility of the concession model in that country.

The Tlajomulco Administrative Center faced some political resistance from the opposition parties, which announced that, if elected, they would return the complex to public hands. However, the reality for the citizens of the municipality was entirely different, due to the improvement in the quality of services perceived following the construction and opening of this complex.

Cost overruns at El Dorado airport in Bogota also generated some controversy in Colombian society over the period that the contractual changes were made in recognition of the higher levels of investment. However, protests gradually subsided due to the fact that this was the most important airport in the country and the substantial increase in demand justified the investments, not to mention that the contract itself left a door open for possible changes in the design.

In the case of the prisons in Chile, the social response was important for two reasons. The first is that the different reports that were released showed that the cost per inmate of prison under the concession scheme was higher than government-operated prisons. The second is that the main advantage of this system, which was the higher quality of service offered prison inmates, is not positively valued by taxpayers. Some opposing sectors argued: why pay more so that prisoners live better? Society may have been more accepting of this model if the approach had been to pay less so that the prisoners live under the same conditions as those at government-run prisons.

The lesson learned regarding social acceptability is that this will be higher as long as the price that users or society have to pay is compensated by the benefits that society perceives and values. However, as mentioned in the case of the quality of life of Chilean prison inmates, the benefits perceived by the users do not have to coincide with social benefits.

Another important aspect is that the concessionaire deliver what has been promised. The San Jose-San Ramon highway is a clear example of how the failure to comply with the prices announced to society ended up sinking the project.

A final point, which should not be forgotten, is that not all projects lend themselves to development under the PPP modality. There are cases of infrastructure with certain characteristics or significant social acceptability issues that render it necessary to continue opting for a conventional model of public provision, which should continue to play a very important role in the construction and management of infrastructure in any country.

8.2.9 How can the risks be distributed in a balanced manner?

One of the most important elements of PPP schemes is proper risk management so that risks should be distributed in the manner in which they create the highest value to society. This will occur where the risks are associated with the right incentives so that each of the parties strive to provide a better service.

The case studies analyzed show that Latin America is leaning toward models that transfer a significant amount of risk to the private sector, like in the case of Costa Rica's highways or El Dorado airport in

Bogota, or in favor of models of payment based on availability, in which the risk of operation is barely passed onto the concessionaire, like in the Tlajomulco CAT or the Chilean prison program. As a result, these contracts resemble conventional work contracts with a deferred payment, which does not stimulate management efficiency in the private sector.

There are lessons that can be extracted from these experiences. The first is that, as noted earlier, there are risks such as expropriation and traffic levels that should not be transferred entirely to the concessionaire. The second lesson is that contracts with quality and availability indicators should transfer more risk to the concessionaire, insofar as this can generate greater social wellbeing.

8.2.10 How to manage the financial closing?

One of the most controversial aspects of PPPs is to define the most appropriate time at which the government should demand the concessionaire's financial closing. While in some countries the contract is awarded once the financing has been secured and allocated, in others—including Spain and most Latin America countries—the contract is awarded without a definitive financial closing in place.

There are several reasons why Latin American countries opt to award contracts without financial closing: streamline the tender process, save costs for bidders when tendering and avoid giving too much power to financial institutions negotiating with concessionaires. Although the previous aspects represent important advantages, the reality is that in some of the analyzed cases, not requiring the financial closing can lead to problems if there is a sudden shift in market conditions that could ultimately result in major cost overruns in regard to the original bid. In the cases of the Moncloa interchange hub in Madrid and the San Jose-San Ramon highway, the lack of a financial closing resulted in cost overruns that ended up, in the first case, affecting users and, in the second case, making the project unfeasible.

The lesson to be learned from the experience is that even if a definitive financial closing is not required prior to awarding the contract, it seems reasonable that the government at least establish a deadline from the time of project approval or the granting of the construction permit for the concessionaire to close the financing. In the event that the concessionaire fails to comply with this requirement within the agreed period, the administration may choose to terminate the contract or award it to the second place in the original tender or launch a new tender.

8.3 The 12 challenges in Latin America

After covering the lessons learned from case studies in the prior chapters, in closing, the book will next highlight the twelve challenges key to PPP success in Latin America for the coming years. The challenges are the result of an analysis of the overall evolution of the infrastructure sector in Latin America, in addition to the assessment of the case studies covered in this book.

1. Prove that PPP projects create value in regard to conventional tenders. Although many countries are in the process of implementing an assessment mechanism known as value-for-money analysis, significant problems are inherent in this mechanism. On the one hand, they are implemented on an ex-ante basis, as such, they do not reflect the impact of contract changes introduced over the life of a project. On the other hand, they do not reflect aspects like quality of service or the possibility of making the project available to stakeholders in advance, which are key factors in project valuation. In this respect, the development of a methodology for quantifying PPP advantages ex post as regards conventional modalities, not only project costs but also benefits, would undoubtedly be of interest.
2. Ensure that PPPs are not used to finance projects without a social impact, which will just represent a large budgetary burden in the future. PPPs are not the end, they are a means to an end, as such, they should never be used to support projects that are not economically and socially visible. Latin American countries should not yield to the temptation to use PPPs for projects that deliver no social benefit and end up representing a burden upon future budgets, as other countries have done.
3. Better prepare the individuals promoting these projects from within the public sector and bolster their enthusiasm. The case studies described in this book show that many problems linked to PPPs are the result of the public sector's lack of agility or efficiency when it comes to getting things done in a timely manner. The public sector needs well-trained, dedicated government personnel with salaries in line with their level of responsibility and with the authority to drive these projects from within the public sector. That said, the case studies analyzed in this book show that preparation is as essential as enthusiasm and institutional support to guarantee a project's success.
4. Convert PPPs into a widespread project management format at regional and local levels alike. So far, the PPP model in Latin America has been used only for large projects, mainly transport initiatives managed by central governments. However, this model is applicable to any public infrastructure and public facilities project. The Administrative Center case in Tlajomulco is a clear example of how the PPP model can be successfully used for municipal and local projects. Latin America should explore the application of the PPP scheme in these areas.

