

Pre-Investment

in Infrastructure in Latin America and the Caribbean

Case Studies from
Chile, Mexico, Peru and Uruguay

Juan Alberti



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Abstract

There is evidence that suggests that an “infrastructure gap” vis-à-vis other industrial and developing regions opened up in Latin America and the Caribbean (LAC) over the past two decades. In this context, the Inter-American Development Bank (IDB) conducted a public consultation process in 2013 during which several participating stakeholders from the public and private sectors analyzed the current situation. They indicated a particular need to improve the pre-investment phase of the infrastructure project cycle in LAC. Therefore, this report studies why the region is having a problem with the pre-investment phase and what the consequences are. It uses a multiple-case-study design to confirm that the countries’ institutional strategy for pre-investment is failing because: it has not been adapted to address new problems; the strategy does not always consider political acceptability issues; there are undesired interactions between the different institutions participating in the process; and there is a lack of sufficient resources to implement the strategy correctly. In order to analyze the consequences of the current strategy, this paper develops a benchmark using previous findings and other smart practices. LAC institutionalism and this benchmark are then used as two possible alternatives to draw a policy analysis. Outcomes are estimated for the two alternatives in terms of transactional hazards, using the new transaction cost regulation body of knowledge, and the alternatives are compared in terms of cost-effectiveness, considering that these hazards are responsible for potential cost overruns and delays. The analysis concludes that a flawed pre-investment process in LAC is probably contributing to cost overruns and delays. Specific institutional recommendations are put forth to mitigate these consequences, including institutionalizing stakeholders’ participation when generating a vision and goals for future infrastructure investments; increasing governmental capacity, particularly in terms of human resources, to develop specific types of pre-investment studies; and institutionalizing the participation of self-described “interested parties” when a project is first accepted, and before project implementation starts. The paper concludes that there is room for feasible policy improvements in the pre-investment phase in LAC that would enhance infrastructure delivery, boost growth, and promote development in the region.

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Chapter 1 Introduction

Insufficient infrastructure in a country or region in terms of availability, quality, and accessibility can have a direct impact on its economic and social development. There is evidence that suggests that an “infrastructure gap” vis-à-vis other industrial and developing regions opened up in Latin America and the Caribbean (LAC) over the past two decades. In this context, the Inter-American Development Bank (IDB) conducted a public consultation process in 2013 to solicit feedback on the priority areas of its Infrastructure Strategy. Several public and private sector stakeholders that participated indicated a particular need to improve the pre-investment phase of the infrastructure project cycle. Cost overruns and delays were associated with flaws related to this critical phase of the project cycle.

Theoretically, countries and communities have several reasons to promote a proper planning process in infrastructure. Stakes are high because infrastructure projects are often large and expensive. Moreover, decisions extend for years, implementation takes time, and debt financing is often used. Yet even though these considerations seem obvious, there has only been a modest amount of research about them, prompting a serious need for proper exploration of these issues. The IDB, Development Bank of Latin America (Corporación Andina de Fomento – CAF), World Bank, and United Nations Conference on Trade and Development (UNCTAD) have published research on the topic, but additional research is needed to draw specific recommendations.

Two key research questions that this paper intends to answer are:

- Why is the pre-investment phase of the infrastructure project cycle a problem in LAC?
- How is the inadequate pre-investment phase affecting infrastructure delivery?

The paper answers both questions using different tools. For the first question – why is the pre-investment phase of the infrastructure project cycle a problem in LAC – a multiple-case study design is used. Four carefully selected countries are analyzed to corroborate the replicability of a set of initial hypotheses regarding why the current pre-investment process is failing in LAC: (1) the strategy has not been adapted to new problems; (2) the strategy does not always take into account political acceptability; (3) there are insufficient resources to implement the strategy correctly; and (4) there are undesired interactions between the different institutions that participate in the process. Case studies using a pattern-matching logic help to demonstrate that empirical and predicted patterns show manifest similarities, confirming the hypotheses.

For the second question – how is the inadequate pre-investment phase affecting infrastructure delivery – the abovementioned findings are taken into account along with formal extrapolation from relevant sources in order to develop a feasible institutional benchmark. LAC institutionalism and this benchmark are then used as two possible alternatives to draw a policy analysis. For those alternatives, outcomes are estimated in terms of transactional hazards, using the transaction cost regulation literature, and compared in terms of cost-effectiveness, taking into account that these hazards are responsible for potential cost overruns and delays.

This paper concludes that the flawed pre-investment process in LAC might be contributing to cost overruns and delays, as this finding is replicated for all the analyzed countries. There are three general recommendations that would probably mitigate these consequences: institutionalizing stakeholders’

participation when generating a future vision and goals in terms of infrastructure planning; increasing governmental capacity, particularly in terms of human resources, in the development of specific pre-investment studies; and institutionalizing the participation of self-described “interested parties” when a project is first accepted, and before project implementation starts.

These recommendations could be implemented as policies in each of the selected countries, and could easily be extrapolated to other countries of the region where the pre-investment phase problem persists as well. The final recommendations for LAC countries, resulting from this paper include establishing a specific institution, made up of several stakeholders, to take charge of developing a long-term infrastructure plan; a specific mechanism to involve interested parties in the earliest phases of infrastructure projects; and a fund to increase the government’s sectoral capacity to enrich the development of profile, feasibility, and design studies implemented by public institutions in charge of infrastructure projects.

Chapter 2 Literature Review

2.1 Context and Motivation

2.1.1 Infrastructure and Economic Growth

Infrastructure is the basic physical and organizational structure needed for a society to operate. Although there is no standard definition, infrastructure is usually subdivided into economic infrastructure, social infrastructure, and soft infrastructure. Economic infrastructure, which is discussed here, includes transport facilities (air, sea, and land), utilities (water, gas, and electricity), flood defenses, and waste management, among other facilities and services (WEF, 2012).

There is indisputable evidence that economic infrastructure development and economic growth are related (Calderon and Servén, 2010; Esfahani and Ramírez, 2003; Fay and Yepes, 2003). Determining causality, however, is more difficult. The problem is what comes first, public facilities or growth? Growth influences capital facility needs, and the availability of capital facilities influences growth patterns. It is generally accepted that both are needed in a developing region, country, or community, in line with a detailed and comprehensive plan. Infrastructure and economic growth should be aligned with economic, industrial, social, and environmental priorities (Kelly, 1994).

Infrastructure affects output in direct and indirect ways. First, it contributes to increasing the gross domestic product (GDP) by providing transport services, telecommunications, drinking water, power supply, and sanitation services. Second, it creates externalities on production and investment. Third, it influences the productivity of the rest of the economy, in different production processes, and at the business level (Rozas and Sánchez, 2004).

Under certain conditions, infrastructure development may promote growth, equity, and environmental sustainability. The extent to which it promotes these desirable outcomes will depend on how coherent the investments are in the context of each country's situation. Consequently, planning is essential. Countries should have a national economic infrastructure plan that takes into account baselines and medium- and long-term objectives. Moreover, governments should ensure that their plans are effectively and efficiently implemented in order to avoid cost overruns and delays, which can diminish growth and development potential.

2.1.2 Infrastructure Gap in Latin America and the Caribbean

There is evidence that suggests that an “infrastructure gap” vis-à-vis other industrial and developing regions opened up in Latin America and the Caribbean over the past two decades. The region lags behind other middle-income countries, and even further behind East Asia, in almost all dimensions and infrastructure sectors (Calderón and Servén, 2010). Closing this gap requires policy measures to raise investment levels and reinforce the regulatory, organizational, and institutional environment.

The infrastructure gap in LAC is both horizontal and vertical. The horizontal gap has to do with internal factors – that is, when the domestic supply of infrastructure and the demand for it trend differently. In a study for the Economic Commission on Latin America and the Caribbean, Perroti and Sánchez (2011) found that the region would need to spend 5.2 percent GDP per year to maintain the infrastructure

investment flows required to meet the needs of companies and end-users over 2006–2020.

The vertical gap refers to a certain objective, such as a comparison with other countries. To reach the levels of per capita infrastructure stock of East Asian economies such as Korea, Malaysia, Singapore, and Hong Kong SAR by 2020, LAC would need to spend 7.9 percent of GDP per year (Perroti and Sánchez, 2011).

An example of what is happening in LAC is urban infrastructure. The need to improve the quality of infrastructure planning across many sectors is undeniable. The apparent deficit is particularly pronounced in relation to water resources (drinking water, wastewater, and storm drainage) and transportation. It is estimated that the water sector would require US\$12.5 billion annually (almost triple the current investment) over the next 20 years to close the gaps in infrastructure. For its part, the lack of adequate urban infrastructure for transportation of people and goods has serious effects on the quality of life of the population, both in terms of health (due to contamination of the environment) and social relations. The impact of traffic congestion in cities has been estimated at up to amount to 2 percent of GDP (Barbero, 2012).

2.1.3 The Infrastructure Pre-investment Constraint in Latin America and the Caribbean

Although an improved fiscal situation in LAC has helped increase public and private investment in infrastructure sectors in recent years, the level is not enough to close the infrastructure gap. Growth in demand has not been accompanied by a proper planning process for the provision of infrastructure and basic social services. This disproportionately affects the poorest populations, particularly in terms of their exclusion and vulnerability (Barbero, 2012).

Historically, LAC countries have generally used a planning process that only takes into account specific needs. Synergies between sectors are not usually considered. The way that governments in the region are organized has led to a fragmented infrastructure delivery model in which sectors do not consider the affects (positive and negative) of a project on other sectors. There is a need to expand multisectoral approaches to leverage the synergies between infrastructure sectors (IDB, 2013).

The pre-investment phase of the infrastructure project cycle is relevant to achieve this multisectoral approach and deliver infrastructure projects in an efficient way, diminishing cost overruns and delays. However, there is general consensus that this phase is a problem in the region. As a result, the IDB conducted a public consultation process in 2013 to solicit feedback on the priority areas of its Infrastructure Strategy. The bank worked with key stakeholders such as governments, private sector entities, civil society, policymakers, and experts to enrich the content and design of the strategy. The process identified the need for improvements throughout the entire infrastructure project cycle. However, it found that, in general, stakeholders believe there is a particular need for improvements in the pre-investment phase. This diagnosis came from practitioners, academics, government officials, and representatives of other multilateral institutions.

The IDB has a long history of working with countries of the region to improve public sector performance at each stage of the project cycle. However, after this public consultation process, it was clear that there is a specific need to enhance its assistance to improve the infrastructure pre-investment phase in order to start closing the infrastructure gap in order to help promote growth and development in the region.

2.1.4 The Pre-investment Phase of the Investment Cycle

The infrastructure investment process is normally divided into four phases: pre-investment, investment, operation, and ex-post evaluation (Cohen and Martinez, 2004).

In the pre-investment phase, authorities need to decide if a selected alternative should be implemented. This phase is the process of preparing the studies and analyses needed to clarify the appropriateness of implementing certain projects (Cohen and Martinez, 2004). Moreover, this phase serves to eliminate possible uncertainties and avoid taking unnecessary risks. As a first step, the government starts eliminating those uncertainties that can translate into general inefficiencies, such as cost overruns and delays.

The investment stage is the implementation of the project. It includes all those actions aimed at putting the formulated and evaluated suitable solution into place. During the operation phase, the project is realized; that is, the installed asset initiates the generation of the product, good, or service in order to achieve the specific goal for which it was created. Finally, the ex-post evaluation stage studies if the project was a solution to the initially identified problem.

As explained in the previous section, there is a particular need to study the current state of the infrastructure pre-investment phase in LAC because, according to how this phase has been defined above, there is a need in the region to clarify the appropriateness of implementing particular projects, eliminate possible uncertainties, and avoid unnecessary risks.

The pre-investment phase begins with the general identification of a number of projects and ends when project execution starts. It is needed to ensure the relevance, feasibility, and effectiveness of the options considered, and should include general and specific studies. The first studies should include master plans, strategic plans, regional studies, and sectoral studies. The studies that follow should include engineering designs, economic analysis, financial studies, and legal and environmental viability analyses.

For the purpose of this study, the pre-investment phase is divided into two large groups of activities. The first is the generation of project ideas, and the second covers project profile to feasibility and design studies. This paper analyzes why LAC is currently facing problems with its pre-investment phase, what the consequences are for the public interest, and how to maximize society's net benefits.

2.2 Theoretical Approach

2.2.1 Transaction Cost Economics

This paper uses transaction cost economics (TCE) as the theoretical basis to better address the problem under study. TCE started with two works by Ronald Coase, "The Nature of the Firm" (1937) and "The Problem of Social Costs" (1960). He challenged mainstream neoclassical economics by introducing the concepts of transaction costs, property rights, and contracts, which he said influence the entire economy. Government policies are used to reduce overall transaction costs and define property rights in a context of interrelated structures, influenced by laws, social systems, and culture, among other factors (Coase, 1937, 1960; Coase, 1998, p. 2). This theoretical approach is used in this paper to analyze

the institutionalism of infrastructure planning in LAC. Under this body of theory, careful planning should be the medium through which society reduces several associated transaction costs when developing new infrastructure. If the government fails to minimize transaction costs due to a flawed pre-investment phase, then society's net benefits are not being maximized.

Separately, Douglas North, another important representative of this school of knowledge, analyzed broader institutional environments. He concentrated his studies on the role of the state and its fundamental characteristics, using transaction cost economics as well. In his view, "Third World countries are poor because the institutional constraints define a set of payoffs to political/economic activity that does not encourage productive activity" (North, 1990, 110). He associates economic and social development with sophisticated economic organizations and credible enforcement of property rights and other contractual commitments, but he still believes that institutional reforms are path-dependent and that identical laws or rules produce very different outcomes across countries (North, 1990). These ideas are used in this paper as well, as transaction costs may be reduced with changes in the pre-investment process only by taking into account changes in the margin of the current path selected by LAC countries, bearing in mind that rules from other places may have different affects in a particular institutional setting.

Oliver Williamson, who followed Coase's line, studied the role of incomplete contracts, driven by bounded rationality and opportunism, as a consequence of information scarcity, resulting in principal agent problems, adverse selection, and moral hazards. Williamson rescues several good ideas from this body of knowledge, and two of them are specifically selected to address the problem of the institutional context of infrastructure pre-investment: feasibility issues and treatment of firms (Williamson, 2000, 2002).

In terms of feasibility issues, Williamson (2000) explains that a particular mode of organization is efficient when no superior feasible alternative can be described and implemented with expected net gains. He calls this the "remediableness criterion," which implies that policy analysts must only consider improvement opportunities that are feasible. Analysts cannot condemn public policies that only deviate from hypothetical ideals (Williamson, 2000). This paper gives special attention to this point when constructing the benchmark to establish a possible institutional alternative.

In terms of the treatment of firms, Williamson (2000) considers firms as governance structures, or as organizational constructions, that are created to face contractual hazards and security features. He states that public agencies can be analyzed as a consequence of especially difficult transactions. In particular, government procurement institutions can be viewed as a consequence of the existence of several contractual hazards and the complexity of security features (Williamson, 2000).

Sclar (2000, p. 100) explains that new institutional economics, the root of TCE, "connects rationality concerns of transaction cost economics with formal and informal rules that social institutions impose on the behavior of individuals and organizations, [and] creates a more robust but less specific context in which to evaluate contractual and organizational behavior." Menard and Shirley (2011) note that new institutional economics is a good theoretical base to compare costs of different institutional schemes, which is exactly what the present paper proposes.

2.2.2 Transaction Cost Regulation

According to Williamson (2000), there are four levels of social analysis. The first, embeddedness, is related to informal institutions, customs, traditions, norms, and religion. The second level is the institutional environment, which is related to formal rules, such as constitutions, laws, and property rights. It includes the executive, legislative, judicial and bureaucratic functions of government. Level three is related to the institutions of governance, understood as the rules of the game, specifically contracts, aligning governance structures with transactions. Finally, the fourth level is about resource allocation and employment.

This paper concentrates on analyzing levels two and three of Williamson's social analysis, as they are associated with the pre-investment phase for infrastructure, with the understanding that there is an opportunity to improve the institutional environment (first-order economizing) and consequent governance structures (second-order economizing). Final governance structures should infuse order, mitigate conflict, and realize mutual gains. This paper assumes that a public agency is a flawed organizational entity in which transaction costs are featured and strengths and weaknesses of different and feasible modes of organization must be analyzed comparatively (Williamson, 1999).

In order to do this, this paper uses the recent framework proposed by Spiller (2013), which he calls "transaction cost regulation." Spiller specifies that the determinants of regulatory institutions and regulatory performance are those hazards characterizing government/investor relations, and that the intensity of these hazards varies with the institutional environment of the jurisdiction under analysis. Therefore, the relationship between institutional environments and transaction hazards is of particular interest. This relationship is the determinant of the specificity and rigidity of regulatory contracts, and it leads to more litigation and conflict (Spiller, 2013). In other words, the relationship between institutional endowment and hazards generates costs overrun and delays.

According to North (1981, 1990), the institutional endowment includes five elements: legislative and executive institutions, judicial institutions, administrative capabilities, customs and informal norms, and the nature and balance of contending social interests (including ideology). Consequently, in this paper, outcomes are projected in terms of hazards for each institutional environment (benchmark and LAC), and those outcomes are then linked to potential inefficiencies. The hazards proposed by Spiller (2008) include risks associated with standard opportunistic behavior, governmental opportunism, and third-party opportunism. To sum up, in this paper we intend to analyze and propose efficient ways to economize transaction hazards in the pre-investment phase.

Menard and Shirley (2011) maintain that the existing literature, concerning TCE, is characterized by the use of interdisciplinary approaches and case studies, rather than more mathematical methodologies. Good examples of the progress achieved by case studies can be found in Coase (1959), North and Weingast (1989), Ostrom (1990), and Levy and Spiller (1994), among others. These studies validate case studies as a valuable tool when based on theory and conducted with rigor (Menard and Shirley, 2011).

This paper considers the pre-investment phase of the infrastructure investment cycle as a particular public policy immersed in a specific institutional environment. It is an economic and social construction that aims to identify ways to minimize transaction costs that appear when society needs to develop new infrastructure projects. While previous analyses show that there might be room for improvement

in the pre-investment phase in LAC, careful public policy and institutional analysis is needed to address institutional environment and governance issues. The current institutional scheme can be compared with other policy options in terms of the minimization of transaction costs to identify opportunities for improvement.

2.2.3 Previous Research: The Pre-Investment Problem

Several authors have specifically studied the pre-investment phase of large infrastructure projects, and there is consensus that the preparation and execution of many such projects are seriously flawed. Flyberg (2007) states that cost overruns and/or benefit shortfalls for most projects are the result of misinformation about costs, benefits, and risks. He maintains that this misinformation is the consequence of projects having been inherently risky because of long planning horizons and complex interfaces; decision-making and planning that are often multi-actor processes with conflicting interests; and because the project scope changes significantly over time (Flyberg, 2007).

In the words of Williamson, one could argue that large infrastructure projects impose “complex modes of governance...reserved for those transactions for which contractual hazards are especially difficult” (Williamson, 2000, p. 603). In fact, Flyberg (2007) presents measures for reforming policy and planning for large infrastructure projects with a focus on better planning methods and changed governance structures.

In this context, countries need to promote a proper pre-investment phase for several reasons. First, the stakes are high. Infrastructure projects are often large and expensive, and planning, financing, and management procedures need to ensure that projects are well designed and efficiently implemented (Marlowe, Rivenbark, and Vogt, 2004). Considering the theoretical approach presented in the previous section, this kind of sound pre-investment process would help to maximize society’s net benefits.

Second, countries need to prepare general plans and apply a comprehensive model to implement them. Such plans have several purposes: they provide for the replacement and rehabilitation of existing capital assets; they allow time for project design, the arrangement of financing, and the identification of sites; they further community development; and they facilitate political agreements and commitments. A comprehensive application model is thus obviously needed, and it should include the identification of possible infrastructure projects; organization and implementation of the planning process; preparation and approval of a multiyear plan; evaluation and prioritization of projects; understanding and evaluation of the opportunity to use public-private partnership mechanisms; development and implementation of a financing strategy; and final authorization of the plan (Marlowe, Rivenbark, and Vogt, 2004).

Unfortunately, at present practical rationale is not applied. As explained in previous sections, the pre-investment phase is not working properly in LAC. Why is this happening? How could this be efficiently addressed? This report aims to answer these questions.

2.2.4 Selected Tools: Case Studies and Policy Analysis

Using a doctor-patient analogy, this paper has two main objectives: (1) Understand why the patient is suffering from the “illness” of a flawed pre-investment phase in LAC countries; and (2) Identify how to efficiently heal this patient, that is, determine what the LAC countries need to do to treat the current illness.

To address the first objective, the paper uses a particular recommendation by Bryson (2004) from his book *Strategic Planning for Public and Non-Profit Organizations*. According to Bryson, institutional strategies cease to work for four main reasons: changes in the problem they are directed to solve, insufficient resources devoted to their implementation, incorrect organizational interactions, and shifts in the political environment. As detailed in the methodology and discussion sections of this paper, we basically intend to show that these propositions are confirmed in the case of the LAC countries studied, and that they may be used to draw specific recommendations.

For the second objective, we study the problem using a policy analysis approach. Again, the approach is detailed in the methodology and discussion sections. Fundamentally, after assembling evidence from the region’s current policies (target sites) and from other benchmark countries (source sites), the paper conceptualizes and simplifies two alternatives: LAC and benchmark. The outcomes of those alternatives in terms of transaction hazards are then compared and contrasted, using the economizing criteria proposed by the specified literature. Basically, outcomes are projected and confronted in terms of cost-effectiveness, with the objective of minimizing the transaction costs involved in this particular activity, which is a typical policy analysis exercise (Bardach, 2008).

Chapter 3 Methodology

3.1 Pre-Investment – A Difficult Problem

Theoretically, problems usually vary in at least four ways: structure, complexity, dynamics, and specificity of domain (Jonassen, 2004).

The pre-investment phase of major infrastructure projects in LAC is often ill-structured, as it is interdisciplinary – that is, there are economic, political, anthropological, and social forces influencing it. Multiple views are required to correctly evaluate possible solutions (e.g., public sector, private sector, nonprofits, and social organizations). Addressing well-structured problems usually requires the use of a limited number of concepts, rules, and principles, but this is not the case with the ill-structured pre-investment phase of LAC's infrastructure projects, which is a complex problem because there are a number of issues, functions and variables involved. This is probably driven by the interdisciplinary nature of the problem: there are functional relationships among properties, and there is a probable instability of the process over time. Besides, there are several components of the problem, and they are difficult to represent in a clear way (Jonassen, 2004). Moreover, as with every complex problem, the pre-investment process in every country is dynamic, with evolving and changing factors over time. Finally, different countries have different problems and, therefore, a good part of this problem is context-specific.

Consequently, the problem of inadequate pre-investment phase in LAC is ill-structured, complex, dynamic, and context-specific, so examining it from a single viewpoint is not a reasonable option. Moreover, although there are evident causal relationships, it is clear that the pre-investment process can sometimes be risky, chaotic, and fundamentally uncertain in several countries and sectors.

In this context, various perspectives are required to understand what constitutes a good solution, as there is usually no consensual agreement on what the problems are. The information available is incomplete, inaccurate, and/or ambiguous. Therefore, to come up with a clear understanding of this topic, several stakeholders that are influenced by (or influence) the subject of the research must be interviewed. Similarities and differences between countries and sectors must be compared and contrasted in order to construct a single information-based interpretation of what the situation is (Jonassen, 2004).

3.2 Case Analysis and Replication of Smart Practices

Considering the characteristics of LAC's pre-investment process and its consequences, this paper uses case analysis as the major methodological tool and qualitative data as the selected vehicle. Specifically, the objective is to conduct a formal multiple-case-based policy analysis to enable a disciplined examination of the pre-investment process in different parts of the region (Yin, 2013). The logic underlying the use of this methodology is the prediction of similar results, a literal replication, predicted explicitly at the beginning of the investigation. With cases turning out as predicted, there is compelling support for the initial set of propositions (Yin, 2013).

In this context, five components regarding case analysis design are considered: the research questions,

the study's units of analysis; the study's propositions; the logic for linking the data to the propositions; and the criteria for interpreting the findings (Yin, 2013).

3.2.1 Research Questions

The research questions are based on the previously analyzed theoretical foundations. Given that the pre-investment process currently has frequent problems in several LAC countries, this paper addresses the following questions:

- Why is the pre-investment phase of the infrastructure project cycle a problem in LAC?
- How is the inadequate pre-investment phase affecting infrastructure delivery?

3.2.2 Unit of Analysis

The study's unit of analysis relates to the research questions that constitute the first component. This paper aims to analyze the current pre-investment phase in LAC, but the region overall would be too general as a case analysis. Cases should not be too general or specifically focused. Being too general may only cover organizing principles, while learning can be limited if a case focuses only on a single context.

The obvious geographic region to be studied is countries. Policies and organizational strategies happen on a country basis and, as previously stated, similarities and variations between them should be compared and contrasted in order to construct an information-based interpretation of the situation.

A further question on the subject of units of analysis has to do with the number of cases deemed necessary or sufficient in the study. This problem is addressed considering the importance of rival explanations. In view of four rival explanations proposed (propositions are explained in the next subsection), at least four countries need to be evaluated. This number seems to cover the basis of replication, considering different initial explanations for the several issues around this topic.

This paper works with countries where there is a positive context to invest in infrastructure; where there is macroeconomic stability and relatively available fiscal or debt space; and where there is private interest. Therefore, we study countries where demand for new infrastructure is increasing and cash availability does not seem to be the most important problem.

It is only logical to assume that these LAC countries are better prepared than others in the region to improve the pre-investment process. An analogy with drug testing would be that this paper intends to suggest a new drug, compare it to the existing ones rather than with a placebo (or a less-effective drug). Consequently, the four countries selected for the analysis were Chile, Mexico, Peru, and Uruguay.

3.2.3 Propositions

Propositions refer to both questions mentioned above. Regarding the first question, the paper uses the four reasons proposed by Bryson (2004) to reassess public strategies in order to explain why the pre-investment process is not working: acceptability, relevancy, adequacy, and consistency. This is thoroughly analyzed in the next section.

In terms of the second question, when considering the problems that a flawed pre-investment phase may be generating, the hypothesis is that public interest and society's net benefits are far from being maximized. The proposition is that the previous specified problems are generating excessive transaction costs, each to a different extent. Therefore, LAC countries can concentrate their efforts on changing the current policy in an efficient way, that is, in specific institutional areas where the greatest transaction costs may be generated.

3.2.4 Linking Data to Propositions and Criteria for Interpreting the Findings

In order to answer the first question, legislation from the four countries is carefully analyzed from public sources and then compared to how it functions in practice. We obtain information from semi-structured interviews. The paper indicates how and why the four propositions play out in each individual country, and then specifies the extent of the replication logic across cases.

On the subject of the second question, the current institutional context of the pre-investment phase is contrasted against a feasible institutional benchmark for infrastructure delivery. This step poses several challenges.

The benchmark is constructed based on suggestions proposed by the World Economic Forum (WEF, 2012) in order to correctly prioritize infrastructure projects. These suggestions are enriched by inputs from the interviews conducted and by using other countries' smart practices. This last point presents specific challenges, mostly in terms of what some authors call the "extrapolation problem" (Bardach, 2004).

It is evident that the target-site environment (LAC countries) introduces variations from what one can analyze in other source sites (other exemplar countries from other regions). This is why this is an extrapolation problem, not a replication one. The objective is to learn from the experience of others, considering that strict and faithful replication is not an option. Three steps can be taken with someone else's practices: adapt them, experiment with them, or get some further ideas that are inspired by them.

This paper uses those practices as a theoretical but feasible tool to analyze differences and draw policy recommendations. We acknowledge that a clear replication is unnecessary and potentially inconvenient, and propose an applicable benchmark based on a number of best practices to draw conclusions. The paper uses institutional tools currently applied by Australia, Canada, and the United Kingdom.

In order to adapt foreign "smart practices" to LAC countries, it is necessary to have adequate resources, correct problem specification, consistent organizational interactions, and an appropriate political environment. After beginning the analysis based on that concept to answer the first question, the WEF proposal, enriched by relevant countries' smart practices, is then improved by recommendations from the agents interviewed. The proposed adaptation is potentially applicable and feasible, as it uses recommendations from interviewed agents.

Finally, some other suggestions from Bardach (2004) are considered as well. An alternative institutional design of the pre-investment phase enriched by other countries' experiences is considered in an institutional, political, economic, and interpersonal context that may or may not warrant extrapolation to the target site. The previous issues should be considered when constructing a benchmark. This is

the only way to reach something realistic and comparable. This is the technique to construct a feasible better practice, not an optimal one, considering the suggestions addressed in the literature review.

3.3 Data Collection Field Procedures

Different secondary sources were analyzed in order to make an initial analysis of the institutional context of the pre-investment process. This step is referred to as the collection of documentary information (Yin, 2013). It included examining web pages from relevant public institutions and laws, decrees, regulations, and general procedures of the pre-investment processes in the countries analyzed. In addition, it included the same analysis for the case of the source sites that are then considered for extrapolation.

An extensive set of interviews was then conducted with relevant agents in each country in order to understand how the actual pre-investment phase in each country is developed, and what the current problems are with those phases. This step is referred to as prolonged case study interviews, as each interview took place between one and two hours. The purpose was to ask interviewees about their explanations, insights, and interpretations of the problem and possible solutions for the process in their countries (Yin, 2013).

In this context, stakeholders from different backgrounds were consulted because several points of view must be compared and contrasted in order to construct an information-based interpretation of the situation. Specifically, five different views were considered: in-house (the institution in charge of controlling the pre-investment system), multisectoral, sectoral, institutional/financial, and private sector.¹

In order to answer the first question proposed by this paper, the problems addressed by the different stakeholders are associated with the initial set of propositions and a literal replication is shown. Therefore, for each individual case, the paper indicates how and why the propositions play out. Across cases, the paper specifies the extent of the replication logic and why the cases were predicted to have the expected results. This is known as pattern matching (Yin, 2013).

For the second question, the theoretical institutional benchmark is constructed using a relevant bibliography, smart practices from source sites, and relevant recommendations from the interviewees.

3.4 Outline

The following chapter, which presents the results, starts by explaining how the proposed sectoral analysis was carried out by country. For each case, the institutional context and legislation is presented, as obtained from secondary resources (mostly legislation and institutional web pages). Then, the results from the interviews for each country are detailed. This second part of each case study, entitled “The Pre-investment Process in Practice,” refers to the fact that what is initially postulated in the legislation is usually not fully accomplished. To understand flaws and propose recommendations, this process as it plays out in practice is the one that should be analyzed.

¹ A list of the interviewees can be sent by the author upon request.

In order to organize the analysis, the process for each case study is divided into two large groups of activities. The first is the generation of ideas for new infrastructure projects, and the second is the process that goes from project profile to feasibility/design studies.

In all cases, the general focus of this paper is on the central government bodies working in this area. The objective is to analyze their strategy. However, in some cases, some external relevant comments from the interviews regarding second and third levels of governments are identified.

The same happens with the public and private sector. This paper centers its attention on the public sector. However, considering the different levels of private participation in the process, and in the pertinent sectors, relevant interviews are conducted and some comments about private participation are noted as well. This is particularly important because the extent of private participation in the pre-investment process may change the perception of the agents about its quality.

After the country analyses are finished, the problems suggested by the different agents are associated with the four possible explanations of why this problem is happening, as well as with reasons for changing the strategy, in order to show that a theoretical replication of the possible explanations actually occurs in different countries of LAC. At the end of the chapter, a table summarizes the results in order to show the extent of this replication logic, specified in the methodology.

The discussion in Chapter 5 reviews the legislation from the source countries, outlines steps proposed by WEF (2012), and proposes a final theoretical but feasible institutional benchmark for the large groups of activities previously analyzed: the generation of ideas, and project profile to feasibility/design studies. With the source site (benchmark) institutional environment and target site (LAC) institutional environment established, the analysis in terms of TCR is then developed and recommendations proposed.

3.5 Limitations and Constraints

Using this methodology, this paper aims to develop an analytical generalization. It is based on corroborating the theoretical concepts referenced at the beginning of the investigation. However, in using this methodology, the paper is incapable of making a statistical generalization. Cases are not sampling units, and the number of countries analyzed is too small to serve as an adequately sized sample to represent the total amount of countries in LAC (Yin, 2013).

Chapter 4 Results

Returning to the propositions discussed earlier in this paper, Bryson (2004, p. 32) proposes a 10-step strategic planning process in order to organize participation, create ideas for strategic interventions, build a winning coalition, and implement strategies. This paper uses some of Bryson's suggestions, particularly those found in the 10th step, as propositions to encapsulate the problems of the pre-investment phase of the infrastructure project cycle in LAC. Bryson refers to this step as reassessing the strategies and the strategic planning process, and argues that it is needed once implementation of the strategy has been started in order to assess the state of the intervention – that is, to analyze if the adopted strategies should be maintained, replaced by other strategies, or terminated.

The effectiveness of this step depends on organizational learning, and this paper intends to generate valuable information about what is really happening with the specified processes. This assessment is needed to analyze whether the current strategy could be improved in order to improve the pre-investment phase and thus maximize the generation of public value (Bryson, 2004, p. 51).

According to Bryson, strategies cease to work for four main reasons. First, the strategy may show flaws as a consequence of a change in the political environment. In this paper, this is called the political “acceptability” of the strategy. Politicians may be uninterested in or even opposed to the subject of a particular strategy. Second, as problems change, strategies should change as well. What seemed at first to have been a good solution to a particular problem may have become obsolete over time. When this happens, strategies must be modified. This is referred to here as “relevancy.” Third, while the strategy may be well formulated, there may be insufficient resources to develop it properly. The strategic issue the strategy is meant to resolve thus goes unsolved, or is only partially solved, as a consequence of bad implementation. In this document we refer to this as “adequacy.” Finally, a problem can be addressed by different policies and institutions, overcrowding implementation and resulting in undesired interactions. The strategy should be revised if there is a bureaucratic problem of this nature, which is referred to in this paper as “consistency.”

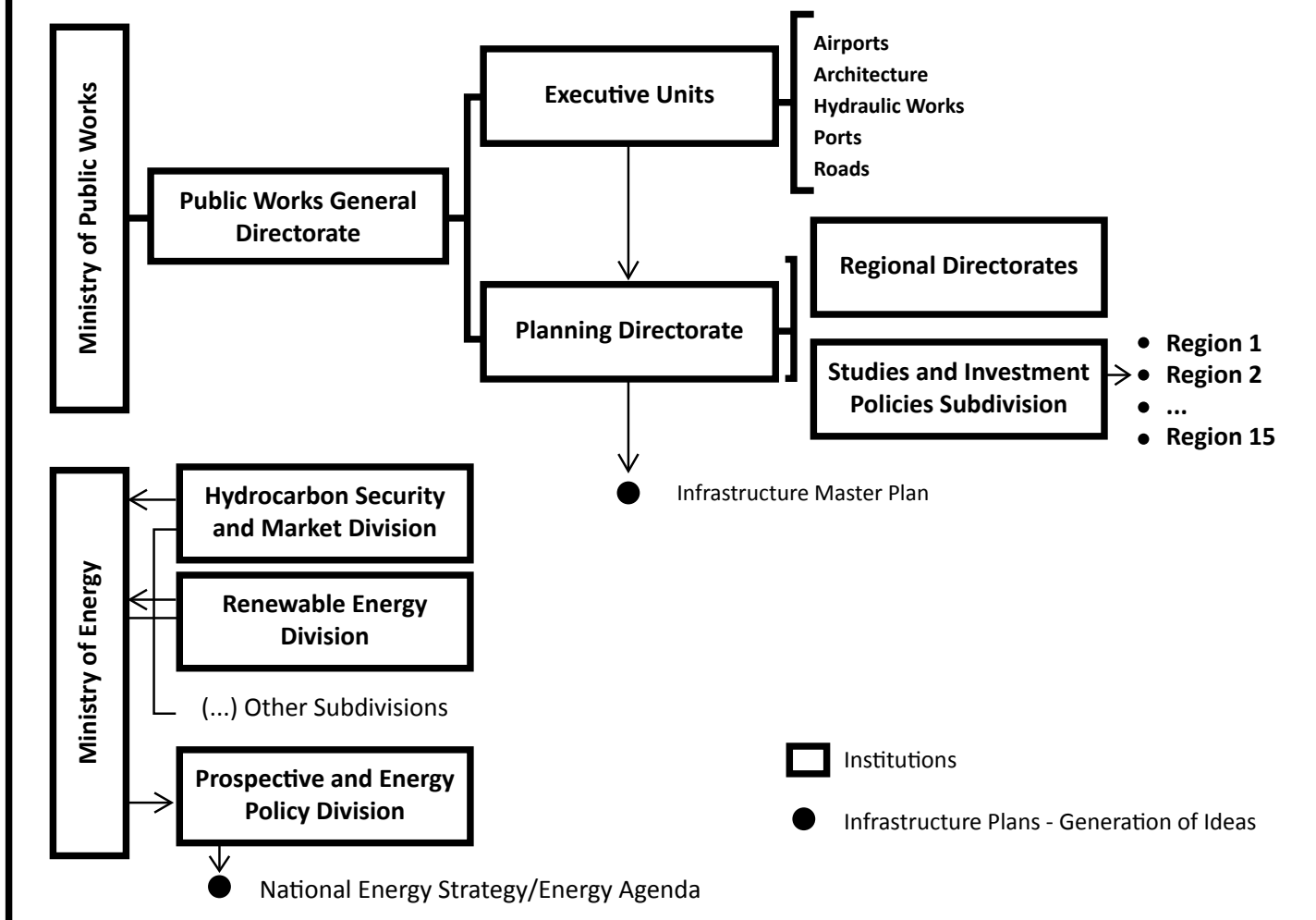
The four countries are analyzed below. First, the institutional context and legislation of each country is described. Then the results from the interviews are presented in order to show the problems of the pre-investment process in practice. Finally, the results are associated with propositions to show the extent of replication.

4.1 Case Study: The Pre-investment Process in Chile

4.1.1 Institutional Context and Legislation

As explained earlier, the pre-investment process is analyzed in this paper taking into account two groups of activities: generation and analysis of project ideas; and project profile to feasibility/design studies. This section looks at the institutional context and legislation that affect these pre-investment phase activities in Chile.

Figure 1. Generation of Ideas: The Basic Process in Chile



Source: Prepared by the author.

Generation and Analysis of Ideas

Figure 1 outlines the basic process for the generation of project ideas in Chile. The Ministry of Public Works (MOP) is in charge of the provision and management of infrastructure works and services. The ministry seeks to promote economic development through infrastructure using an integrated approach.