5. Attract more participants and increase competition for public tenders. Governments need to strive to develop attractive tenders by creating an equal treatment scenario for everyone involved, informing stakeholders which projects are available for bidding and allotting sufficient time for bid preparation.
6. Find an effective way to transfer risks to the different players involved as a form of added value. This challenge can be met if the stakeholder charged with a given task (administrative agent, public agent, business, etc.) can perform it with success. For some projects, transferring the expropriation or demand risk to the private sector in full is not efficient due to the private sector's limited influence on the management of these risks.
7. Introduce only those contract changes that are strictly necessary in order to ensure public benefit once the winning bidder has been selected. In addition, these changes should reflect a continuing respect for competition in support of maximum social benefit.
8. Open the financing of PPP projects to all funding sources available in the market: national and foreign multilateral banks, and the capital market through infrastructure bonds or asset securitization. This will require countries to improve their legal and institutional framework to ensure maximum competition in financial markets.
9. Ensure that society recognizes the positive aspects of project developed under a PPP scheme. As described in this book, the general population does not always perceive the value of PPP projects because users feel that the benefits received are too low for the price they have to pay. A challenge for Latin America is to make society aware of the advantages of PPPs to improve development and their quality of life.
10. Successfully implement agile conflict-resolution mechanisms with the involvement of non–biased technical experts. PPP contracts can be construed in many ways and these different interpretations need to be addressed promptly and objectively. Along these lines, agile conflict-resolution mechanisms that employ the opinion of independent specialists as necessary may be of invaluable assistance.
11. Adjust the concessionaire's revenue models to schemes more closely tied to service delivery. Past experience shows that concessionaires have very limited influence over demand risk management. However, they can make an enormous contribution to improving project quality. This should gradually lead to the development of mechanisms that link concessionaires' revenues more to the service they provide, and less to the use of infrastructure.
12. Promote data transparency. By definition, PPP projects are public projects. Therefore, it only seems reasonable that society at large have access to project data, including contract changes, financing conditions, and the quality of services to be provided. Upon development of this book, we realized that there are many barriers to data and information access, despite the fact that this information is supposed to be public.

9

Bibliographic references

- Abedrapo, E. (2013). 'Panorama institucional de la asociación público-privada en Latinoamérica', paper presented to the training course *Análisis costo-beneficio para proyectos de infraestructura y servicios en México*, organized between the IADB and the SCT. City of Mexico.

- AEROCIVIL(2006). Contract Nº 6000169OK from 12 September. *Concesión para la administración, operación, explotación comercial, mantenimiento y modernización y expansión del Aeropuerto Internacional El Dorado de la Ciudad de Bogotá D.C.* Bogota.

- AEROCIVIL. (2008). *Concesión Aeropuerto Internacional El Dorado. Obras de modernización y expansión terminadas y en ejecución.* Bogota.

- Alborta, G. R., Stevenson, C. and Triana, S. (2011). *Asociaciones público-privadas para la prestación de servicios.* Una visión hacia el futuro. Interamerican Development Bank.

- Alonso, J., Bjeletic, J., Herrera, C., Hormazábal, S. and Romero, C. (2011). *Un balance de la inversión de los fondos de pensiones en infraestructura: la experiencia en Latinoamérica.* Nº 0920, Working Papers. The BBVA Economic Research Department.

- América Economía Intelligence (2013). *Mejores ciudades para hacer negocios en América Latina.* Dirección de Gestión de Conocimiento, Bogota Chamber of Commerce, Bogota.

- Aportela, F. & Durán, R. (2012). *La Infraestructura en el desarrollo integral de América Latina. Financiamiento. Metas y oportunidades*. CAF, Bogota.

- Arellano, J. (2003). 'Reforma penitenciaria: El caso del programa de concesiones en infraestructura penitenciaria en Chile', paper presented to the seminar Justicia y Gobernabilidad Democrática held by the Justice Studies Center of the Americas and the Ministry of Justice from Chile.

- Balmaseda, M., Daude, C., Melguizo, Á.& Taft, L. (2010). 'Financiando infraestructuras en América Latina. La relevancia de las infraestructuras', paper presented to the CAF-IFC-OCDE Seminar. 13-14 May. Bogota.

- Barbero. J. A. (2013). La Infraestructura en el desarrollo integral de América Latina. (Ideal 2013, Ed.). Corporación Andina de Fomento. Bogota.

- Barbero, J. A. (2011). *La Infraestructura en el desarrollo integral de América Latina.* Diagnóstico estratégico y propuestas para una agenda prioritaria. Corporación Andina de Fomento. Bogota.

- Benavente, P. & De la Torre, B. (2011). *Mejores prácticas de financiamiento de Asociaciones Público-Privadas en América Latina.* 4-5 May. Washington DC.

- Benavides, J. (2008a), *Alternativas de adjudicación de proyectos de concesión vial en Colombia*. Consultancy provided for the Ministry of Economy and Public Credit of Colombia financed by CAF –Development Bank of Latin America, pp. 1-190.

- Benavides, J. (2008b). *Cuatro microensayos sobre infraestructura y geografía en Colombia.* Working paper. Center of Strategy and Competitiveness. School of Management, University of the Andes. Bogota. pp. 1-17. Available from http://cec.uniandes.edu.co/pdf/ articulo2.pdf.