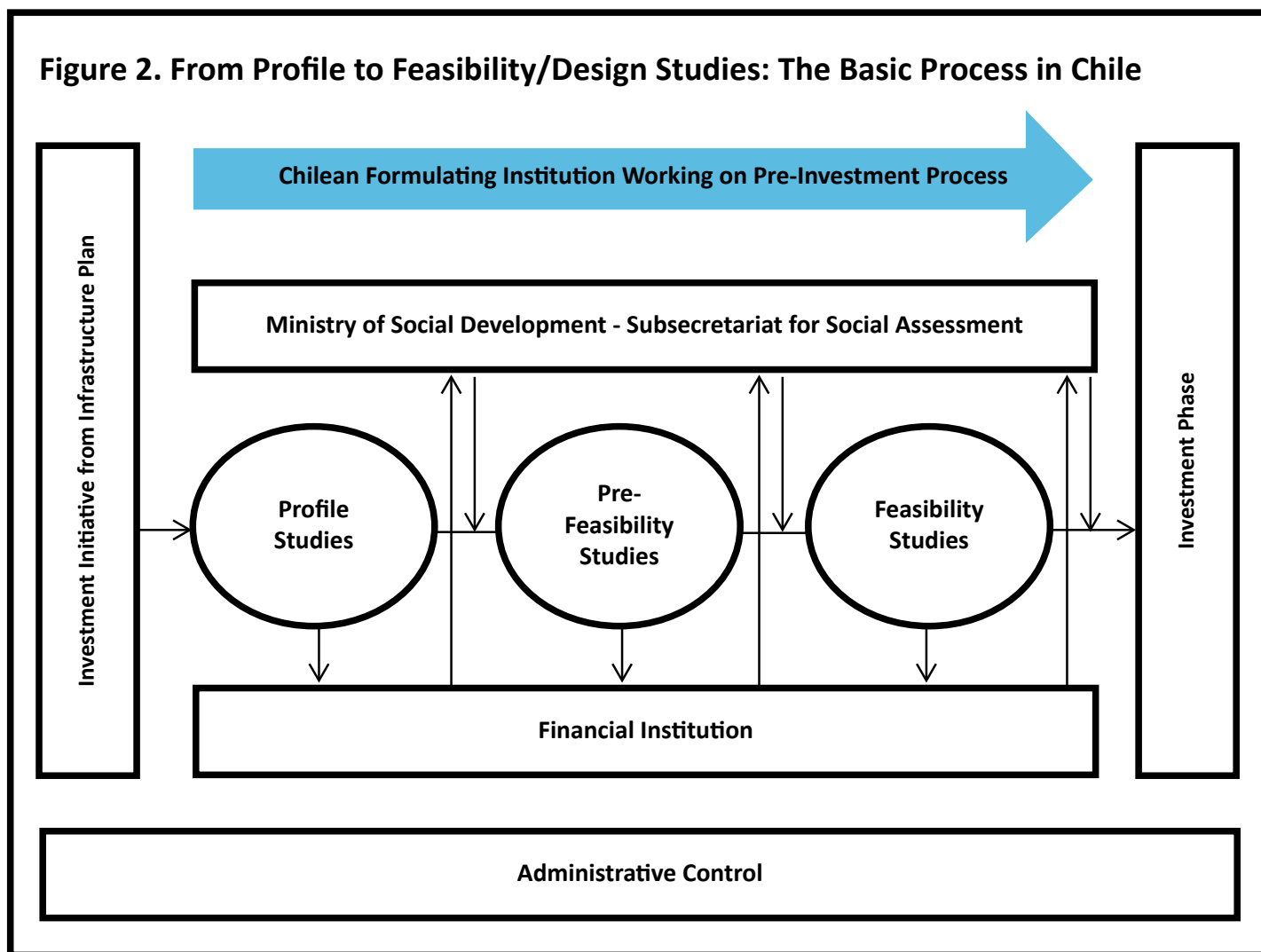
The MOP is composed of two directorates, the General Water Directorate, in charge of applying the water code, and the Public Works General Directorate, responsible for articulating the technical management of the following infrastructure services: airports, architecture, hydraulic works, port works, and roads.

The MOP has an Infrastructure Master Plan to define and determine lines of action for the infrastructure services it provides through a system of objectives and sectoral policies. In addition, the plan aims to promote integrated planning and intersectoral communication between infrastructure sectors, determining priorities in the allocation of resources.

The Infrastructure Master Plan is a strategic tool – the temporal dimension is long-term, with a horizon

of at least 20 years. Moreover, there is a National Strategy for Water Resources for 2012–2025 and Regional Plans for Infrastructure and Water Resources directed toward the different regions of Chile for 2014–2021.

The Ministry of Energy is in charge of developing and coordinating plans, policies, and standards for the proper functioning and development of the sector. It ensures compliance and advises the government on all matters relating to energy. The ministry has a National Energy Strategy for 2012–2030 and a recently published Energy Agenda that serves as a roadmap to build and execute a long-term energy policy with social, political, and technical validation. The public sector may propose different incentives in order to direct private investment as desired, but the private sector is in charge of proposing new energy projects.



Source: Prepared by the author.

From Profile Studies to Feasibility/Design Studies

Figure 2 outlines the basic process for project profile to feasibility/design studies in Chile. The Subsecretariat for Social Assessment in the Ministry of Social Development, through the Division of Social Evaluation and Investment, evaluates pre-investment studies of projects seeking state funding. The National Investment System studies all investment initiatives generated by public institutions in cases where funding, partial or total, comes from public sources. These include sectoral funding, the National Fund for Regional Development, and public enterprises.

The National Investment System covers the entire project life cycle, from identification to execution, in order to guarantee that only those projects with the greatest social returns are ultimately implemented. Chile specifically considers “pre-investment” as the formulation, evaluation, and selection of the most profitable initiatives from a socioeconomic point of view. It includes three steps of particular concern to this analysis: profile, pre-feasibility, and feasibility.

The profile studies incorporate information to conduct a preliminary assessment of the investment initiative. Pre-feasibility analysis requires additional data directed toward improving alternatives. Further economic and technical evaluations are then carried out in order to identify the alternatives that show the most promise and discard the rest. Finally, feasibility studies aim to improve the selected alternative (i.e., the one with the better evaluation indicator – highest net present value). An investment project does not necessarily go through each and every stage of the pre-investment phase; it depends on the complexity of the amounts involved and the implementation of the project.

Regarding the private sector, the Public Works Concession Coordination Agency of the Ministry of Public Works has a development cycle, with differences in terms of the origin of the project, public or private. Either one must be economically viable and show a reasonable social benefit. Before the bidding process, each project must be subject to several studies, including pre-feasibility and business studies. Any natural or juridical person may apply to submit a project by means of private initiatives.

In the case of energy, the pre-investment process is basically handled by the private sector. Although regulated, the private sector is basically in charge of the energy sector, and thus handles the pre-investment phase that starts with the profile and ends with project design.

4.1.2 Infrastructure Pre-investment Process in Practice

According to the interviewed agents, the infrastructure pre-investment process in Chile has several problems both in terms of the generation and analysis of ideas and profile and design/feasibility studies.

Generation and Analysis of Ideas

Some interviewees explained that some of the current plans are not associated with an agreed-upon and accessible objective, which should transcend the electoral period. The fact that results must be produced in the short term was mentioned as a problem, as this context puts pressure on the wrong side of infrastructure project proposals. There is a proper planning process but short-term needs become a risk factor because there is considerable incentive to inaugurate public works as soon as possible.

Other interviewees noted a lack of integral and interdependent work in project formulation during the planning phase. There are plans, but they seem to be sector-specific. Furthermore, there is a lack of intersectoral planning within particular ministries in some cases. This seems to be a problem, for example, for the rural sector, where interdependent work is important to generate and demonstrate a correct impact.

Furthermore, although not the particular focus of this paper, several infrastructure investment ideas are expected to be generated in the regions, or in municipalities. Interviewees explained that this process is not always well organized. In theory, the final portfolio of infrastructure investment in Chile's regions is an indicator of the capacity, initiative, and commitment of the responsible public agents of the regions. In practice, there are many differences regarding this matter and regions are very diverse.

In the energy sector, in practice the private sector is expected to generate new projects. The public sector agenda is to help with new legislation, but more involvement seems to be needed. For example, as the private sector pays for all the pre-investment process, technical information and procedural information is not always available to the public. Another consequence is that the cost of failure of a particular project for the private sector is higher than the cost in other countries, which may discourage project presentation.

From Profile Studies to Feasibility/Design Studies

Some interviewees explained that the current methodology responds to a need that has changed. It is based on the cost-benefit analysis methodology implemented in Chile 30 years ago. It does not account for productive linkages or externalities, for example. The current method of measuring the social profitability of projects seems to respond to a need to prioritize mega projects. This approach was fine when it was initiated several decades ago, when the country had an enormous amount of needs, as it helped to efficiently allocate resources at that time. However, in today's more complex contexts it is outdated. It must be updated to help emerging countries to include other relevant variables needed to consolidate their development process. For example, project combinations that connect different sectors are needed, as are more systemic multi-criteria analyses. When infrastructure aims to generate growth in a strategic way, a process based on cost-benefit analysis sometimes results in cutting off needed and available funding for relevant projects.

Recently, Chile has taken some steps to address this problem. A legal exception was issued for those projects located in particular "extreme regions" of the country, and for particular strategic objectives. In those cases, the social impact is measured by cost-efficiency,² not cost-benefit analysis³.

Another problem is that the pre-investment process fails to correctly estimate the importance of the social reactions that projects will generate. Time of construction is usually weakened by this issue. This is a problem for both the public and the private agents in some sectors. For example, in the energy sector, the private sector is failing to deal with the judicialization of the process due to environmental and social claims presented in subsequent project phases. However, the country is working to resolve these issues, with positive outcomes in some other sectors, such as transportation. Progress has been made in investments in the road, port, airport, and urban transportation sectors.

² Cost efficiency is based on minimizing project costs, but with an understanding that there are no accurate methods to measure benefits.

³ Under cost-benefit analysis, only projects with positive social benefits are accepted.

There is also a need for better differentiation of projects. The current process appears to expect too much initial research for projects of very different sizes, which presents problems for small projects. As explained in the previous subsection, an investment project does not necessarily go through each and every stage of the pre-investment phase – it depends on the amounts involved and the complexity of project implementation. However, interviewees explained that in the case of small water projects, for example, the proportion of money destined to the pre-investment stage seems to be excessive.

Another problem involves the timing in terms of when projects are presented in the Ministry of Social Development. Some sectors present their project evaluation documents before April/May of each year. The ministry takes three to four months to analyze the projects and, after that, the projects are ready to be discussed by the parliament and integrated into the budget for the following year. The problem that arises is that this process requires that the sectoral entity present several initiatives in a very few months. This forces them to concentrate the analysis on particular simple indicators, which might not be sufficient to analyze the breadth of the problem being addressed.

On the other hand, problems associated with lack of planning, mentioned in the previous section, means that agencies sometimes present their projects exceedingly late, even in the year they are intended to be developed. Several inefficiencies rise as a consequence. For example, a budget might have been set aside for a project that is not approved. Moreover, the process pushes projects to be formulated more rapidly. Consequently, the quality of the pre-investment studies declines and some concessions are made. For example, the selected project locale may not be the best choice – that is, it may be based on current availability in order to skip the process of buying the associated land.

Furthermore, the institutions participating in the process seem to be excessively controlling the agencies that are formulating the project. Four public agents are involved in this process: the one formulating the project, the one that controls the quality of the pre-investment phase, the one that provides funding after approval, and the one that exercises administrative control. Some interviewees explained that in some cases there is duplication in the controlling function, which increases bureaucracy.

Some interviewees noted that the job market for civil engineers is strongly affected by movements of the Chilean economy. When a boom in mining occurs, there may be problems finding engineers to work on pre-investment studies, particularly in specialized sectors. In addition, there is disequilibrium between salaries in the public and private sectors, with the most qualified human resources going to the latter. In some entities, this translates into young and inexperienced human resources.

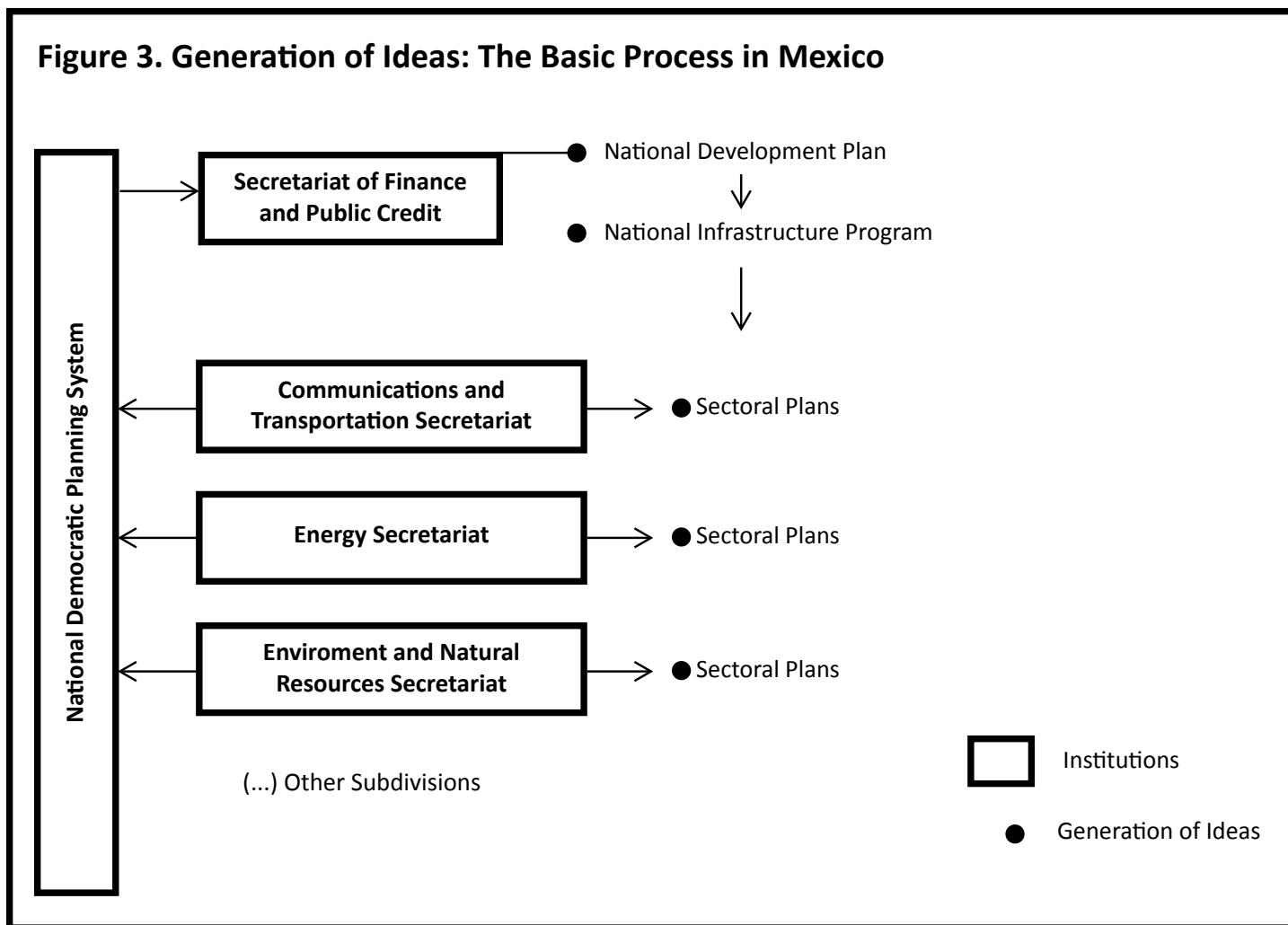
Most interviewees did specify, however, that Chile's public sector workforce in general is sufficiently educated. There is a vocation for public service in some of the country's most important universities, and working in the government provides career stability. Nevertheless, while in several public agencies the workforce is stable, in some others there are not enough people to handle the amount of work involved with the quantity of infrastructure projects needed.

4.2 Case Study: The Pre-investment Process in Mexico

4.2.1 Institutional Context and Legislation

As explained earlier, the pre-investment process is analyzed in this paper taking into account two groups of activities: generation and analysis of project ideas; and project profile to feasibility/design studies. This section looks at the institutional context and legislation that affect these pre-investment phase activities in Mexico.

Figure 3. Generation of Ideas: The Basic Process in Mexico



Source: Prepared by the author.

Generation and Analysis of Ideas

Figure 3 outlines the basic process for the generation of project ideas in Mexico, where there is a Planning Law. Under this legislation, the government must design, together with its citizens, an action plan for project administration. In addition, the Secretariat of Finance and Public Credit (SHCP) must create, with inputs from a National Democratic Planning System, a National Development Plan.

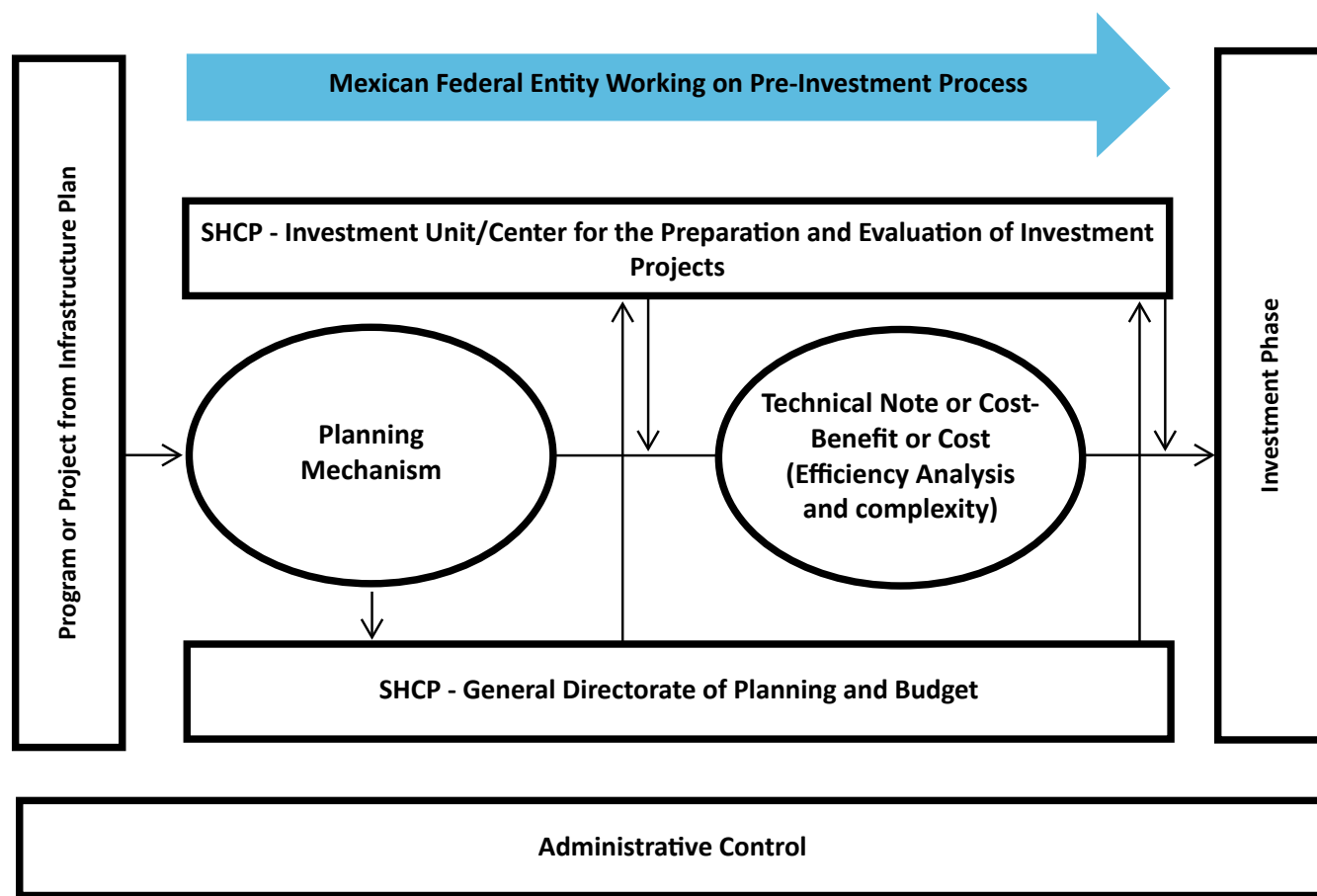
The most recent version of this plan was proposed for the 2013–2018 period. It considers proposals of departments and agencies from the federal government and state governments, as well as the approaches that are formulated by the different stakeholders participating in the process.

In this context, the government must work on several programs to obtain the National Development Plan, including the National Infrastructure Program. This program details objectives, strategies, and action plans that reflect those priorities and specific activities that the government will develop in infrastructure sectors.

The plan includes the transportation, energy, and water and sanitation sectors, among others. It incorporates a diagnosis and analysis of strategic priorities taking into account the National Development Plan and the Sectoral Plans, and proposes objectives, strategies, lines of action, and funding sources.

The Communications and Transportation Secretariat, Energy Secretariat, and Environment and Natural Resources Secretariat have worked on their respective Sectoral Plans, which must be aligned with the previous plans for 2013–2018. In particular, the Energy Secretariat has a National Energy Strategy for 2013–2027.

Figure 4. Profile to Feasibility/Design Studies: The Basic Process in Mexico



Source: Prepared by the author.

From Profile Studies to Feasibility/Design Studies

Figure 4 outlines the basic process for project profile to feasibility/design studies in Mexico. The SHCP has an Investment Unit that integrates and manages the investment portfolio (Project Bank), analyzes the socioeconomic profitability of investment projects, authorizes and evaluates projects, and integrates the investment projects into the corresponding volume of the country's project expenditure budget.

The Investment Unit is supported by the Center for the Preparation and Evaluation of Investment Projects (CEPEP), which helps the government optimize the use of resources for the implementation of investment projects and programs. In addition, CEPEP helps with ongoing training for the preparation and evaluation of socioeconomic projects for all levels of government.

Federal entities that intend to access federal resources must register their projects with the Investment Unit, linked to the General Directorate of Planning and Budget of the SHCP, after observing the relevant guidelines. The pre-investment process in this case involves two stages: the planning mechanism, and evaluation and analysis.

In the first stage, the federal entity detects a need that can be resolved through the use of public resources. The need should be aligned with the general plans previously developed. At this stage, the problem must be analyzed, including a diagnosis that identifies causes and objectives, and proposes feasible alternatives for the project. This stage is similar to a profile-level study, as has been defined earlier in this paper.

In the second step, the federal entity formulates alternative solutions and works on a preliminary analysis. It prioritizes the alternatives, verifies interdependence situations, and selects the best two options by establishing their feasibility. Through this analysis, the entity classifies the project by its type and expected cost. After this classification process, it is possible to know, under this legislation, the required level of evaluation.

The required level of evaluation involves only a technical note for small projects of less than MXN 50 million (US\$3.8 million). For larger projects, some type of cost-benefit or cost-efficiency analysis is required. Simplified options of these analyses are expected for medium-sized projects of between MXN 50 million and MXN 500 million (US\$38.6 million).⁴

4.2.2 Infrastructure Pre-investment Process in Practice

According to the interviewed agents, the infrastructure pre-investment process in Mexico has several problems both in terms of the generation and analysis of ideas and profile and design/feasibility studies.

Generation and Analysis of Ideas

Some interviewees pointed out that there is no penalty if the National Development Plan is not followed, and the plan may thus be viewed as institutionally weak. Therefore, the same seems to happen with the National Infrastructure Program. Some interviewees also specified there is no significant intersectoral planning.

The political context around this process seems to have several effects. For example, the Congress appears to have significant influence, which shapes the selected approach of the projects. It has a key role in the planning process via budget approval. This can lead, in some cases, to preferring specific kinds of solutions. For example, in road infrastructure, new projects are usually preferred over maintenance.

⁴ Based on a US\$/MXN exchange rate of US\$1= MXN 12.9.

Mexico also has a tool called Presidential Commitments, which is used in political campaigns. They are infrastructure project ideas that are proposed by political candidates who promise to develop these commitments if elected. However, on occasions, these projects are not based on a proper technical analysis and they do not follow the usual pre-investment phase. Although only recently institutionalized, Presidential Commitments always happened but were simply not assigned a name.

On the subject of the influence of the different levels of government at this stage, interviewees described states as being institutionally strong, but municipalities not so. This is even clearer when governments are controlled by different political parties and must gain political acceptance to get their projects considered. Other interviewees explained that this lack of coordination between the different levels of government may discourage investment in those projects.

The National Infrastructure Program starts in the sectoral secretariats, and interviewees stated that one problem is the amount of time they have for proper planning. According to some agents, sectoral secretariats are now worried on administrating their burgeoned portfolios, instead of generating new projects. They are worried on day-to-day issues and proper planning is harder. The issue seems to be less about the amount of money destined for projects and more about priorities and human resources.

In this context, intersectoral planning, as well as long-term planning, can be very difficult, particularly when it comes to sending a message to the public and private sectors with a clear portfolio of investments for the coming years. According to some interviewees, there can even be coordination problems within each infrastructure sector, and synergies may be lost as a consequence.

From Profile to Feasibility/Design Studies

Some interviewees explained that there has been a change in the paradigm in terms of the role of the public sector. Some decades back, the public sector was expected to generate projects, but today it seems to be expected to administrate them. This is related to the fact that the amount of public-private partnerships has been steadily increasing over the past 10 years. In the past, public entities had more time for planning activities; now they are mostly working in administrating their portfolio.

This situation has had some consequences, for example on the human resource capacity of the public sector. Interviewees explained that workforce quality may be now seen as weaker than in past years, with consequences in the quality of the studies presented. On this subject, there are some differences between sectors – for example, there are more problems in transportation than in energy. The former has difficulties executing the expected amount of projects in light of current budget objectives.

The quality of the public workforce seems to respond to several issues, including macroeconomic concerns over the past decade. Some public sector wages were frozen and have not been adjusted for inflation since 2000. The public sector is now probably in worse condition to compete with the private sector for needed human resources, which might be affecting the quality of the pre-investment studies.

In addition, there appear to be problems as a consequence of the way other relevant institutions are participating. For example, some interviewees pointed to issues regarding control and oversight institutions, with consequences in terms of both the costs and quality of the studies conducted.

Interviewees criticized the Investment Unit for lacking flexibility. They argued that this institution is

mostly concentrated on cost-benefit analysis, which is based on quantifiable benefits and costs and leaves aside important considerations such as regional development, industry promotion, environmental benefits, and equity concerns, among other issues.

Furthermore, the current cost-benefit analysis does not consider political negotiation, which may be very important in the process.

In this context, the pre-investment process, according to some interviewees, is sometimes seen as a prerequisite to obtain resources, rather than as the foundation for selecting better projects. There are several issues associated with this problem, and participating organizations like the CEPEP may have little room to change things.

Interviewees also argued that the planning process is first to suffer when there are budget cuts. This happens in all sectors, with different results in terms of the final quality of the pre-investment studies. The energy sector, as well as the road subsector within the Transportation and Communications Secretariat, is viewed as presenting the best analyses.

Finally, there seems to be a lack of intersectoral planning as a consequence of the budget allocation system. Although there may be evident synergies, projects are broken down according to the participating secretariats. This is due to the fact that these entities must receive the money from the secretariat budgets according to the numbers originated by the system. There are examples of projects from different entities, presented separately, estimating benefits assuming that another project will be undertaken, and then one of them is canceled.

4.3 Case Study: The Pre-investment Process in Peru

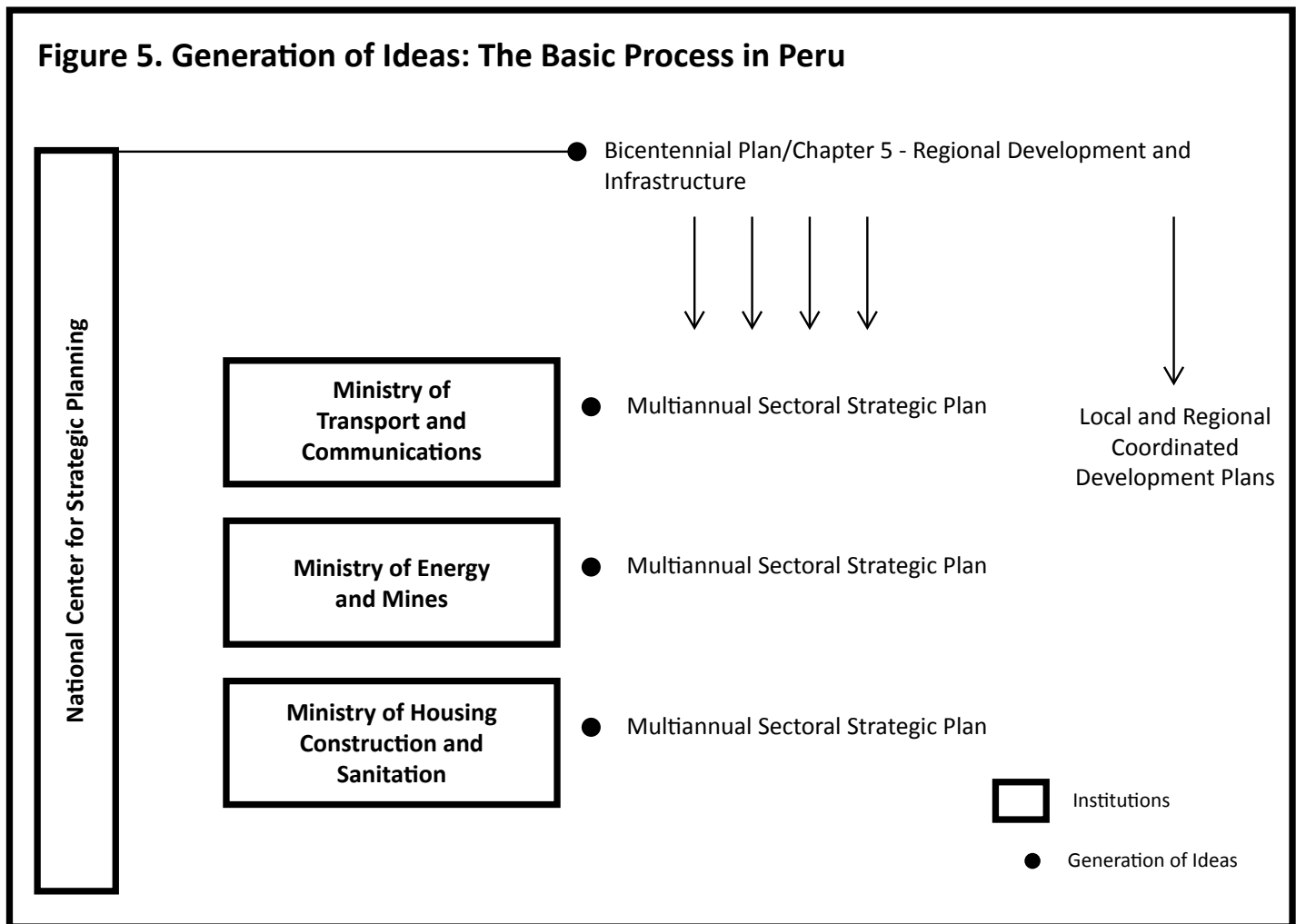
4.3.1 Institutional Context and Legislation

As explained earlier, the pre-investment process is analyzed in this paper taking into account two groups of activities: generation and analysis of project ideas; and project profile to feasibility/design studies. This section looks at the institutional context and legislation that affect these pre-investment phase activities in Peru.

Generation and Analysis of Ideas

Figure 5 outlines the basic process for the generation of project ideas in Peru. The country has a National Center for Strategic Planning that is a specialized technical institution in charge of the National Strategic Planning System. It aims to drive this system in a participatory, transparent, and concerted manner, contributing to the improvement of the quality of life of the population by means of sustainable development.

Figure 5. Generation of Ideas: The Basic Process in Peru



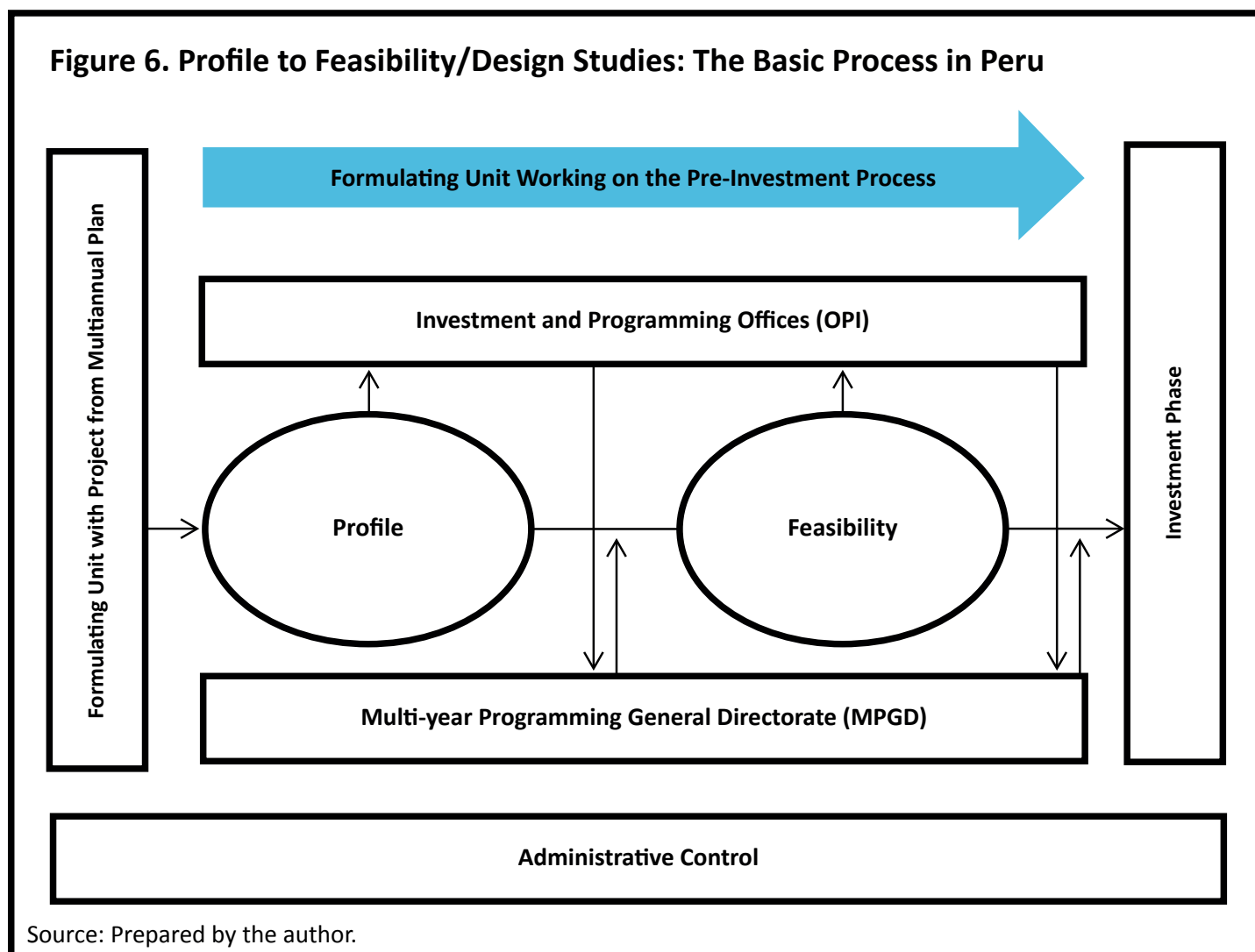
Source: Prepared by the author.

In an update of the National Development Strategic Plan (known as the Bicentennial Plan) published in 2013, there is an Infrastructure and Regional Development section (Chapter 5) that contains general directorates regarding transportation, energy, and water and sanitation. The chapter includes national objectives, policy guidelines, and priorities, with specific objectives that include targets, indicators, and strategic actions.

In parallel, the Ministry of Transport and Communications, Ministry of Energy and Mining, and Ministry of Housing, Construction, and Sanitation are in charge of the general policy and regulation of their respective sectors, including the publication of plans. In particular, they are in charge of producing multiannual sectoral strategic plans in accordance with the Bicentennial Plan.

In terms of private initiatives, the Ministry of Economy and Finance works in coordination with PROINVERSIÓN, the country's investment promotion agency. Private initiatives are accepted for asset investment and other projects, public infrastructure and services, and the development of applied research projects and/or technological innovation.

Figure 6. Profile to Feasibility/Design Studies: The Basic Process in Peru



From Profile to Feasibility/Design Studies

Figure 6 outlines the basic process for project profile to feasibility/design studies in Peru. The Ministry of Economy and Finance (MEF) has a preponderant role in the infrastructure pre-investment process. In particular, the MEF's Public Investment General Directorate (DGPI) is responsible for the design of policy guidelines on public and private investment.

Three particular DGPI directorates are relevant to this paper: the Investment Programming Policy Directorate, Public Investment Directorate, and Private Investment Directorate. The first directorate is responsible for formulating and proposing policy guidelines and strategies for public and private investment in accordance with the country's economic policy. The second and third directorates evaluate, coordinate, and monitor public and private investment projects, respectively.

The DGPI is also the governing body for the National Public Investment System (NPIS), which is the administrative system in charge of organizing and certifying the quality of the public investment projects. The NPIS has the objective of encouraging the nation's economic development by optimizing public resources destined toward investment. Therefore, it ensures that the public entities in charge of executing public investment projects fulfill particular principles, processes, methodologies, and technical standards in order to achieve the specified goal.

The NPIS is made up of Decision-Making Organizations, Investment and Programming Offices, Formulating Units, and Implementation Units. The particular organizations involved vary depending on the investment project under study. The Decision-Making Organizations are the highest executive authorities in each sector; the Programming Offices are the sector body in the regional or local organization in charge of making a public investment multi-year program; the Formulating Units are in charge of pre-investment studies; and the Implementation Units execute the investment.

The two stages of the pre-investment phase in Peru are referred to as the profile and feasibility stages, with each involving a study. The profile phase is a document that identifies the problem, causes, and objectives of the alternatives. The feasibility phase is a document that identifies the best alternative and an optimal design. It includes a technical analysis, private evaluation, social cost-benefit analysis, and ex-post evaluation guidelines.

The evaluation process is different for those projects with and without public debt financing. When the project does not include public debt financing, the project profile is registered in the Project Bank and the Investment and Programming Office has 30 days to work on a technical note, approve it, and authorize or reject conducting a feasibility study. After that, the Formulating Unit works on feasibility and presents the document to the Investment and Programming Office, which has 40 days to declare viability, ask for reformulation, or reject the project.

When the project includes debt financing, the MEF's Multi-year Programming General Directorate (MPGD) is included in the process. After the investment and Programming Office approves the different documents, the MPGD has the same amount of days to re-approve them.