- Benavides, J. (2008c). *Contract renegotiation with and without hold up.* Working paper. School of Management, University of the Andes. Bogota.

- Berganza, I., López, A., Monge, P. y Navarro, S. (2012). *Las CPP en los países emergentes.* Análisis comparado. Refuerzo institucional. Master in infrastructure and public service management. Technical University of Madrid. Madrid.

- Bogota Chamber of Commerce (2014). *Observatorio de la región Bogotá–Cundinamarca Dinámica económica y empresarial*, pp. 1- 19. Bogota.

- Bogota City Hall. (2011). *Anuario de estadísticas económicas y fiscales de Bogotá.*

- Bojórquez, C. (2012). '¿Cómo operan las APP y PP's en las entidades?: Aspectos Jurídicos y Financieros', *Federalismo Hacendario*, 178, pp. 83–92.

- Boonefoy, J. C. and Armijo, M. (2005). *Indicadores de desempeño en el sector público.* Serie Manuales, 45. Instituto Latinoamericano y del Caribe de Planificación Económica y Social (ILPES). Santiago de Chile.

- Brady, K. y Galisson, K. (2008). *Dynamics of Private Sector Support for Education: Experiences in Latin America.*

- Calderón, R. (2013). 'APP para acelerar la infraestructura en ALC', Infraestructura, 17, pp. 17–19.

- Cardos, J. R., Alcoba, F. & Ignacio, Y. J. (2010). *Participación Público-Privada en la provisión de Infraestructura en Latinoamérica: dificultades para su implementación.* Colegio de Ingenieros de Caminos, Canales y Puertos, pp. 1–22. Madrid.

- Carpintero, S., and Barcham, R. (2012). Private toll roads: lessons from Latin America. In IACSIT Press (Ed.), *International Conference on Traffic and Transportation Engineering* (ICTTE 2012) IPCSIT vol. 26 (2012) © (2012) (Vol. 26, pp. 98–102). Singapore.

- Carpintero, S., Vassallo, J., and Soliño, A. (2013). 'Dealing with Traffic Risk in Latin American Toll Roads', J. Manage. Eng., 10.1061/(ASCE) ME.1943-5479.0000266 (Oct. 23, 2013).

- Castillo, D. (2013). 'Cada usuario de la vía a San Ramón pagará casi ¢30 millones en peajes a la empresa', EL PAÍS, La Nación, 8 April. Costa Rica.

- Carmach, M. (2013). 'Concesión de cárceles, la respuesta inconclusa', Revista de Derecho Penitenciario. March-May.

- Carvajalino, G., and Jimena, I. (2012). 'Empresas, fundaciones empresariales y educación en América Latina', *Programa de Promoción de la Reforma Educativa en América Latina y el Caribe* (PREAL), Nº 64. Chile. Available from www.preal.org/publicacion.asp

- CEFP (Centro de Estudios de las Finanzas Públicas). (2007). *Proyectos para Prestación de Servicios (PPS).* Mexico D.F.

- Cepeda, J. T. (2009). *Experiencia chilena en concesiones y asociaciones público- privadas para el desarrollo de infraestructura y la provisión de servicios públicos.* Final Report. Santiago de Chile.

- Cerdas, A. (2012). *Las concesiones en Costa Rica: Antecedentes y evolución. Dificultades y una propuesta.*

- CGR (Comptroller General of the Republic). (2011). *Informe sobre el control ejercido por el consejo nacional de concesiones sobre los ingresos del concesionario y el proceso de multas de la concesión de la carretera San José-Caldera.* Costa Rica.

- Clavijo, S., Vera, A. and Vera, N. (2013). 'La inversión en infraestructura en Colombia 2012-2020*. Efectos fiscales y requerimientos financieros', *Actualidad Económica,* ANIF, January-March, pp. 7–14.
- CNC (National Concessions Council). (2001). Contrato de Concesión Carretera San José-Caldera.pdf. Costa Rica.
- CNC. (2008). Supplementary agreement N° 1 to the San Jose-Caldera highway concession of public works with public services contract.
- CNC. (2010). Draft Addendum to the San Jose-San Ramon corridor concession of works with public services contract.
- CNC. (2013). San Jose-San Ramon Corridor. Description of project and benefits for users.
- CNC. (2000). *Cartel de licitación de la concesión de obra pública con servicio público de la carretera San José-Caldera*. pp. 1–297. Costa Rica.
- CMIC. (2012). *Asociaciones Público-Privadas: agenda e incidencia de la industria de la construcción en México.*
- Comptroller General of the Republic (2011). *Informe de auditoría al contrato de concesión al Aeropuerto Internacional El Dorado.*
- Consorcio Regional de Transportes de Madrid. (2004). *Contrato de concesión de obra pública para la construcción, conservación y explotación de un intercambiador de transportes en Moncloa.* Madrid.
- Consorcio Regional de Transportes de Madrid. (2005a). *Aforo de viajeros en las líneas interurbanas del intercambiador de Moncloa.*
- Consorcio Regional de Transportes de Madrid. (2005b). *Encuesta a los viajeros en el intercambiador de Moncloa.*
- Consorcio Regional de Transportes de Madrid. (2005c). *Concurso público de concesión, de ejecución de obra pública y explotación de un intercambiador de transportes en Moncloa. Memoria justificativa.*
- Consorcio Regional de Transportes de Madrid. (2007a). *Demanda en el intercambiador de Moncloa. Resultados 2007.* Madrid.

- Consorcio Regional de Transportes de Madrid (2007b). Addendum to the Moncloa transport interchange hub concession contract, executed on March 1, 2006.

- Consorcio Regional de Transportes de Madrid. (2007c). *Plan de Intercambiadores de Madrid.* Madrid.