In terms of private investment, the Directorate of Private Investment (DIP) works in coordination with PROINVERSIÓN, the investment promotion agency. The DIP regulates public-private partnerships, which may be self-sustainable or require some kind of public financing (cofinancing). In addition, PROINVERSIÓN may be asked by a particular Formulating Unit to promote private participation in a specific project, in which case the Formulating Unit works in the pre-investment process.

4.3.2 Infrastructure Pre-investment Process in Practice

According to the interviewed agents, the infrastructure pre-investment process in Peru has several problems both in terms of the generation and analysis of ideas and profile and design/feasibility studies.

Generation and Analysis of Ideas

Several agents noted that the Bicentennial Plan is not strong institutionally. There still seems to be a need for an effective organic plan for the medium term (five years) and long term (20 years) that specifies the potential infrastructure needs in the context of the country's objectives. Interviewees familiar with the plan said there is still room for public empowerment of this tool. The applicability of the plan seems to depend on the particular efforts of the specific public sector workers.

Moreover, one critical problem seems to be that a context of predictability in sectors such as energy generation and sanitation is not always perceived. Some interviewees argued that they do not know

the government's future plans. The lack of a clear plan for the medium and long term is probably what is behind this and other types of problems. In this context, it is not clear how to prioritize projects, with such efforts under way only in certain sectors and within certain organizations.

From Profile to Feasibility/Design Studies

Regarding the work of the NPIS, interviewees pointed out that pre-investment process legislation is a consequence of an initial budget constraint that had to be taken into account when the legislation was implemented. The legislation was initially proposed as a way to bring order to public investment, but in a new context of fast economic growth and available resources, and with an increasing need for mega projects, the process established by that legislation may present some problems. For example, some interviewees stated that the process is inflexible, noting that it functions in the basically same way not matter the sector or the size of project. One problem that appears in this context is that alternatives must be analyzed in the profile studies even though the Formulating Unit knows there is only one alternative. Rules are very specific and may delay project completion.

Another issue is the time spent on the profile and feasibility studies. The perception of this issue differs according to the different sectors, mainly as a consequence of the degree of public and private participation. For example, in the case of publicly funded projects, although the NPIS process has evolved and some of its subprocesses have been eliminated (i.e., pre-feasibility phases), the current preparation cycle (including profile, feasibility, and definitive studies) takes several years. Another example is road infrastructure, for which the project preparation cycle takes at least five years – one year for each study and one year for the tenders' processes. This may cause some problems, considering that conditions may change and what was initially a good project may not be so good five years later.

On the other hand, other interviewees felt that not enough time is spent by the public sector in the pre-investment process in the case of those sectors where the private sector is more involved in pre-investment. There seem to be some examples of this problem in the energy generation sector. Projects that are priorities for the government can be delegated to PROINVERSIÓN without definitive technical engineering studies, with the call for proposals published only as a technical annex. If done so, this process could become a barrier for new players interested in entering this market, as only those players that know how to transform the technical annex into a cost-benefit analysis can participate.

To sum up, the length of the process in Peru may be a relevant problem, sometimes because of the long period of time required, and other times because of the short amount of time used. Too much time spent in the process was particularly noted with regard to road and sanitation infrastructure. Too little public participation may be an issue in the energy generation sector, if the private sector studies where and when to develop a project.

Another issue addressed in some interviews was the amount of institutions and consequent processes in the pre-investment phase. In some instances, it is not clear how much time some of the approving entities have to issue their opinions. In others, the time period is clear but not respected. Moreover, this problem leads to another issue related to the number of permits and licenses required for the several parties included in the process.

In addition, some interviewees identified a problem with the quality of the pre-investment studies.

First, they said that sometimes incomplete terms of reference are used because of problems associated with the lack of human resources. Second, they noted that public agents, on occasions, must present incomplete studies in order to cope with the pre-investment process requirements.

Regarding the terms of reference, there seems to be a considerable lack of specialists to address the public sector's needs. The consultancy and construction markets seem to be weak as well, and, considering that private sector salaries are above those of the public sector (which are constrained by salary caps), the private sector can easily poach human resources from the public sector. In addition, the public sector appears to have problems finding financial specialists. Some interviewees noted that projects that may not be bankable are on occasion approved anyway. This problem seems to be aggravated because of a lack of continuity among public employees in some public institutions.

Moreover, the public sector's demand for consultancies is exceeding the private sector's possibilities and, on occasions, the same specialists are part of different consortiums participating in the same bids. It is difficult to hire international consultants, as this involves paying 30 percent more in taxes than when hiring national ones. The lack of specialists was particularly noted in the road infrastructure and sanitation sectors, while the problem seems to be less prominent in the energy sector, where there is clear expertise and not as many projects.

In addition, some agents remarked that the feasibility phase may inhibit technical change by recommending less-expensive and known options, without taking innovation into account. The contracting mechanisms and legislation might represent a problem, as they benefit less-expensive candidates, sometimes to the detriment of better analysis and project formulation.

Likewise, the process may sometimes include nonoptimal alternatives in the project cycle as a consequence of short-term priorities, which can become a problem in the long-term. The process may be considering ineffective alternatives for which a profile study is conducted and resources invested during several phases of the infrastructure project cycle.

Furthermore, a waiver from the pre-investment process may be issued if the project is deemed a priority. In the past, there have been examples of "emergency decrees" by which a particular public project is implemented without going through the NPIS. Some interviewees noted that it is not easy to determine if this is a problem with the process or just a consequence of short-term needs. The process can be very bureaucratic, and so when a project needs to be completed quickly this kind of waiver is issued and as a result insufficient time may be spent on the pre-investment studies. However, when the process is followed, the bureaucratic issues addressed may affect the possible outcomes of the project, and it may be reasonable to ask for the waiver.

Similarly, interviewees noted that the profile studies sometimes include technically nonoptimal options that take into account demands from the populations involved in or affected by the projects. Stakeholder pressures sometimes surface after the project has been officially recorded and when alternatives are being analyzed. It is not clear how good is the current political support when communities act but they seem to be empowered to do so. These types of situations may generate opportunistic behaviors. For example, when a project location is defined, community members might even build their houses in the project area in order to seek reparations. This can happen even though every stakeholder knows the project is needed.

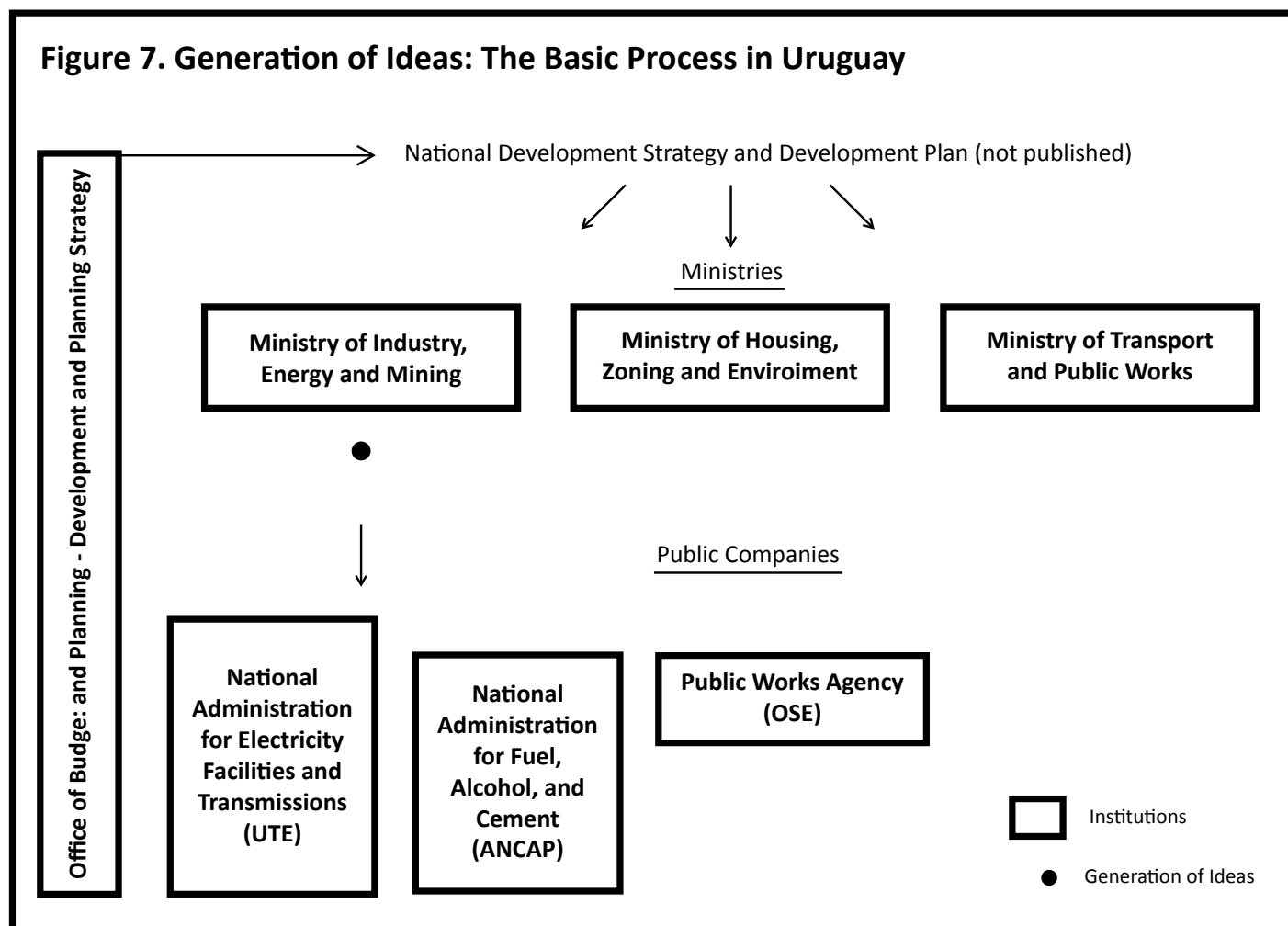
4.4 Case Study: The Pre-investment Process in Uruguay

4.4.1 Institutional Context and Legislation

As explained earlier, the pre-investment process is analyzed in this paper taking into account two groups of activities: generation and analysis of the project idea; and project profile to feasibility/design studies. This section looks at the institutional context and legislation that affect these pre-investment phase activities in Uruguay.

Generation and Analysis of Ideas

Figure 7 outlines the basic process for the generation of project ideas in Uruguay. The Office of Budget and Planning (OPP) is in charge of advising the executive branch on matters of economic and social strategy, and assisting in the formulation of plans, programs, and policies. Within the OPP, the Development Strategy and Investment Policy Coordinating Area is responsible for the Development and Planning Strategy (EDP) and the Investment and Economic Policy (PEI) areas.



Source: Prepared by the author.

In addition to preparing the EDP, the OPP is responsible for developing strategic guidelines and planning instruments, as well as for integrating and coordinating the work between ministries, public companies, universities, and other state entities in order to achieve a country strategy. Because of its coordination

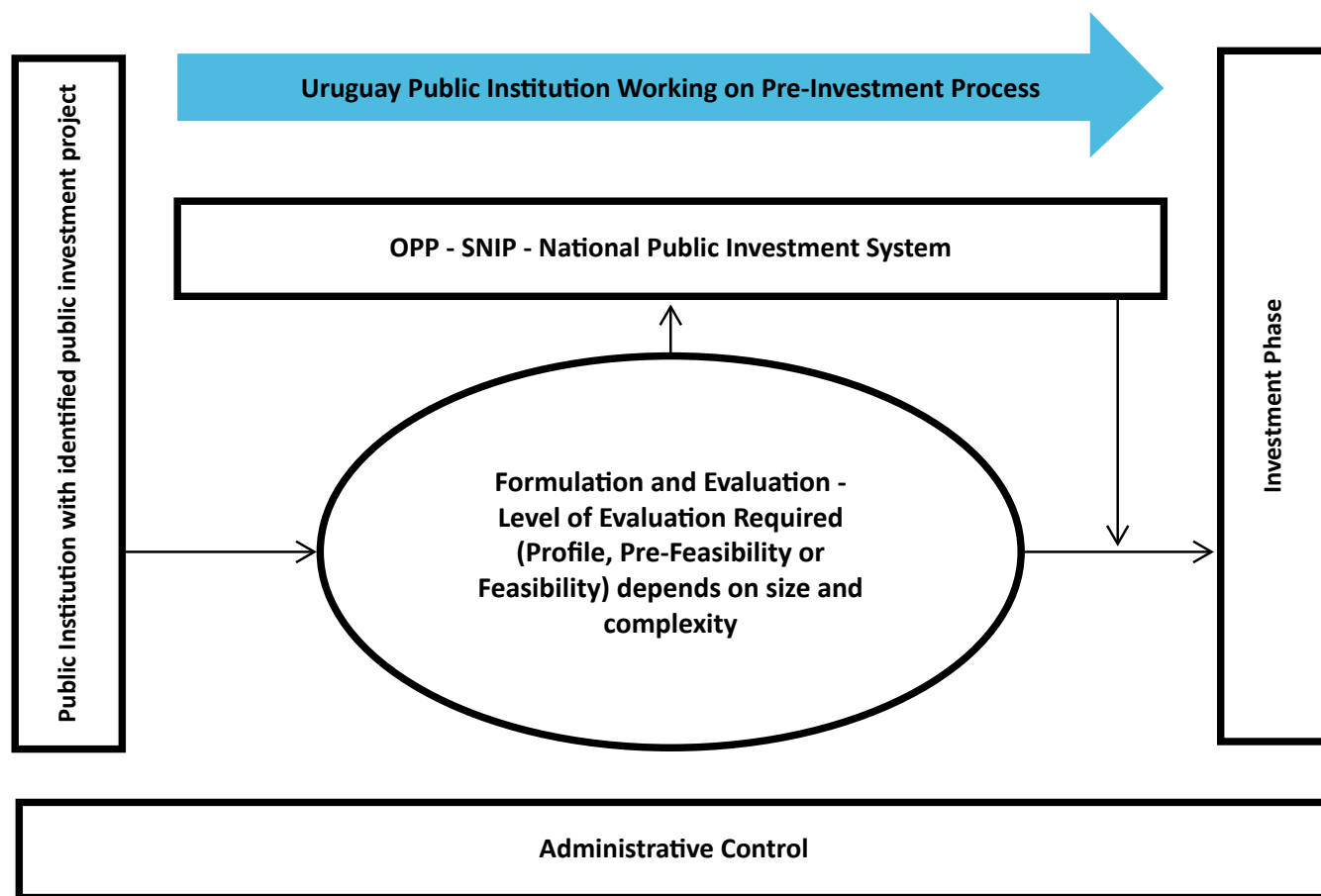
and support function, the OPP is specifically tasked with monitoring the alignment of sectoral public policies and infrastructure with the EDP.

The Ministry of Transportation and Public Works is responsible for designing, implementing, monitoring, and evaluating the National Transport Policy. In 2011, the ministry announced it was starting work on formulation of a Strategic Plan for Transport, Logistics, and Infrastructure for 2030.

The Ministry of Housing, Spatial Planning, and Environment (MVOTMA) is responsible for designing policies in the water sector through the National Directorate for Water and Sanitation. The Public Works Agency (OSE) is the decentralized state company responsible for providing water services throughout the country. The Montevideo Intendancy is responsible for providing sanitation services in the capital and the OSE provides these services in the rest of the country.

Finally, the Ministry of Industry, Energy, and Mining, and particularly its National Energy Directorate, is responsible for developing, proposing and coordinating policies to meet the country's energy needs. Since 2005 the ministry has had an energy policy in place with medium-term (2015) and long-term objectives (2030).

Figure 8. Profile to Feasibility/Design Studies: The Basic Process in Uruguay



Source: Prepared by the author.

From Profile to Feasibility/Design Studies

Figure 8 outlines the basic process for project profile to feasibility/design studies in Uruguay. According to current legislation, the National Public Investment System (SNIP) is responsible for the PEI areas of the OPP. It seeks to help assign public spending in an effective and efficient way, regulating and guiding the investment process throughout the life cycle of projects.

The SNIP is intended to optimize the allocation of public resources, strengthen institutional capacity to develop the pre-investment process, select and prioritize the Public Investment Program, monitor the implementation of projects, and measure outcomes and impacts of investments. The SNIP seeks to ensure that investments are made with a certain technical level of expertise in accordance with international methodologies. The application of this system is expected to enrich the design, evaluation, and preparation of investment projects across the public sector.

The SNIP monitors all institutions that plan and execute public investment – including all those bodies under the national budget – involving autonomous entities and decentralized services of industrial and commercial property of the state, departmental governments, mixed companies, and state-owned private entities, among others. These institutions are responsible for identifying a problem and formulating and preparing the public investment project. The projects are presented having followed the methodological guidelines set by the SNIP.

Projects are registered with the OPP's Project Bank, and SNIP evaluates projects in technical terms, issuing a technical compliance (approval for financing) and a technical report (approval for implementation). Once pre-investment studies are approved, each investing institution may prioritize its pipeline, asking for budget or funding in the next stage.

Concerning the private sector, private initiatives require the implementation of a public-private partnership (PPP) contract and must be submitted to the National Development Corporation (CND). The initiative must be submitted with all the information concerning the project along with a pre-feasibility study that shows, at that level, the project's viability. The PPP legislation is associated with the transportation, energy, and sanitation sectors, among others. The CND, MEF, and OPP must agree on the technical requirements applicable to the design of these projects in the pre-investment phase.

4.4.2 Infrastructure Pre-investment Process in Practice

Generation and Analysis of Ideas

Some interviewees noted that long-term strategic planning in some of the country's entities could be enhanced. A management-by-objectives approach seems to be needed in those cases, which occur across various sectors and activities. This issue may be having consequences on the energy, transportation, and water and sanitation sectors, as well as in terms of budgeting, control, and environmental issues, among others. Problems usually appear when operationalizing existing strategic plans for the short and medium term.

In addition, intersectoral planning does not seem to work as it should. Again, interviewees said that an enhanced culture of collaboration between different public entities should be promoted. Moreover, the quality of sectoral planning is uneven among the different sectors, as well as between central government bodies and publicly owned companies.

On a positive note, the energy sector seems to be well-prepared in terms of the generation of ideas. Both the Nacional Administration for Electricity Facilities and Transmission (UTE) and the National Administration for Fuel, Alcohol, and Cement (ANCAP) have strong planning sectors, both having been publicly owned companies. A similar finding is reported for the water and sanitation sector, which is for the most part handled by the OSE, another public company.

All these public companies undertook a planning effort a decade ago and developed different kinds of plans, but most of the planning at present involves the short term. In fact, some interviewees said that plans are changed when their boards of directors change.

Several stakeholders identified a problem with human resources in the public sector. The technical workforce seems to be less prepared than some years ago. As the amount of financial resources to develop projects has increased, pressure has grown to develop new projects. In the context of less capacity, this is a problem that can be affecting the quality of the analysis process. Some of the interviewed agents specified that medium- and long-term human resource policies are needed to correct this situation.

From Profile Studies to Feasibility/Design Studies

When the interviews were conducted, the SNIP was in the first phase of an implementation period. As public investment is associated with the five-year programming cycle, following approval of the 2015 national budget, public sector organizations will have to comply with the SNIP if they intend to access resources from this general budget. The SNIP is expected to participate in every project that uses public resources.

At present, some of the interviewed agents said they did not report their pre-investment studies to the SNIP. In those cases, only those projects that are financed by multilateral external organizations follow an externally controlled pre-investment process from profile to feasibility and design studies. The other projects need to be better controlled; explicit rules are needed, and this is the SNIP's objective for the following year.