- Consorcio Regional de Transportes de Madrid. (2008). D*emanda en el intercambiador de Moncloa. Resultados 2008.* Madrid.

- Consorcio Regional de Transportes de Madrid. (2009a). *Aforo en el intercambiador de Moncloa 2009.* Madrid.

- Consorcio Regional de Transportes de Madrid. (2009b). *Encuesta de calidad en el intercambiador de Moncloa 2009. Memoria.* Madrid.

- Consorcio Regional de Transportes de Madrid. (2011a). *Aforo en el intercambiador de Moncloa 2011. Memoria básica.* Madrid.

- Consorcio Regional de Transportes de Madrid. (2011b). *Informe anual 2011.*

- Cornick, J. (2013). The Organization of Cooperation for Productive Development Policies The Organization of Public-Private Development Policies. IDB working paper series, 437. Inter-American Development Bank.

- Costa Rica Chamber of Commerce (2013). Conciliation agreement between the government of Costa Rica and the firm OAS.

- Cruz, A. (2010). *El Project Finance: una técnica para viabilizar proyectos de infraestructura.* Serie Documentos de Trabajo, vol. 27, 61 p. Universidad ESAN. Lima.

- Dammert, L (2006). 'El sistema penitenciario en Chile: Desafíos para el nuevo modelo público-privado', *paper presented to the Meeting of the* Latin American Studies Association (LASA), San Juan, 15-18 March.

- Dammert, L. and Díaz, L. (2005), 'Cárceles privadas: ¿modelo de gestión penitenciaria o inversión inmobiliaria?'. *Observatorio: Programa de Seguridad y Ciudadanía,* vol. 5. Facultad Latinoamericana de Ciencias Sociales. Santiago de Chile.

- Department for the Coordination of Strategic Projects (2013). *Expediente Técnico del conjunto administrativo Tlajomulco*, pp. 1–24.

- Desarrolladora Centro Administrativo Tlajomulco. (2013). Addendum to the investment and service provision contract of the Tlajomulco Administrative Center. Jalisco.

- Dirección de Licitación y Normatividad de México. (2011). Legal opinion on the national public tender for the Tlajomulco de Zuñiga administrative complex. Jalisco.

- Di Ciommo, F., Vassallo, J. M., & Oliver, A. (2009). *Private Funding of Intermodal Exchange Stations in Urban Areas.* Transportation Research Record: Journal of the Transportation Research Board, 2115(-1), 20–26. doi:10.3141/2115-03

- Dobbs, R., Manyika, J. and Roxburgh, C. (2013). *Infrastructure productivity: How to save $1 trillion a year.* McKinsey Global Institute.

- Esty, B. C. and Sesia, A. (2011). *An Overview of Project Finance and Infrastructure Finance— 2009 Update.* Harvard Business School.

- Fedesarrollo (2013). *Infraestructura de transporte en Colombia.* p. 162. Bogota.

- Fernández, A. R. (2011). 'Los intercambiadores de transporte en el Consorcio Regional de Transportes de Madrid', paper presented to the XIII Congreso "*Profesionales IT" 2011 TESIC - Tecnologías y Seguridad en Infraestructuras Críticas*.

- FOMIN (2011). *Programa de promoción de Alianzas Público/Privadas para la región de América Latina y el Caribe.* Washington DC.

- Fundación BBVA (2010). 'Las fuentes del crecimiento económico en América Latina', Capital y Crecimiento, 6. Available from: www.fbbva.es

- Government of Chile (2001). Tender documents. Concession Program for Penitentiary Infrastructure.

- González, G. (2013). 'La carretera entre San José y San Ramón costará el doble, 8 años después de su inicio', *El Financiero.* 7 April. Costa Rica.

- Guasch, J. L. (2005). Concesiones en infraestructura. Cómo hacerlo bien, pp. 1-240.

- Herrera, L. M. 2013, 'Propuestas para construir vía a San Ramón son estudiadas por Hacienda', *EL PAÍS, La Nación,* 14 June. Costa Rica.

- Hinojosa, S. A. (2013). *"Value for Money" y la promoción de proyectos de inversión en infraestructuras mediante APP: mejores prácticas internacionales. Las asociaciones Público Privadas (APP) como alternativa de inversión de infraestructuras.* April. Lima.

- Hinojosa, S. A. (2010). *Un indicador de elegibilidad para seleccionar proyectos de Asociaciones Público-Privadas en Infraestructura y Servicios.* May. IKONS. Santiago de Chile.

- Hodges, J. T., and Dellacha, G. (2007). *Unsolicited infrastructure proposals: how some countries introduce competition and transparency.* Working Paper, 41730, vol 1. World Bank.

- IATA (2013). *Aeropuerto El Dorado, retos y oportunidades. La experiencia del pasajero.*

- Ibarra-Coronado, R. (2011). *La ley de concesiones de obras públicas chilena en el tiempo*.* 19 International Law, Revista Colombiana de Derecho Internacional, pp. 183–222. Available from: 1692-8156(201112)19<183:LDCOPC>2.3.TX;2-Z

- Inditec (2008). *Proyectos de Prestación de Servicios: Compilación de Experiencias.* Guadalajara, Jal. Mexico.

- Industry and Trade Superintendence. (2012). *Aeropuertos de Colombia.*

- INECO (2013). *Ecuador ama el transporte. Ineco ha realizado el Plan Estratégico de Movilidad 2013-2017.* Itransporte: Revista de ingeniería y consultoría del transporte, 48, 11–15. Madrid.

- Infraestructura CR (2013). 'Conclusiones equivocadas', *OPINIÓN, La Nación.* 30 April. Costa Rica.

- Interamerican Development Bank. (2013). *Evaluación del sistema concesionado versus el sistema tradicional en la reducción de la reincidencia delictual.* IADB.

- INVEX Controladora (2012). *Reflejo de 20 años trabajando con pasión. Informe anual 2011.* Mexico City.

- Jannuzzi, G. D. M., Rodríguez, O. de B., Dedecca, J. G., Nogueira, L. G., Gomes, R. D. M. and Navarro, J. (2010). *Energías Renovables para Generación de Electricidad en América Latina: mercado, tecnologías y perspectivas. International Copper Association.* Santiago de Chile.

- Jefatura del Estado. Government of Spain (2003). Law 13/2003, from May 23, regulating the public works concession contract.

- Jones Day. (2012). *Ley de asociaciones público-privadas: un nuevo régimen para las licitaciones públicas en México.* Mexico City.

- KPMG (2004). *Asesoría para la estructuración financiera, legal y técnica y puesta en marcha del esquema de vinculación de capital privado para el mejoramiento, mantenimiento y operación del Aeropuerto Internacional El Dorado de Bogotá.* Union Temporal KPMG LLP, Advisory Services Ltda., MMM, Duran Osorio, Impuestos y Servicios Legales Ltda. Bogota.

- LanammeUCR (National laboratory of materials and structure models, Department of evaluation of the national road network) University of Costa Rica (2010). *Informe de Evaluación del Proyecto San José-Caldera Ruta Nacional 27. Análisis de las especificaciones contractuales, año 2010.* Costa Rica.

- LATAM Capital Advisors LCA. (2010). PPS - *Complejo Administrativo Tlajomulco de Zúñiga. Análisis previo a licitación.*

- Loaiza, V. (2013). 'MOPT promete que San Ramón estará a 50 minutos en hora pico', EL PAÍS, La Nación, 5 April. Costa Rica.

- Lopez-Lambas, M. E., and Monzon, A. (2010). 'Private funding and management for public interchanges in Madrid', *Research in Transportation Economics,* 29 (1), 323– 328. doi:10.1016/j.retrec.2010.07.041

- Martínez, F. and Espinoza, O. (2009). 'Cárceles privadas en Chile: ¿El camino a la privatización?, Debates penitenciarios, e-journal Nº 9. Universidad de Chile.

- Mesalles, L. and Céspedes, O. (2009). *Obstáculos al crecimiento económico de Costa Rica.* Academia de Centroamérica, pp. 181-295). San José.

- Ministry of Finance and Public Credit (2001). Document Conpes 3107

- Ministry of Public Works of Chile. (1996). Law and regulations on public Works concessions. Santiago de Chile.
- Ministry of Public Works of Chile. (2010). *Inventory of infrastructure plans 2010.* Santiago de Chile.
- Ministry of Transport of Colombia. (2013). *Transporte en cifras. Estadísticas* 2012.
- Montaño, C. (2009). *Diario Oficial Estados Unidos Mexicanos.* Executive branch. Office of the Secretary of Finance and Public Credit. 4 August. Mexico City.
- MOPT (Ministry of Public Works and Transport of Costa Rica). (1998). Concession of Public Works with Public Services General Act and its Regulation N°7762.
- MOPT. (2010a). *Plan Nacional de Transportes de Costa Rica. Segundo Informe Parcial: propuesta de actuaciones inmediatas.* Costa Rica.
- MOPT. (2010b). *Plan Nacional de Transportes de Costa Rica. Primer Informe Parcial: Levantamiento de información general.* Costa Rica.
- MOPT. (2011). P*lan Nacional de Transportes de Costa Rica 2011-2035.*
- MOPT and CNC. (2002). Final tender specifications for the international public tender N° 03-2002 Concession of Public Works with Public Services San Jose-San Ramon. Costa Rica.
- MOPT and CNC. (2003). Addendum to the San Jose-Caldera highway concession of public works with public services contract. Costa Rica.
- MOPT and CNC. (2004a). *San Jose-San Ramon corridor concession of public works with public services contract.* Costa Rica.
- MOPT and CNC (2004). Addendum N°2 to the San Jose-Caldera corridor concession contract.
- MOPT and CNC (2005). Addendum N°3 to the San Jose-Caldera highway concession of public works with public services contract.
- MOPT and CNC (2007). Addendum N°4 to the San Jose-Caldera highway concession of public works with public services contract.

- MOPT and CNC. (2007b). Addendum Nº5 to the "San Jose-Caldera highway project" concession of public works with public services contract.

- MOPT and CNC. (2013). *"San Jose-San Ramon Corridor" Concession of Public Works with Public Services Contract.* Costa Rica.

- Municipality of Tlajomulco (2004a). Specifications for the national public tender Nº OP-EA-MUN-S3Z5-LP-0158-10 (Tlajomulco administrative complex). State of Jalisco.

- Municipality of Tlajomulco. (2004b). Tlajomulco de Zúñiga City Hall's investment and service provision contract. Jalisco.

- Municipality of Tlajomulco. (2007). Terms of reference for executive project No OP-EA-MUN-S3Z5-LP-0158-10 (Tlajomulco administrative complex). State of Jalisco.

- Observatorio Legislativo. (2012). *Asociaciones Público Privadas. Ley 1508 de 2012, 1-4.*

- Official Journal of the Municipality of Tlajomulco de Zúñiga. (2010a). 'Reglamento, Proyectos, Inversión y Prestación de Servicios del Municipio de Zúñiga', Gaceta Municipal. October. Jalisco.