There also seems to be a faulty structure of incentives in some cases. Interviewees said that the indicator that seems to be followed by some public organizations is the percentage of the executed budget. In this context, project efficiency should be promoted. Although this is not the rule, there seems to be room for improvement.

Moreover, some interviewees said that short term urgencies shape the way the actual process works. For example, public works may be tendered, on some occasions, based only on the first stages of the preliminary design. This may not be responding to a technical issue.

Other interviewees said that the project preparation process is affected by a lack of human resources. Financial resources do not seem to be an issue in most cases, although this might be a more important problem with small projects. At present, there is sometimes a lack of capacity in planning areas, and in

other areas there seems to be a generation gap, as there was no new recruitment for several years. Therefore, there are several examples of pre-investment studies that are outsourced to the private sector. Unfortunately, the interviewed agents stated that the private sector has too much work as well and that private companies are also having problems with human resources.

Other interviewees maintained that there may be some difficulties in the relationship between public entities in the pre-investment phase. The fact that some organizations present their investments to the SNIP and others do not is evidence of this problem. This seems to depend on the type of entity. At present, central government entities seem to be presenting their investments to the SNIP, but some of the publicly owned companies do not. Additionally, there seem to be differences in the way public entities that are carrying out projects relate to the associated ministries. For example, the communication channels between the MVOTMA and the Energy and Water Services Regulatory Unit (URSEA) with OSE are not the same as the communications channels that the Montevideo Intendancy has with these entities.

Finally, some interviewees pointed to a problem of delays due to bureaucratic processes specified by the current legislation. For example, in some institutions an advisory committee may be designated for projects that exceed their budget by a certain amount. This can be a bottleneck when there are several projects, as the same people are designated for various advisory committees.

4.5 Summary of Results

Table 1 presents a summary of the results of the analysis of the pre-investment process (policy framework, public agencies involved, pre-investment, and implementation) for infrastructure in the four case studies presented in this chapter: Chile, México, Peru, and Uruguay.

Table 1. Results: Pre-investment Processes

		Policy Framework	Public Agencies Involved	Pre-investment Process	Implementation
Chile	Generation of ideas for Infrastructure Plans	Law - 15.840 Law 20017 Law 2009 DFL 164 - 1991	Ministry of Public Works (Public Works General Directorate) Ministry of Energy	Ministry of Public Works - Master Plan/ National Strategies - Regional Plans Ministry of Energy - Energy Strategy and Agenda	Ministry of Public works - Executive Units work on plans. Ministry of energy leaves implementation on the private sector.
	from Profile to Feasibility/Design	Decree/Law 20.530 Decree/Law 1.263 Decree/Law 19.175	All public institutions Ministry of Social Development	Profile, Pre-feasibility, Feasibility	Investment initiative from formulating institution
Mexico	Generation of ideas for Infrastructure Plans	Planning Law DOF 05-01-1983 DOF 27-01-2012	Secretariat of Finance and Public Credit (SHPC), Communications and Transportation Secretariat, Energy Secretariat, and the Environment and Natural Resources Secretariat	SHCP - National Development Plan/National Infrastructure Program Secretariats - Sectoral Plans	Secretariats work on sectoral plans taking into account the National Infrastructure Program
	from Profile to Feasibility/Design	Federal Budget Law and Regulation DOF 27/04/2012 DOF 18/03/2008	SHCP - Investment Unit Center for the Preparation and Evaluation of Investment Projects (CEPEP) SHCP - General Directorate of Planning and Budget	Planning Mechanism + technical Note/Cost-Benefit/Cost-Efficiency Analysis	Program or project from sectoral secretariats

Peru	Generation of ideas for Infrastructure Plans	Law Decree - 1088 and Resolutions	National Center for Strategic Planning, Ministry of Transport and Communications, Ministry of Energy and Health and Sanitation	NCSP - Bicentennial Plan Ministries - Multinational Sectoral Strategic Plans	Ministries develop multiannual plans considering Chapter 5 of the Bicentennial Plan
	from Profile to Feasibility/Design	Law 27293 and Resolutions	Decision-making Organizations), Investment and Programming Offices, Multi-year Programming General Directorate, Implementation Units, Formulating Units	Profile, Feasibility	Formulating Unit with projects from Multiannual Plans
Uruguay	Generation of ideas for Infrastructure Plans	Decree 91/97 Resolution 136 - 2009	Office of Budget and Planning (OPP), Ministry of Industry and Mining, Ministry of Housing, Spatial Planning, and Environment, Ministry of Transport and Public Works, Public Companies	OPP/Development and Planning Strategy (EDP)/Investment and Economic Policy (PEI) - National Development Strategy and Development Plan	Ministries develop sectoral plans
	from Profile to Feasibility/Design	Law 18.996 - National Public Investment System (SNIP)	OPP - SNIP	Formulation and Evaluation	Public institution with identified public investment

Source: Compilation based on secondary resources (see Appendix 1).

4.6 Flaws of the Organizational Strategy: A Cross-case Analysis

4.6.1 Acceptability – Political Environment

All of the country strategies reviewed have difficulties in terms of acceptability of the pre-investment phase of the infrastructure project cycle. This is particularly the case in the generation of ideas for new projects.

In Chile, most of the interviewed agents said that investments that can be inaugurated during the term of a particular government administration are usually favored, as they may solve short-term needs. In Mexico, as there is no penalty if the National Development Plan is not followed, projects to be developed are sometimes selected if they are developed in the short-term as well. In Peru, the Bicentennial Plan is not as institutionalized as it should, so a similar problem occurs. Uruguay seems to have difficulties to use the planning tools that exist, which may be considered as a lack of acceptability as well.

In every case, therefore, there is little intersectoral planning and possible gains from coordination are lost. When an institutional tool to plan in an intersectoral way exists, like the general plans mentioned above, the tool is usually a group of projects, without really considering the possible associated advantages. In consequence, in general, the tool lacks credibility.

Thus, the only planning in these situations is at the sectoral level, and it is actually carried out only to varying degrees. There are in fact institutional tools in each of the countries to overcome the expected pre-investment process. For example, there are Presidential Priorities in Chile, Presidential Commitments in Mexico, and Emergency Decrees in Peru. Uruguay does not have an institutionalized tool, but it may

not follow the expected process as well. In this context, it is not always clear how countries are prioritizing the infrastructure projects.

Acceptability also affects the process between profile and feasibility/design studies. The previous tools may be used as waivers to bypass the entire process, which can compromise the overall quality of the pre-investment phase studies. The consequence is that, in most countries, there are infrastructure sectors that view the pre-investment evaluation of investment systems as a prerequisite to obtain resources.

4.6.2 Relevancy – Changes in the Problem

The relevancy of the current strategy was specifically mentioned by the interviewed agents when considering the segment of the process between profile and feasibility/design studies. In the case of Chile, interviewees considered the current methodology used to evaluate projects to be out of date because it does not account for productive linkages and externalities. The same happens in Mexico, where the Investment Unit seems to consider only cost-benefit analysis, leaving aside important considerations such as regional development, industry promotion, environmental benefits, and equity concerns, among other issues. A similar problem was noted in Peru, where the strategy was initially proposed to bring order to the public investment process, but where other needs have by now surpassed the initial purpose of the strategy. In Uruguay, the current process is not always respected.

This lack of relevancy of the current infrastructure pre-investment phase process is reflected in other comments by the interviewed agents. In most of the countries, the interviewees maintained that the process is too generic or inflexible. For example, Chile and Peru apparently have the same process requirements for projects of very different sizes, and in Mexico there are no specific considerations whatsoever for some sectors.

There are a number of potential problems as a consequence of this lack of relevancy. In Chile and Peru, small projects may be supporting a disproportionately large financial burden to cope with pre-investment study requirements compared with larger projects. In all the countries, the lack of sector-specific considerations may cause a number of inefficiencies. For example, there may only be one clear alternative, yet several alternatives must be proposed according to the process requirements stipulated by existing legislation.

In sum, in most of the countries, the pre-investment phase was developed to cope with a particular problem, i.e., to organize what was a disorderly public investment process. The countries undertook this effort using particular methodologies to address this problem, but in most cases the problem eventually changed. As the problem has changed, the strategy should change as well.

4.6.3 Adequacy – Pre-investment Resources

The methodological design of this paper selected four countries that currently have resources to develop a correct pre-investment phase for the infrastructure project cycle. The replication logic, in the case of adequacy, is evident when analyzing human resources devoted to this phase.

In all the countries, the human resource problem was seen starting with the generation of project ideas. In Chile, for example, some interviewees stated that a significant number of infrastructure ideas come

from the regions, where there are often not enough human resources to develop a good portfolio of projects. This was also the case in Mexico, where the available human resources seem to be devoted to administrating the portfolio, not generating new ideas, and in Peru, where intersectoral planning seems to be an individual effort by certain staff without any broader planning per se. In Uruguay, the problem seems to be the lack of human resources working on an increasing demand of projects given by the financial opportunity.

This problem is even clearer in the phase from profile to feasibility/design studies. To different degrees in all countries, economic growth has resulted in an increase in the development of new projects. Therefore, human resources to work on these types of studies have been moving from the public to the private sector, where salaries are generally more competitive. In some cases, there is even a human resource problem in the private sector, mostly in instances where this sector is not fully developed.

Chile seems to be the country where the human resource issue is less acute. The general opinion of the agents interviewed is that the public sector still has well-educated and experienced human resources working on these studies. Nevertheless, some interviewees noted that even in Chile, certain specialized sectors have human resource issues. In Mexico, public sector human resource capacity diminished over the past two decades, mostly as a consequence of the wage policy. In specialized sectors in Peru there are only a few professionals capable of conducting the studies needed. Similarly, in Uruguay, interviewed agents said that the project preparation process is affected by the lack of human resources. Overall, it should be noted that human resource issues differ depending on the sector. Problems seem to be less acute in energy than in transportation, and probably most serious in water and sanitation.

4.6.4 Consistency – Organizational Interactions

Finally, problems in public organizational interaction are common to all countries during the process of generating project ideas, although the different stakeholders noted more specific issues during the profile to feasibility/design studies. This coincides with the fact that institutionalism in every country in terms of these studies is heterogeneous, as noted by the interviewees.

Regarding the generation of ideas, although every country has some kind of institutionalism to promote intersectoral planning, that planning is not actually happening. In some cases, this is a problem even inside particular ministries and secretariats. General plans seem to be grouping sectoral initiatives, rather than representing work reflecting interdependence and integrality of ideas.

On the subject of organizational interactions during the profile to feasibility/design studies, problems are seen as more country-specific. In Chile, these problems were observed during the period when the pre-investment studies are being worked on by the different entities. Difficulties were noted in terms of presenting the documents on time and the apparent vagueness of the actual functions that the organizations are assigned to develop. Likewise, in Mexico, some ineffective control and oversight mechanisms are impacting on the efficiency of the process.

Although the pre-investment process has evolved in Peru, interviewees argued that the length of the pre-investment cycle for publicly funded projects represents a challenge. It is sometimes not clear how much time some of the intervening institutions have to issue their opinions. In addition, some

interviewees noted the excessive number of permits involved in the process. Finally, in Uruguay, the pre-investment process is in its initial implementation phase and organizational interactions are not yet fully developed. Nevertheless, this is a very relevant issue in Uruguay because some institutions that should present their pre-investment studies to the SNIP are currently not doing so.

4.7 Summary: An Evident Replication

This chapter has followed the theoretical propositions initially stated in this paper. The strategies that the four countries employ for their pre-investment phase of the infrastructure project cycle should be revised in view of four issues: acceptability, relevancy, adequacy, and consistency (Table 2). The multiple-case analysis has used a pattern-matching logic, comparing the empirically-based pattern with the pattern predicted prior to data collection. The fact that empirical and predicted patterns show manifest similarities supports the internal validity of this analysis. There is evidence of replication in multiple cases, which is a good indicator of the robustness of the conclusions (Yin, 2013). In summary, the four cases show theoretical replication, providing compelling support for the initial set of propositions.

Table 2. Results: Flaws of the Organizational Strategy

		Acceptability	Relevancy	Adequacy	Consistency
Chile	Generation of Ideas for Infrastructure Plans	Long-term plans not always followed. Results are needed during the period of a given government administration.	More integrality and interdependence of project formulation is needed.	Big differences in human resources among regions.	NA
	From Profile to Feasibility/ Design	NA	Outdated methodology (cost-benefit analysis). Weak estimation of social reactions. Lack of differentiation.	Workforce is well educated but amount of work is increasing at a faster rate	Problems with the time of year when projects are presented. Excessive control by participating institutions.
Mexico	Generation of Ideas for Infrastructure Plans	National Development Plan (NDP) and National Investment Plan (NIP) not always followed by sectors.	Problems in intersectoral and long-term planning.	Administering portfolios is more urgent than planning. States are strong but municipalities are not.	Lack of coordination between some levels of government
	From Profile to Feasibility/ Design	Pre-investment studies are sometimes viewed as a prerequisite to obtain resources.	Outdated methodology (cost-benefit analysis). does not consider regional development, industry promotion, etc. Political negotiation not considered.	Workforce quality impacts on the generation of projects.	Process is weakened by the way several institutions are participating.

Peru	Generation of Ideas for Infrastructure Plans	More empowerment of Bicentennial Plans needed.	Long-term plan must be strengthened.	NA	More intersectoral work is needed.
	From Profile to Feasibility/ Design	Non-optimal alternatives may be chosen as a result of short term urgencies.	Inflexibility in the process among sectors and regarding the size of projects. Insufficient stakeholder participation.	Lack of technical and financial specialists.	Excessive amount of time when institutions keep track of projects.
Uruguay	Generation of Ideas for Infrastructure Plans	Difficulties for long-term planning. Some plans change every electoral period.	Long-term plan must be strengthened.	NA	More intersectoral work is needed.
	From Profile to Feasibility/ Design	Short term urgency, and no need to send project through the National Public Investment System (SNIP). The process is not always followed.	NA	Lack of human resources in planning divisions. Generation gap.	Not every organization presents its projects to SNIP, but it is still not necessary to obtain resources.

4.8 Limitations and Constraints

The pre-investment phase can present difficult problems, so the more information gathered from different stakeholders implies a better understanding of the questions addressed. To construct an information-based interpretation of the situation in the countries examined, 28 interviews were conducted for this study. Specifically, different views were considered in each case. This was a significant effort but it could be further extended. In light of the time and resources available for this study, the interviews and the results presented focus on the public sector, and particularly on national or federal governments. However, it is clear that the infrastructure pre-investment process is very different when contemplating regional and local government efforts. Both groups of activities – the generation of ideas and the profile to feasibility/design studies – pose different kinds of problems for federal, regional, and local governments. This issue is not examined in this paper.

There are similar issues with the private sector. In several infrastructure sectors, the extent of private participation is a good indicator of the quality of the pre-investment process. This paper is not intended to address this question, and further research on the private sector role is needed. Again, time and resources of the current study focused on analyzing the functioning of the public sector.

A final limitation is that, in analyzing the generation of ideas during the pre-investment phase for infrastructure projects, this paper includes only those plans that are actually published online. It may occur that public institutions have plans that were not available or were not located during the research for this paper.

Chapter 5 Discussion

This chapter uses the findings from the previous chapters to develop a feasible benchmark and draw a policy analysis. The aim is to understand how the findings can be used to help design an institutional environment that promotes an efficient pre-investment phase for the infrastructure project cycle in LAC.

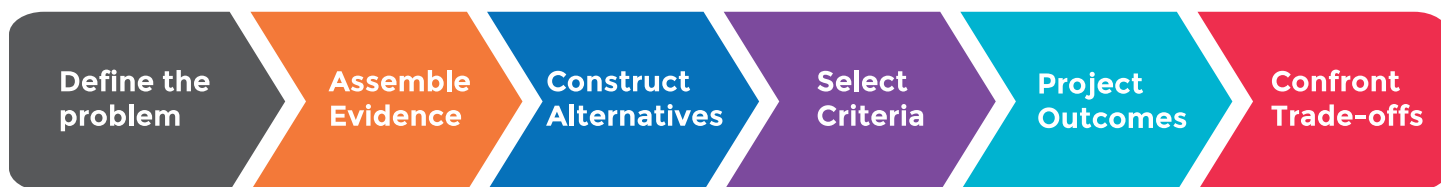
In order to work on this analysis, recent theoretical proposals from new institutional economics and transaction cost economics (TCR) are used, as explained in the literature review. The current situation is formally addressed using this theoretical tool, and policy recommendations are drawn taking into account possible steps to efficiently change the institutional environment of the pre-investment phase in the analyzed countries.

5.1 Selected Methodological Structure for Policy Analysis

As explained by Bardach (2008), policy analysis is more art than science, as it draws as much on intuition as on method. Nevertheless, Bardach makes a remarkable effort to offer a coherent methodological structure for policy analysis. He proposes the following steps: (1) Define the problem; (2) Assemble evidence; (3) Construct alternatives; (4) Select criteria; (5) Project outcomes; (6) Confront trade-offs; (7) Decide; and (8) Tell your story (Bardach, 2012, p. xvi). This paper follows this structure, specifically from steps one to six (Figure 9).

Step one has been developed in the literature review and the methodology chapters, and step two has been partially taken up in the results chapter. This section provides a deeper analysis of step two and also develops steps three through six.

Figure 9. Policy Analysis Framework – Steps 1 to 6



Source: Prepared by the author based on Bardach (2008).

The completion of steps two and three are related to proposing a benchmark, which is then used as the alternative to the pre-investment process for the analyzed LAC countries. The alternative is based on that proposed by WEF (2012). However, in order to come up with a feasible process, this proposal is enriched by the experiences of three exemplar countries (referred to as “source sites,” the countries are Australia, Canada, and the United Kingdom) and by the analysis proposed in the previous chapter. Evidence is assembled and the final alternative is constructed for the two subprocesses (generation of ideas, and from profile to feasibility/design studies).

This benchmark is then compared with the current pre-investment process in LAC in order to analyze potential ways to improve that process. That is why steps four, five, and six are needed. In

particular, step four is about selecting the criteria to compare the alternatives. According to Bardach (2008), any policy story has two interconnected plotlines: the analytic and the evaluative. The first considers facts and disinterested projections, such as those made in the previous chapters, and the second reflects value judgments. Step four reflects those judgments when selecting criteria. In this document, the selected criterion is cost-effectiveness, defined as the extent to which a particular policy is expected to achieve its results at a lower cost compared with alternatives.

Maximizing public interest is defined here as lower cost overruns and fewer delays as a result of a better institutional environment for infrastructure planning. In this context, the infrastructure institutional design should be selected considering first- and second-order economizing, as defined by new institutional economics, and taking into account relative potential future costs. This criterion is not used to judge the alternatives. It is applied to projected outcomes in terms of transaction hazards that have an impact on transaction costs. This issue is carefully explained in later sections. Therefore, for the proposed alternatives, the effects of the possible pre-investment processes are projected in step five in terms of transaction hazards, which are then addressed in terms of cost-effectiveness in step six. The entire analysis is intended to help determine which phases of the process are having a larger impact – that is, the phases where it is most urgent to change current institutional policies in order to minimize cost overruns and delays.

5.2 Step Two of the Policy Analysis Framework: Assemble Evidence



To conduct the policy analysis, relevant pre-investment institutional tools from the three source sites (Australia, Canada, United Kingdom) are detailed. The WEF (2012) proposal is then outlined.

5.2.1 Source Sites

Table 3 summarizes the analysis of smart practices identified in each one of the source countries (see also Appendix 1). Practices in Australia are concentrated in an institutional context that promotes a national perspective of infrastructure planning, using “monetized” cost-benefit analysis as a core tool complemented by “nonmonetized” effects. The recommendation of this specific institution is required to access funds. Besides, Canada (and Australia too) links its plan with funding and requires an inter-sectoral plan at secondary government levels. The United Kingdom implements Infrastructure Capacity Plans by sector and requires an application process for major projects in order to promote participation of third parties.