- OPAIN. (2005). *Propuesta de licitación aeropuerto El Dorado.*

- Official Journal of the Municipality of Tlajomulco de Zúñiga. (2010b). 'Convocatoria No. 005/2010 para el proyecto de inversión (CAT) que comprende el diseño, construcción, equipamiento y operación del conjunto administrativo e infraestructura vial de acceso en la Cabecera Municipal del Municipio de Tlajomulco de Zúñiga', *Gaceta Municipal.* November. Jalisco.

- Orellana, J. R. (2010). 'Los asociaciones público-privadas (APP)*: una opción para contratación administrativa en Latinoamérica', *Revista de Derecho* (13), 97–108. Quito.

- Perrotti, D. E. and Sánchez, R. J. (2011). 'La brecha de infraestructura en América Latina y el Caribe', *Recursos naturales e infraestructura,* serie 153. CEPAL. Santiago de Chile.

- Peruvian Congress (2008). LEGISLATIVE DECREE Nº 1012. *Decreto Legislativo que aprueba la Ley Marco de Asociaciones Público-Privadas para la generación de empleo productivo y dicta normas para la agilización de los procesos de promoción de la inversión privada.*

- Pinglo, M. A., Guasch, J. L. and Foster, V. (2005). *'How profitable are private infrastructure concessions in Latin America? Empirical evidence and regulatory implications', The Quarterly Review of Economics and Finance,* vol. 45, pp. 380-402.

- Plan Maestro El Dorado Consortium. (2001). 2001-2025 Master Plan for El Dorado International Airport in the city of Bogota. Bogota.

- Pozueta Echavarri, J. (1997). *Experiencia española en carriles de alta ocupación. La calzada BUS/VAO en la N-VI: balance de un años de funcionamiento.* (S. de U. del I. J. de H. [SpyOT] E. T. S. de A. de Madrid, Ed.) (Instituto). Madrid.

- PROINVERSION (2005). *Las Asociaciones Público Privadas en el Perú.* Agencia de Promoción de la Inversión Privada. Lima.

- Quesada, G. (2008). *Experiencia mexicana en Asociaciones Público-Privadas para el desarrollo de infraestructura y la provisión de servicios públicos.* PIAPPEM, 1–147. IADB.

- Quesada Lastiri, G. (2009). 'Experiencia de México: el Modelo PPS bajo un enfoque de diseño y regulación institucional', *paper presented to the Primer encuentro técnico sobre la estructuración de proyectos de asociación público-privada.* City of Mexico.

- Quirós, R. (2012). *Estudio de valoración de beneficios socio-económicos y ambientales. Proyecto corredor San José-San Ramón.* Costa Rica.

- Reyes Peña, J. D. (2002). Garantías en carreteras de primera generación. Iimpacto económico. Departamento Nacional de Planeación. Colombia.

- Rica, A. L. de C. (2014). Proyecto de Ley de desarrollo de obra pública "corredor vial San José-San Ramón" mediante fideicomiso.

- Rodríguez, E. C. (2014). 'Las Concesiones y las Alianzas Público-Privadas en Costa Rica', *Foro de la Cámara de Construcción.* Costa Rica.

- Rojas, A. R. (2013). Informe de auditoría de carácter especial sobre la situación actual del proyecto San José-Caldera. Costa Rica.

- Rojas, P., Bonifaz, J.L. and Guerra-García, G. (2012). El financiamiento de la infraestructura. Propuesta para el desarrollo sostenible de una política sectorial. Published by the United Nations.

- Rozas, P., Bonifaz, J. L. and Guerra-García, G. (2012). El financiamiento de la Infraestructura. Propuestas para el desarrollo sostenible de una política sectorial. CEPAL. Santiago de Chile.

- Rozas, P. and Sánchez, R. (2004). 'Desarrollo de infraestructura y crecimiento económico: revisión conceptual', R*ecursos naturales e infraestructura,* serie 75. CEPAL. Santiago de Chile.

- Sánchez, J. A. (1997). Documento de política de concesiones para Costa Rica. Costa Rica.

- Sánchez Soliño, A. (2000). 'Infraestructuras, estabilidad y crecimiento', *Revista de Obras Públicas,* N° 3400. July-August. Spain.

- Sandino, B. (2011). 'Lecciones aprendidas en el proyecto de concesión de obra pública y servicios públicos San José-Caldera', *Ruta Nacional,* N° 27. Costa Rica.

- Santamaría, J. (2001). Estudio sobre situación y estructura de financiamiento del Sistema de Concesiones de Infraestructura en Chile. MOP. Santiago de Chile.

- Santos, E. Dos, Torres, D., and Tuesta., D. (2011). Una revisión de los avances en la inversión en infraestructura en Latinoamérica y el papel de los fondos de pensiones privados. BBVA Research. Madrid.

- Secretariat of Communications and Transportation (2006). *Asociaciones Público-Privadas para el desarrollo carretero de México.* Mexico, D.F.

- Secretariat of Communications and Transportation (2013). Programa de Inversiones en Infraestructura de transporte y comunicaciones 2013-2018. City of Mexico.

- Sequeira, Aarón. (2013). 'Libertarios presentan proyecto de ley para crear fideicomiso pro carretera a San Ramón', *EL PAÍS - La Nación,* 7 May, Costa Rica.

- Sequeira, Aarón. (2013). 'Préstamo o un peaje de consenso son las opciones para vía San José-San Ramón', *La Nación.* Costa Rica.

- Serebrisky, T. (2013). 'Should the Government Provide Subsidies to PPP Projects?', *paper presented to the Transportation Research Board Annual Meeting,* Washington DC, 14 January 14.

- Siu, M. (2013). 'INS financiaría carretera a San Ramón si se incluyen fondos de pensiones, bancos estatales y otros inversionistas', *Noticias 24/7,* 9 May. Available from www.crhoy.com. Costa Rica.

- Teletica. (2013). 'Foro de Occidente entrega propuesta a Presidencia para carretera a San Ramón', *Nacional - Noticias | Teletica,* 3 July, pp. 6–7. Costa Rica.

- Tlajomulco Administrative Center and Municipality of Tlajomulco de Zúñiga. (2011). Administration Trust Fund Contract N° 1093. Jalisco.

- The World Bank. (2012). *Private investment in Latin American infrastructure grows in the energy sector and in Brazil,* pp. 1–12. Available from http://ppi.worldbank.org/

- The World Bank. (2013). *Private Participation in Infrastructure Projects Database, Mailstop MC4 419, 1818 H St. NW, Washington,* DC 20433 © 2014. The World Bank Group.

- Tuesta, D. (2013). 'Uso de los fondos de pensiones en Obra Pública: experiencia de los países latinoamericanos', BBVA, *Acceso de los fondos de pensiones al financiamiento de obra pública.* 7 August. San José, Costa Rica.

- T.Y. Lin International. (2014). Actualización del Plan Maestro del Aeropuerto Internacional El Dorado. pp. 1-22.

- Universidad de Costa Rica. (2013). *Pronunciamiento sobre la concesión de obra pública y la carretera San José-San Ramón.* Costa Rica.

- Vargas, V. (2013). 'Concesión de vía San José-San Ramón cumple 100 meses y las obras no se inician', *La Nación,* 1 February. Costa Rica.

- Vassallo, J.M. (2013). 'Claves para el éxito de las iniciativas privadas', *Claves de las APPs: Financiación e Iniciativas Privadas.* 28 May. Bogota.

- Vassallo, J. M. (2006). 'Traffic Risk Mitigation in Highway Concession Projects: the Experience of Chile', *Journal of Transport Economics and Policy,* vol. 40 (3), pp. 359- 381.

- Vassallo, J. M. and Sanchez Soliño, A. (2006). 'Minimum Income Guarantee in Transportation Infrastructure Concessions in Chile', *Transportation Research Record,* vol. 1960, pp. 15-22.

- Vassallo, J. M. and Izquierdo, R. (2010). *Infraestructura pública y participación privada: conceptos y experiencias en América y España.* CAF, Caracas.

- Vassallo, J. M., Di Ciommo, F., and García, Á. (2011). 'Intermodal exchange stations in the city of Madrid', *Transportation,* 39(5), 975–995. doi:10.1007/s11116-011-9377- 2.

- Vassallo, J. M., Sierra, J., and Saldaña, P. (2011). Las Infraestructuras de Transporte en las Grandes Áreas Metropolitanas y su Contribución al Desarrollo "El Caso de Madrid."

- Vega, L. A. (2003). *La legislación de las concesiones viales de Colombia frente a las de Chile y España.* Research Work. Department of Transport, High Technical School of Engineers for Roads, Canals and Ports. Madrid.

List of tables, charts and figures

List of tables

- Table 2. 1. Traffic risk allocation models (1992-2010)
- Table 3.1. Number of workers broken down by their place of work and place of residence
- Table 3.2. Public transport system in the Community of Madrid
- Table 3.3. Fundamental impact of transport interchange hubs operated under a concession program
- Table 3.4. Structure of the consortiums participating in the tender of the interchange in Moncloa
- Table 3.5. Key bid data
- Table 3. 6. Award criteria
- Table 3. 7. Score broken down by sections and bids
- Table 3.8 Summary of milestones in the bidding process
- Table 3. 9. Expected distribution of revenue (in constant 2006 EUR, VAT not included)
- Table 3. 10. Fares obtained by the concessionaires during the first year of operation
- Table 3.11. Operating costs of the concession expected for 2009 (in constant 2006 EUR, VAT excluded)
- Table 3.12. Cost overruns and renegotiations of fares and terms in Madrid's transport interchange hub concessions
- Table 3.13. Initial shareholders of the transport interchange hub concessionaires
- Table 3.14. Current shareholders of the transport interchange hub concessionaires
- Table 3.15. Baseline data for the Moncloa interchange hub financing: comparison between the actual debt and the debt levels forecasted in the economic-financial plan of the concession agreement

- Table 3.16. Revenue forecast in the economic-financial plan submitted with the awarded bid and the operating income in 2013.
- Table 3.17. Revenue perceived from actual demand compared to revenue perceived from guaranteed demand mechanism for intercity bus lines of the Moncloa interchange hub
- Table 3.18. Variation between the updated economic-financial plan and the actual operating output
- Table 4.1 Planned investments, National Transport Plan 2011-2035, Costa Rica
- Table 4. 2. Revenue sharing by the state in estimated revenues from tolls in the original and final contracts of the San Jose-Caldera highway concession
- Table 4.3 Minimum revenue guaranteed by the state, original and final contracts of the San Jose-Caldera highway concession
- Table 4.4. Fines imposed by the granting entity for incompliance with the terms of the concession contract for the San Jose-Caldera highway
- Table 4.5. Toll fees at the toll stations of the San Jose-San Ramon highway concession project before and after the contract was renegotiated.
- Table 4.6. Minimum revenue guarantees by the state in the original and final contract for the San Jose-San Ramon highway concession
- Table 4.7. Financial model used for the San Jose-Caldera highway
- Table 4.8. Financial model of the offer submitted by the successful bidder, Autopistas del Valle, S.A. in the initial contract for the San Jose-San Ramon highway
- Table 5.1 Airport projects developed under PPP schemes in Latin America and the Caribbean (1990-2013)
- Table 5.2. Airport concessions in Colombia
- Table 5.3. Analysis of alternatives for enlisting private capital
- Table 5.4. Evaluation of the alternatives for bringing in private capital
- Table 5.5. Projected traffic growth 2005-2020