Table 3. Source Sites: Summary

	Specific Infrastructure Institution	Infrastructure Intersectoral Plan	Sectors	Sepecific Smart Practices
Chile	Infrastructure Australia	National Infrastructure Plan	Transport, Energy, Communications, and Water	<ul style="list-style-type: none"> ● National perspective instead of project-by-project and jurisdiction-by-jurisdiction approach. ● Economic viability uses monetized coast-benefit analysis as its core tool, completed by nonmonetized effects. ● Infrastructure Australia's recommendation is a condition to authorize Payments
Canada	Infrastructure Canada	Building Canada Plan	Transport, Energy, Communications, and Water	<ul style="list-style-type: none"> ● Building Canada Plan provides funding (Community Improvement Fund, New Building Canada Fund, and other programs) ● Some regional government legislation to require regularly updated 10-years plans.
United Kingdom	Infrastructure Canada	National Infrastructure Plan	Transport, Energy, Communications, and Water	<ul style="list-style-type: none"> ● Takes a cross-cutting and strategic approach to infrastructure planning ● Sectoral Departments implemente Infrastructure apacity Plans ● Planning Inspectorate requires application process for significant projects

Source: Compilation based on secondary resources (see Appendices 2 and 3).

5.2.2 World Economic Forum: Proposed Steps – The General Benchmark

In order to maximize the benefits from economic infrastructure, WEF (2012) recommends that governments first address a fundamental question intimately linked to the infrastructure pre-investment phase: how should governments prioritize infrastructure projects? For countries that need a national economic infrastructure plan, WEF (2012) proposes a seven-stage model to help with the prioritization process:

- 1) *Understanding the Current Situation.* This is proposed to help governments to understand four drivers of infrastructure readiness: the current condition of infrastructure assets; coherence of government policies to promote infrastructure investment; support from society to invest in infrastructure and discuss next steps; and construction industry access to labor, building materials, and finance.
- 2) *Creating a Vision and Goals for the Future.* The step takes into account the fact that infrastructure investment stakes are high, so a long-term vision would help in the drafting of medium-term goals.
- 3) *Using the Infrastructure Goals to Identify Possible Projects.* This is the development of a short-term plan, addressing infrastructure deficiencies in order to achieve the medium-term goals projected in the stage two.
- 4) *Finalizing the Best Solution for Each Infrastructure Deficiency.* This stage is about determining the best solution, taking into account that while cost-benefit analysis is an excellent tool, there may be other problems governments should consider, such as possible misinformation problems in the whole process.

- 5) *Deciding Who Should Pay for Infrastructure.* This stage is recommended to support decision-making on funding. Funds are raised either from the public through taxation, from consumers through bills and user charges, or through some combination of these sources.
- 6) *Finalizing the Plan.* This stage is proposed to develop a formal prioritization of projects. It is a relevant step that allows for analyzing and addressing practical delivery questions that may become bottlenecks in the future if not addressed in advance.
- 7) *Moving From Planning to Action.* Finally, stage seven is about assigning resources and expertise and taking action toward realizing the plan. This may involve the design of commercial structures and detailed engineering designs, economic analysis, financial studies, and legal and environmental viability studies, among other measures.

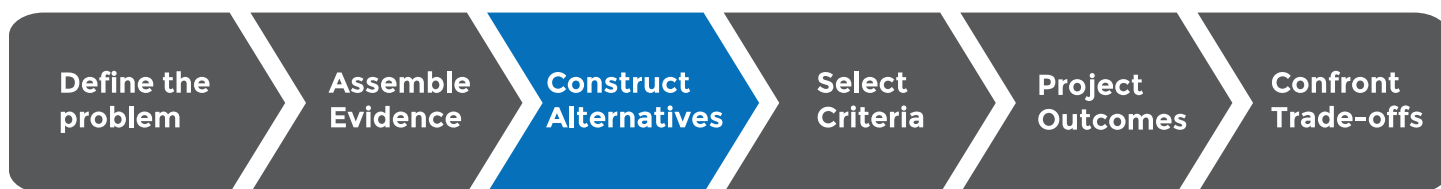
According to WEF (2012), the four main benefits of preparing and executing this model are greater certainty, clear prioritization methodologies, improved coordination, and robust solutions. Certainty would have effects on the public sector, as it would reduce the chance of modifications due to changes in political administrations. It would also affect the private sector, as for example in the case of construction companies that would improve employee retention rates and worker productivity (WEF, 2012).

The second stated benefit, in accordance with the first section of this paper, is that a plan would help to select and prioritize those projects that have the greatest advantages in terms of economic growth, social uplift, and sustainability. Improved coordination refers to the fact that this kind of plan would generate inter-institutional situations, diminishing bureaucracy. Finally, robust solutions refer to the benefits that arise as a consequence of infrastructure interdependence (WEF, 2012).

This last point is particularly relevant. Infrastructure interdependence is defined as a bidirectional relationship between two infrastructure works through which the state of each one influences or is correlated with the state of the other. There are several types of infrastructure interdependence. Physical interdependence is that which arises from the physical linkage between inputs and outputs of infrastructures. The typical example is a rail network and coal-fired electrical generation plants. Cyber interdependence involves electronic and informational links. Geographic interdependence is associated with spatial proximity and several events linked to control schemes that connect an agent in one infrastructure work to an agent in another, without there otherwise being physical, cyber, or geographical connections. Human decisions play a predominant role in this type of interdependence, as for example when low gas prices create traffic congestion along tourist routes (Kelly, Peerenboom, and Rinaldi, 2001).

A coherent pre-investment phase such as that proposed by WEF (2012) would generate these four benefits. However, this model can be supplemented by some of the stated smart practices and experiences from Australia, Canada, and the United Kingdom, and should also take into account relevant proposals from the interviewed agents in terms of developing a feasible benchmark.

5.3 Step Three of the Policy Analysis Framework: Construct Alternatives – A Feasible Benchmark



For both the generation of ideas and the profile to feasibility/design studies, this paper lists the steps suggested by WEF (2012) and proposes simple institutional designs for the two groups of activities. It uses lessons from the selected source countries (Australia, Canada, and the United Kingdom), taking into account the extrapolation problem detailed in Chapter 3 and the propositions that were corroborated in Chapter 4. As explained, this institutional benchmark is then used to evaluate the impact of the inefficient pre-investment process in terms of TCR in the final sections of this chapter.

5.3.1 Generation of Ideas

A Theoretical Approach

For the group of activities related to the generation of ideas, it seems reasonable to apply the first two steps suggested by the WEF: (1) Understanding the Current Situation, and (2) Creating a Vision and Goals for the Future. The first step is the foundation of the second, which is a long-term plan.

From source countries, in this case we use the example of Australia to develop the institutional benchmark. It is presented as the institutional environment of Country X, which this paper intends to use as a feasible alternative.

Country X develops this two-step process with one institution, and the outcome is outlined in one intersectoral long-term plan with medium-term objectives. A particular institution is needed to verify that sectoral efforts are in line with the plan, and one plan is imperative to take into account infrastructure interdependence (physical, geographical, and cyber). It is important, as explained, to provide a clear cross-cutting national perspective rather than use traditional project-by-project and jurisdiction-by-jurisdiction approaches.

A Feasible Approach

The replicated propositions from the previous chapter should still be taken into account to come up with a feasible benchmark. The institutional design should contemplate the following: political acceptability, relevancy to current needs, adequate resources, and minimum bureaucracy. Therefore, some institutional tools that complement the previous proposal are outlined below.

First, the proposed process includes several visions that require the participation of experts, construction companies, financiers, labor unions, civil society, and NGOs in the development of the plan. This guarantees that long-term planning is politically advantageous and promotes accountability.

Second, in order to be relevant to current needs, the plan is prepared in house and takes into account the infrastructure challenges facing the country. It is not a long list outlining sectoral projects and generated by the sectoral bodies. It is focused on those changes needed to improve the way in which infrastructure is used and delivered, on how the country should invest in these sectors, and on national challenges. This is the focus of Australia's national infrastructure plan.

The proposed plan addresses productivity, economic growth, and social well-being, and then puts forth long- and medium-term objectives for infrastructure interdependence. Moreover, it is periodically revised, as is the infrastructure plan proposed in Ontario, Canada (see Appendix 1), addressing relevant needs and providing an understanding the complexity of system. The proposed plan has an intersectoral focus that takes into account infrastructure interdependence.

Third, legislation assures that the institution implementing the plan has sufficient human and financial resources. With regards to possible public wage caps, this institution is outside the central government and thus unaffected. It is a public-private entity, but the public sector has a majority vote on the Board of Directors so that it is politically feasible. The other members are those already mentioned (representatives of construction companies, experts, etc.)

Finally, on the subject of minimizing bureaucracy, this institution participates in the process used by the sectoral bodies (Ministries of Transport, Energy, and/or Water) to gain access to public funds. At this stage, the institution only checks whether sectoral short-term plans, required by legislation in Country X, are associated with the long-term view suggested by the long-term plan. Sectoral short-term plans clearly identify and quantify the problems that are addressed, and explain why solving a particular problem is aligned with the stated long-term plan.

To sum up, Country X uses one institution to develop a long-term infrastructure plan with medium-term objectives, with the participation of several stakeholders. This institution has sufficient resources to participate in the process by which sectoral bodies apply for public funds.

However, as explained in previous sections, when extrapolating this benchmark to LAC, it is necessary to consider the institutional, political, economic, and interpersonal context. In this case, taking into account Bardach's (2008) suggestions, only interpersonal vulnerabilities could oppose the formal extrapolation. The other context issues are considered as the propositions analyzed in chapter four were reflected. For this remaining vulnerability, specifically interpersonal vulnerabilities, this paper did not identify a particular institutional tool, either from input from interviewed agents or from source sites. Nevertheless, it is related to the first level of social analysis proposed by Williamson (2000), which is not the objective of this paper, as it is expected to change long periods of time and they are often non-calculative and spontaneous. Therefore, it assumes this is not a problem to extrapolate, leaving the argument of culture or idiosyncrasy aside. This is an important flaw of the benchmark design because "embeddedness" has an impact on the institutional environment (Williamson, 2000). Another flaw is related to potential vulnerabilities associated with the institutional context of the source sites. In this paper, no interviews were conducted in those countries, and flaws of their institutional organizations are not considered here.

5.3.2 From Profile to Feasibility/Design Studies

A Theoretical Approach

In the case of profile to feasibility/design studies, this paper uses steps three to six as proposed by WEF (2012) as the foundation of the institutional benchmark for this process. The steps are (3) Using the Infrastructure Goals to Identify Possible Projects; (4) Finalizing the Best Solution for Each Infrastructure Deficiency; (5) Deciding Who Should Pay for Infrastructure; and (6) Finalizing the Plan.

For this group of activities, as well as for the those related to the generation of ideas, the experiences from the studied countries and agents' recommendations are used to specify the final feasible benchmark proposal. In this case, each step is analyzed separately for presentation purposes.

On the subject of step three, Country X's short-term plans are developed in each of the specific sectoral institutions, taking into account Infrastructure Capacity Plans such as those in the United Kingdom. The short-term plans are related to the long-term plan as specified in the previous subsection. In this context, they involve the identification of possible projects for the different problems that must be solved. Therefore, these plans are intrinsically related to profile studies.

In this hypothetical set of institutions, the obligation to identify more than one possible project is related to sectoral specifications, such as in Canada, and the category-specific requirements. In addition, within the sectoral-specific requirements, legislation also considers the size of projects in order to determine whether to require the presentation of options, such as in the case of Mexico. To make the benchmark comparable to target sites, a National Investment System is in charge of reviewing the quality of the profile studies.

Steps four and five are essentially related to pre-feasibility and feasibility studies. In our hypothetical country, the requirement of pre-feasibility studies is related to the size of the project. A cost-benefit analysis is compulsory for those projects that can reasonably measure the benefits, and a cost-effectiveness analysis is required if that is not possible. However, a simple multi-criteria analysis system is added, taking into consideration regional development, environmental benefits, externalities, productive linkages, and social equity concerns. It is important to complement cost-benefit analysis with nonmonetized effects, as in the case of Australia. Again, the National Investment System is in charge of reviewing the quality of both studies.

On the subject of who should pay for infrastructure (step five), this benchmark considers that the approach to infrastructure funding rests on three options: from the public through taxation; from consumers through bills and user charges; or through some mixture of these sources. Considering the lack of public resources, user charges are promoted when aligned with economic, industrial, social, and environmental policies. This topic is addressed in both profile and feasibility studies and again in the analysis of the National Investment System.

Finally, design studies are a result of an approved pipeline of projects, as addressed by the previous steps, that is reviewed in step six. The pipeline in this hypothetical country is published by sectoral bodies as well as by the infrastructure intersectoral organization mentioned in the previous subsection. This final step ends following the example of the United Kingdom and its six-stage process to involve other stakeholders. Specifically, the public has a process by which to express and go on record with their

views, attend preliminary meetings, speak at public hearings, and even challenge the decision in the courts before project execution starts.

A Feasible Approach

The replicated propositions from the past chapter should still be considered when finally proposing a feasible benchmark, as in the previous subsection.

First, political acceptability should be taken into account. Considering that every country analyzed had some kind of waiver, this benchmark considers a formal institutionalization for abandoning the pre-investment process in special cases. A proposal of this type must be presented to the infrastructure organization and discussed by the Board of Directors. After that, the final recommendation from each one of the board members must be published. All of these steps constitute a type of “fast track” that is faster than the current process, and at the same time they provide accountability.

Second, relevancy to the current problem is contemplated at every step. For example, alternatives in profile studies are only required for certain sectors and for relevant-sized projects, as stipulated in category-specific requirements. Moreover, cost-benefit analysis is an important tool, but only when used in conjunction with a multi-criteria analysis to contemplate other needs.

Third, human resource policies are added to the previous institutionalism. The infrastructure institution is in charge of promoting specific pre-investment analysis courses (very specialized training) for public sector workers.

Finally, on the subject of consistency, several institutions participate in the process, including the national infrastructure agency, sectoral bodies, the Ministry of Finance, the National Investment System, and the General Controller entity. Each has a different function. However, an annual screening of the organizational activities and of the process is conducted by the national infrastructure agency. In order to do this, interviews with agents from the different institutions must be conducted on a periodic but defined basis.

In this hypothetical scenario, again, only interpersonal vulnerabilities can oppose the extrapolation. Political, economic, and institutional issues are addressed. Just as in the previous subsection, this document supposes this is not a problem to extrapolate, leaving the argument of culture or idiosyncrasy aside. This, as well as possible vulnerabilities of source sites, is an important flaw of the benchmark design for this second group of activities.

5.4 Step Four of the Policy Analysis Framework: Select Criteria – Cost-Effectiveness



In this paper, outcomes are projected in the context of levels two and three of the social analysis proposed by Williamson (2000), with the understanding that there is an opportunity to improve the

institutional environment (first-order economizing) and consequent governance structures (second-order economizing). The institutional environment and final structures should infuse order, mitigate conflict, and realize mutual gains. This paper assumes that a public agency is a flawed organizational entity in which transaction costs are featured, and strengths and weaknesses of different and feasible modes of organization must be analyzed comparatively (Williamson, 1999).

In order to project outcomes in this context, this paper uses the framework proposed by Spiller (2013), which he calls transaction cost regulation (TCR). He specifies that the determinants of regulatory institutions and regulatory performance are those hazards characterizing government/investor relations, and that the intensity of these hazards varies with the institutional environment of the jurisdiction under analysis. The relationship between institutional environments and transaction hazards is, consequently, of particular interest to this body of knowledge.

Transaction hazards and institutional environment are determinants of the specificity and rigidity of regulatory contracts, and they lead to more litigation and conflict (Spiller, 2013). In other words, the relationship between institutional endowment and hazards generates costs overruns and delays. According to North (1981, 1990), the institutional endowment includes five elements: legislative and executive institutions; judicial institutions; administrative capabilities; customs and informal norms; and character and balance of contending social interests (including ideology).

Consequently, outcomes are projected in terms of transaction hazards for each institutional environment (benchmark and LAC), which then are linked to potential inefficiencies. This discussion, therefore, aims to analyze and propose efficient ways of economizing transaction hazards in the pre-investment phase. The hazards proposed by Spiller (2008) include risks associated with standard opportunistic behavior, governmental opportunism, and third-party opportunism.

Standard opportunistic behavior is related to asset-specific investments, which are linked to bounded rationality and idiosyncratic knowledge. This leads to transaction governance designs in order to limit the opportunistic behavior (Spiller, 2008).

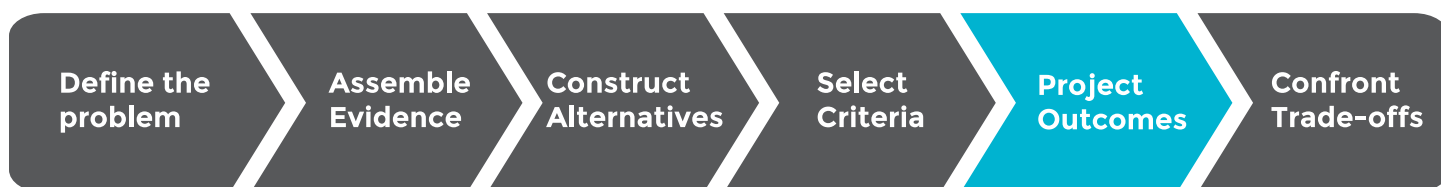
Governmental opportunism is associated with the ability of governments to opportunistically change the rules of the game. Basically, it may use standard governmental powers, in subtle and nonsubtle ways, to extract quasi-rents of utility investors. Although the evident determinant is the existence of sunken investments, the limits of governmental opportunism are institutional, generating an impact on the selected regulatory schemes (Spiller, 2013). It may be profitable if the direct costs (such as reputation loss when asking for new private investment) are smaller than potential benefits (quasi-rents to gain political benefits), and indirect costs are not too large (judiciary/administrative processes) (Spiller, 1996).

Finally, third-party opportunism is related to public contract scrutiny. It may be done by designated agencies, politicians, or other interested groups. The problem is that all of them are biased, and they may be tempted to challenge the probity of government/utility interactions. Both political and economic benefits can be achieved and, given certain complexity, the chance is exploited even if it may be unethical or illegal. The potential for third-party opportunism will depend on the institutional environment (Spiller, 2013).

In summary, this paper projects outcomes, in terms of these hazards, for the different institutional alternatives and for the generation of ideas and the profile to feasibility/design studies. The selected criterion to compare those outcomes is cost-effectiveness, defined as the extent to which a particular policy is expected to achieve its results at a lower cost compared with alternatives.

This criterion is selected because it is reasonable to admit that the benchmark's institutional design would generate larger benefits (as contemplated in the four propositions in Chapter 4). If benefits are included, the distance between the benchmark's institutional design and LAC's institutional environment would be even greater in favor of the former. In this context, the maximization of public interest is defined here as lower cost overruns and delays that may result from a better institutional environment for infrastructure planning, which is a subject that still needs to be systematically addressed.