- Table 5.6. Experience required of the bidders
- Table 5.7. Composition of the participating consortia in the bid for El Dorado airport and the offered 'fee'
- Table 5. 8. Overview of the main milestones of the bidding process
- Table 5.9. Risk allocation in El Dorado airport concession
- Table 5.10 Passenger service quality indicators that the concessionaire must report
- Table 5.11 Cargo service quality indicators that the concessionaire must report
- Table 5.12. Annual values agreed upon by AEROCIVIL and OPAIN
- Table 5.13. Initial shareholding structure of the winning consortium (OPAIN)
- Table 5.14. Current shareholding composition of the winning consortium (OPAIN)
- Table 5.15. Project cost and financial plan
- Table 5.16. Characteristics of CAF loan
- Table 6.1. Evolution of the population and municipal employees of Tlajomulco de Zúñiga since 1995
- Table 6.2. Tlajomulco de Zúñiga's budget for income and expenses in 2011
- Table 6.3. The municipality's bank debts as of June 2011
- Table 6.4. Expected annual payment ranges under different scenarios
- Table 6. 5. Components of the fee accepted in the awarded bid
- Table 6.6. Fees paid in January 2011
- Table 6.7. Percentage of credit amortization
- Table 6.8. General conditions of the syndicated loan

- Table 7.1. Services provided by the concessionaire
- Table 7.2. Features of Group 1 prisons
- Table 7.3. Calculation of the technical weighted passing score
- Table 7.4. Technical bid weighting
- Table 7. 5. Prison monitoring indicators
- Table 7. 6. Comparison of both models
- Table 7. 7. Allocation of main risks
- Table 7. 8. Characteristics of the concessionaire company

List of charts

- Chart 2.1. % of GDP invested in infrastructure 1992-2011
- Chart 2.2. Private investment in infrastructure in Latin America from 1990 to 2012
- Chart 2.3. Evolution of the number of projects in different sectors developed under the PPP model in Latin America
- Chart 2.4 Evolution of the number of projects developed under different modalities of PPP contracts in Latin America
- Chart 5. 1. Demand forecasting vs. real demand

List of figures

- Figure 2.1 Future investments planned in engineering and infrastructure in Latin America
- Figure 3.5. Madrid's regional institutional and operational framework for public transport
- Figure 4.1 Transport infrastructure projects implemented under public works concessions in Costa Rica until 2014

- Figure 4.4. National Concessions Council Organizational Chart
- Figure 5.2. Description of revenue collected by the concessionaire of El Dorado airport
- Figure 5.3. State's management policy of contractual risk in processes of private participation in infrastructure in Colombia
- Figure 5.4. Original design (A) and final design after the modification (B)
- Figure 5. 5. Definition of the delta
- Figure 5. 6. Typical project structure
- Figure 6.1. Municipal revenue from 2005 to 2011. Increase in federal contributions.
- Figure 6.6. Comparison of the PDR project and the PPS project
- Figure 6.7. Comparison of the PDR project and the PPS project. The project's value for money
- Figure 6.8. Legal-financial structure of the project
- Figure 6.9. Risk allocation matrix
- Figure 6.10. BANOBRAS liquidity guarantee scheme
- Figure 6.11. Financial flows of the project
- Figure 6. 12. Structure of the trust fund
- Figure 6. 13. Current shareholders of the consortium awarded the CAT
- Figure 7.2. Virtuous circle thanks to the concession of penitentiary facilities
- Figure 7.5. General scheme of the contractual management of the concession
- Figure 7.6. Organizational chart of the concessionaire for each penitentiary establishment

List of images

- Image 3.1 Madrid Metropolitan Area
- Image 3.2 Road infrastructure in the Community of Madrid
- Image 3.3. Fare zones
- Image 3.4. Transport interchange hub system using access corridors reaching Madrid
- Image 3.6 Moncloa station in 1990 and layout after the interchange hub construction in 1995
- Image 3.7. Renovation and expansion works at the Moncloa interchange hub in 2008
- Image 3.8. Front elevation plan of Moncloa interchange hub in 2008
- Image 4.2. Map of the San Jose-Caldera highway project, Costa Rica
- Image 4.3. Map of the San Jose-San Ramon highway project, Costa Rica
- Image 5. 1. Airports in Colombia
- Image 6.2. Mexican states that have created or reformed their legislation on investment and service provision projects
- Image 6. 3. View of the new Administrative center
- Image 6. 4. Interior hall of the Administrative center
- Image 6. 5. Layout of the Tlajomulco de Zúñiga Administrative center
- Image 7.1. Distribution of penitentiary facilities under concession
- Image 7.3. Location of the Rancagua prison
- Image 7.4. Image of the Rancagua prison

Printed in July, 2015 in
Bogota, Colombia.
Limited edition of 500 copies.

CAF is a multilateral financial institution, whose mission is to support the sustainable development of its shareholder countries and regional integration in Latin America. The institution's shareholders are the following: Argentina, Barbados, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Jamaica, Mexico, Panama, Paraguay, Peru, Portugal, Spain, Trinidad & Tobago, Uruguay, Venezuela and 14 private banks within the region.

CAF serves the public and private sectors, providing a variety of products and services to a broad portfolio of clients, including shareholder nations, private companies and financial institutions. Social and environmental benefits are at the core of the Institution's management policies, with eco-efficiency and sustainability criteria included in all of its operations. As a financial intermediary, CAF channels resources from international markets into Latin America, promoting investment and business opportunities.

CAF DEVELOPMENT BANK OF LATIN AMERICA

www.caf.com