5.5 Step Five of the Policy Analysis Framework: Project Outcomes



The pre-investment phase is the process of preparing the studies and analysis that are needed to clarify the appropriateness of implementing certain projects. This phase should eliminate possible uncertainties and the taking of unnecessary risks. The first step is to generate ideas in terms of the broad identification of a number of projects. These studies are more general in nature. The second step runs from profile to feasibility/design studies, which involves more specific studies, including economic analysis, financial studies, and social and environmental viability, among others. For the two proposed steps, outcomes are projected in terms of the previous transaction hazards: risks associated with standard opportunistic behavior, governmental opportunism, and third-party opportunism. LAC's outcomes are projected as one, considering the replicability of the problems currently faced, as shown in Chapter 4.

5.5.1 Generation of Ideas

The process of generating ideas for new infrastructure projects is related to previous specified hazards, which then are translated into specific regulatory options and potential cost overruns and delays.

First, standard opportunistic behavior could be promoted if potential solutions are not simplified as much as they could be. More complex project options, if they are not needed, may ultimately be converted into more complex contracts, leading to inflexibility in transaction designs. This is probably linked to administrative capacity.

Second, political opportunism may be reduced if the medium- and long-term relationship with the private sector is institutionalized, as the reputation loss increases. A correct institutionalization of the participation of the private sector would raise the direct costs.

Finally, in terms of third-party opportunism, it is reasonable to think that strong and institutionalized stakeholder involvement from the beginning of the process may reduce incentives to act after execution begins. Such involvement would change, for the better, the balance between contending social interests.

5.5.2 From Profile to Feasibility/Design Studies

The process of generating particular studies and controlling their quality, from profile to feasibility/design, is also related to the previously specified hazards. It is reasonable to believe that the hazards may finally lead to specific regulatory options, which may possibly generate cost overruns and delays.

First, in terms of standard opportunistic behavior, strong governmental capacity is needed to handle complex technical, economic, financial, environmental, and social issues, among others. With strong institutional capacity generating the studies and controlling their quality, the information asymmetries are potentially minimized as one moves toward the final contracts. Second, third-party opportunism may be reduced if there is third-party participation and by the fact that projects are evaluated with a multi-criteria tool, including regional development, environmental benefits, externalities, productive linkages, and social equity concerns. Political opportunism is not expected to be potentially affected in this case.

5.5.3 Summary of Outcomes

Table 4 summarizes projected outcomes for the generation of ideas by activity and institutional environment (benchmark and LAC), considering strong (++), semi-strong (+), or weak/null (o) effects on minimizing future transaction hazards.

Table 4. Generation of Ideas					
			Future Standard Opportunistic Behavior	Future Standard Opportunistic Behavior	Future Standard Opportunistic Behavior
Generation of Ideas	Understanding the Current Situation	LAC countries analyzed	O	O	O
		Benchmark	O	O	O
	Creating a Vision and Goals for the Future	LAC countries analyzed	O	+	O
		Benchmark	O	++	+
Note: Strong (++), semi-strong (+), or weak/null (O) effects on minimizing future transaction hazards. Source: Prepared by the author.					

The possibility of affecting future opportunistic behavior seems to be weak in the step related to understanding the current situation, both in LAC and in the proposed benchmark country. However, when creating a vision and goals for the future, there seems to be room for improvement to diminish the specificity and rigidity of future regulatory contracts.

Concerning standard opportunistic behavior, the fact that several views are contemplated may not generate simpler solutions. It is unreasonable to predict that the options selected will be simpler, as more views may generate more complexity, at least in some cases.

On the subject of political opportunism, at present the analyzed LAC countries are concerned about generating a good relationship with the private sector. However, this relationship is not institutionalized, as is the one proposed in the benchmark. It seems the benchmark could be increasing the costs related to the reputation loss in the case of a change of rules of the game after signing contracts.

Additionally, there seem to be gains in terms of future third-party opportunistic behavior as well. Currently, there appears to be very limited third-party involvement at the beginning of the infrastructure planning process in the four LAC countries examined. However, Table 4 shows only one sign in this case, as it is assumed that third-party opportunism is even more related to the detail of the projects, decided in the next stages.

The benchmark institutional design includes experts, construction companies, financiers, labor unions, civil society, and NGOs directly participating in creating a vision and goals for the future, with long- and medium-term objectives. Although not eliminated, due to possible political contestability and fragmentation (Spiller, 2013), it is reasonable to believe that third-party opportunism would be reduced.

Table 5 presents the same analysis for the second part of the pre-investment phase: from profile to feasibility/design studies.

As previously outlined, future possible political opportunistic behavior is not affected by this step in the process. Nevertheless, it may probably change the standard and third-party opportunistic behaviors.

Table 5. From Profile to Feasibility/Design Studies					
			Future Standard Opportunistic Behavior	Future Standard Opportunistic Behavior	Future Standard Opportunistic Behavior
From Profile to Feasibility/ Design Studies	Using Infrastructure Goals to Identify Possible Projects “Profile”	LAC countries analyzed	O	O	O
		Benchmark	++	O	O
	Finalizing the Best solution for Each Infrastructure Deficiency “Feasibility 1”	LAC countries analyzed	O	O	O
		Benchmark	++	O	O
	Deciding Who Should Pay for Infrastructure “Feasibility 2”	LAC countries analyzed	O	O	O
		Benchmark	++	O	O
	Finalizing the Plan (Including Design Studies)	LAC countries analyzed	O	O	O
		Benchmark	++	O	++
Note: Strong (++), semi-strong (+), or weak/null (O) effects on minimizing future transaction hazards. Source: Prepared by the author.					

Standard opportunistic behavior is related, as explained, to the public sector's capacity to control the quality of complex technical, economic, financial, and environmental and social studies. It is reasonable to imagine less room for such behavior, considering information asymmetries decrease if, for example, only feasible understood alternatives are considered (only one alternative required if an alternative exists for profile studies), or potentially good projects are not changed to fit cost-benefit criteria because there is a multi-criteria analysis tool. In addition, well-designed final studies would simply diminish the possibility of gaining benefits associated with bounded rationality and idiosyncratic knowledge.

Third-party opportunism would be particularly diminished if a process of public consultation such as the one proposed were to be put in practice, at least for nationally significant infrastructure projects such as in the United Kingdom. It is reasonable to believe that the fact that any interested party has the formal opportunity to participate in the planning process before the project starts diminishes the probability of taking advantage of this process once it has started. The court would have additional evidence to analyze if the interested party is acting to gain a particular benefit once the project is implemented.

5.6 Step Six of the Policy Analysis Framework: Confront Trade-Offs



The previous analysis has concentrated on analyzing how future transaction hazards can be minimized during the pre-investment phase of the infrastructure project cycle. The fact that it is clear that the institutional environment could be enriched, in light of the four theoretical propositions analyzed in Chapter 4 (which are most probably affecting transaction hazards), shows that these countries' infrastructure pre-investment processes are contributing to inefficient public contracting. This is probably translating into cost overruns and delays as a consequence of specificity and rigidity of regulatory contracts, leading to litigation and conflict.

This analysis has not taken into account potential benefits gained as a consequence of better projects under consideration. In order to show that there is a potential clear gain in terms of minimizing transaction costs, the analysis assumed the same potential benefits of selected projects in the case of LAC countries and the benchmark. However, as already stated, it is reasonable to acknowledge that benefits would be greater, since the proposed institutional design would probably consider infrastructure interdependence and involve a clear cross-cutting national perspective, instead of using traditional project-by-project and jurisdiction-by-jurisdiction approaches. If this issue is included, the distance between the benchmark's institutional design and LAC's institutional environment would be even greater in favor of the former.

5.7 Major Findings

This paper has two major findings related to the questions initially proposed. The first is that the current pre-investment processes in LAC can be enriched by examining the acceptability, relevancy, adequacy, and consistency of the current strategy. Feasible institutional changes taking into account these four factors would ensure that the current policy is updated and that value continues to be created, generating more beneficial infrastructure projects, and promoting growth and development.

The second major finding is that there are specific subprocesses inside the pre-investment phase that, if changed, could possibly diminish potential cost overruns and delays of infrastructure projects. In the case of the generation of ideas, institutionalizing the participation of the private sector and other stakeholders in creating a vision and goals for the future would have potential benefits in these terms.

In the case of profile and feasibility/design studies, increasing institutional capacity, mostly human resources in sectoral bodies throughout the process, would have a very strong impact on this issue. In addition, institutionalizing the participation of other third parties at this stage would potentially have a strong influence on future contracts and on cost overruns and delays.

In summary, this paper used the recent theoretical framework (transaction cost regulation) proposed by Spiller (2013). TCR is an extension of a larger theoretical background: new institutional economics and transaction cost economics. Empirical implementation of TCR, according to Spiller (2013), was expected to focus on a deep understanding of institutional environments and transaction hazards. This paper has taken this recommendation and applied TCR to understanding the impact of a flawed pre-investment phase of the infrastructure project cycle on future contracts.

This body of knowledge differs from the Chicago school and incentive theory, as the emphasis is on the institutional environment rather than pure efficiency incentives. The analysis has led to conclusions in terms of institutional design that may be used to formulate efficient policy changes. If implemented, these suggestions would most probably help LAC gain extra benefits from intersectoral planning and diminish losses related to cost overruns and delays. They would help these countries enhance growth and development by way of better-planned infrastructure projects.

One limitation of this study is that it assumes that the proposed benchmark is feasible. It uses recommendations from interviewed agents and ideas from other countries to do so. However, we acknowledge the remediable ness criterion proposed by Williamson (2000). The paper assumes that the current equilibrium could be changed, considering that the proposed changes are normally changes in the margin to the current path selected by the analyzed LAC countries (North, 1990).

Another limitation is that the four selected countries are not representative of other countries in LAC. In fact, there is sufficient information to believe that they are probably working comparatively well in terms of the pre-investment phase. Conclusions and recommendations from this paper would only be extendable to other LAC countries if those countries were to apply lessons learned from those countries that are leading.

Finally, another limitation is that in using this methodology, this document is incapable of making a statistical generalization. Cases are not sampling units, and the number of countries analyzed is

too small to serve as an adequately sized sample to represent the total amount of countries in LAC. However, this research could help to determine a structured set of questions to propose a statistically relevant study for all the countries in the region. It opens the possibility of further research in these terms.

Chapter 6 Conclusions and Recommendations

The two questions initially proposed in this paper aimed to summarize the current concerns of LAC's public and private agents regarding the pre-investment phase of the infrastructure project cycle. The first question is: Why is the pre-investment phase of the infrastructure project cycle a problem in LAC? The second question is: How is the inadequate pre-investment phase affecting infrastructure delivery? In general terms, answers to these questions were expected to help in developing an institutional strategy to promote growth and development by means of efficient infrastructure delivery. In particular, the answer to the second question was expected to help elucidate how the analyzed LAC countries could change the current situation in an efficient way.

For the first question, theoretical foundations proposed by Bryson (2004) were used to understand the problem. A multiple-case design study, using a pattern-matching logic, helped demonstrate that empirical and predicted patterns show manifest similarities. It is reasonable to conclude that the current pre-investment phase is not working because:

- The current institutional strategy of LAC was developed for a different problem, and that problem has now changed, which in turn requires a new strategy;
- Political acceptability is not always taken into account;
- There are insufficient resources to implement the institutional strategy correctly; and
- There are undesired interactions between the institutions that participate in the process.

For the second question, the previous findings and smart practices from relevant countries were used to develop a feasible benchmark and draw a policy analysis. Outcomes from the current LAC institutional design and the proposed benchmark were outlined in terms of potential transaction hazards. This was justified because these hazards are believed to then translate into specificity and rigidity of contracts, leading to more litigation and conflict, and potential cost overruns and delays.

This paper concludes that the flawed pre-investment process in LAC is indeed contributing to *cost overruns and delays*, as shown for all the analyzed countries. However, there are three general recommendations that would probably reduce these negative consequences:

- The institutionalization of participation of key stakeholders, including the private sector, when generating a vision and goals for the future in terms of infrastructure planning;
- The institutionalization of the participation of self-described "interested parties" when accepting a project, and before project implementation starts;
- Improved governmental capacity, mostly in terms of human resources, in the development of the pre-investment studies.

These recommendations should be adapted to particular policies in each of the selected countries, which could easily be extrapolated to other countries of the region where this problem also exists. First, for the institutionalization of stakeholders' participation, *there is a need to establish a specific entity, comprised of several stakeholders, to take charge of developing a long-term infrastructure plan*. Institutionalized private and third-party participation at this stage could diminish potential transaction hazards of future contracts, moderating future cost overruns and delays. In addition, this entity could

verify that sectoral efforts are in line with this long-term (and medium-term) plan, which is imperative in order to take into account physical, geographical, and cyber infrastructure interdependence.

Second, *there is a need for a specific mechanism to involve self-described “interested parties” in the acceptance of infrastructure projects prior to implementation.* A multiple-stage process is recommended in which third parties express and go on record with their views, attend preliminary meetings, speak at public hearings, and can even challenge the decision in the relevant courts before project implementation starts. This process would particularly diminish transaction hazards related to third-party opportunism.

Finally, the above-mentioned infrastructure planning entity should administer a particular fund to improve governmental sectoral capacity in order to enrich the development of profile, feasibility, and design studies. Particularly, *specific specialized training in each sector should be promoted*, including pre-investment analysis courses for public employees. This is needed to reduce standard transaction hazards related to bounded rationality and idiosyncratic knowledge.

In conclusion, this paper used case-analysis and policy analysis tools to transform a multiple-case study into an empirical analysis of the current pre-investment phase of the infrastructure project cycle in LAC. It based its evaluative plotline on outcomes projected using TCR in order to understand the impact of different inefficiencies during the entire pre-investment process in terms of cost overruns and delays. Against this backdrop, the paper puts forth specific recommendations, and the research serves as a starting point to develop feasible policies to enhance infrastructure delivery, boost growth, and promote the development of the region.

Appendix 1 Technical Note – Smart Practices

Australia

Australia has a statutory body called Infrastructure Australia that was established under the 2008 Infrastructure Australia Act, which came into effect on 9 April of that year. It advises governments, investors, and infrastructure owners on a wide range of issues. This advice addresses Australia's current and future infrastructure needs, mechanisms for financing infrastructure investments, and policy, pricing, and regulation. Planning is viewed as critical to provide a clear national perspective, rather than the traditional project-by-project and jurisdiction-by-jurisdiction approaches. Infrastructure Australia takes a long-term, national approach to infrastructure planning.

Consulting Infrastructure Australia is in some cases a pre-condition to move a proposed project forward. The 2008 Nation-building Funds Act states that the Finance Minister may authorize payments for the creation or development of transport, communications, energy, and water infrastructure based on the recommendation of the Infrastructure Minister, who in turn must obtain advice from Infrastructure Australia before making the recommendation. Requests for support from this organization are submitted by responding to the seven stages of Infrastructure Australia's Reform and Investment Framework in order to demonstrate that analytical rigor has been applied in planning and investment decisions. The sequential stages are structured as follows: Stage 1 – Goal Definition; Stage 2 – Problem Identification; Stage 3 – Problem Assessment; Stage 4 – Problem Analysis; Stage 5 – Options Generation; Stage 6 – Options Assessment; and Stage 7 – Solution Evaluation. The aim is to ensure that decisions are taken in an objective and systematic way, thus leading to the adoption of the most effective and efficient policy solutions.

Infrastructure Australia's methodology for assessing initiatives rests on three discrete components: the initiative's strategic fit and profiling (Stages 1–6), economic viability (Stage 7), and deliverability (Stage 8). The first component assesses the compatibility of initiatives with Infrastructure Australia's strategic priorities. The second component adopts "monetized" cost-benefit analysis as its core tool, complemented by "nonmonetized" effects. Finally, the third component evaluates whether the proposed delivery arrangements for an initiative will compromise achieving the strategic priorities or economic benefits that the initiative promises. It assesses the proposed funding, service delivery, governance, procurement, and risk management approaches.

Canada

The Canadian government recently created the Building Canada Plan, under which the government partners with other levels of government to invest in provincial, territorial, and municipal infrastructure assets that support economic growth and strong communities. This plan provides stable funding for a 10-year period by means of a Community Improvement Fund (CAN\$32 billion), a New Building Canada Fund (CAN\$14 billion), a P3 Canada Fund (CAN\$1.25 billion), and other existing infrastructure programs (CAN\$6 billion). The Community Improvement Fund consists of the Gas Tax Fund and the incremental Goods and Services Tax Rebate for Municipalities, which aims to provide over CAN\$32 billion to municipalities for projects such as roads, public transit, recreational facilities, and other community infrastructure.

The New Building Canada Fund is divided into a National Infrastructure Component (CAN\$4 billion), which supports projects of national significance, and a Provincial-Territorial Infrastructure Component (CAN\$10 billion) for projects of national, regional, and local significance. In parallel, PPP Canada Inc., a federal crown corporation, leads federal efforts to encourage the use of P3s where they can generate better value for money, using the P3 Canada Fund.

Both the National Infrastructure Component and the Provincial-Territorial Infrastructure Component must be supported by a project business case that shows how the project meets the common project criteria as well category-specific outcomes and project criteria. The information that must be provided includes a project description, minimum federal requirements, project outcomes and benefits, eligible recipient(s), project governance, financial requirements, legal requirements, project risks and mitigation measures, and P3 requirements (if subject to P3 screen).

In the Canadian case, although there is specific federal funding and planning, a considerable planning effort is made at the second level of government. For example, in order to move the plan into action, Ontario proposed an improved procurement process, guaranteeing wider adoption of asset management planning. The aim was to support Ontario's construction sector and address key infrastructure needs with other levels of government and partners. At present, Ontario is considering legislation that would require the province to regularly operate a long-term infrastructure plan covering a period of at least 10 years and associated with demographic and economic trends.

United Kingdom

Infrastructure UK is a unit within the Treasury that works on the United Kingdom's long-term infrastructure priorities and secures private sector investment. It is responsible for coordinating and simplifying the planning and prioritization of investment, in addition to improving infrastructure by achieving greater value for money on infrastructure projects and transitions. Its long-term plan, the National Infrastructure Plan (NIP), takes a cross-cutting and strategic approach to infrastructure planning, funding, financing, and delivery.

The government intends to ensure that its priority investments translate into tangible delivery outcomes in an effective and efficient way, and that they are delivered on time, within budget, and with the right results. With that objective, key infrastructure departments – such as the Department for Transport, Department of Energy and Climate Change, and Department for Environment, Food and Rural Affairs – are responsible for implementing Infrastructure Capacity Plans that outline the infrastructure portfolio's resourcing and governance needs.

The government monitors the major projects considered in these Infrastructure Capacity Plans through its Major Projects Portfolio. The objective is to confirm project deliverability, affordability, and value for money. The Major Projects Portfolio has a Planning Inspectorate that is responsible for running the planning process for Nationally Significant Infrastructure Projects (NSIP). It examines applications for development consent from the energy, transport, waste, waste water, and water sectors. Any developer wishing to construct a NSIP must first apply for development consent.

The application process has six stages. The first is pre-application, when developers are required to carry out extensive consultation on their proposals. The second is acceptance, when the relevant Secre-

tary of State evaluates whether the application meets the standards required to be formally accepted for examination. The third stage is pre-examination. The public is able to register with the Planning Inspectorate and provide a summary of their views of the application in writing. Interested parties whose views are accepted for consideration are then invited to attend a preliminary meeting. The fourth step is Examination, when the people who have registered can request to speak at a public hearing, and answers provided are kept in writing and explained at hearings. Planning Inspectorate has six months to carry out the examination. The fifth one is Decision. The Planning Inspectorate prepares a report for the relevant Secretary of State, with the recommendation, and this institution makes a decision regarding the granting or refusing the development consent. The final step is Post-Decision, when stakeholders may challenge the decision in the High Court.

Appendix 2 Webography

Chile

<http://www.mop.cl/Paginas/default.aspx>
<http://www.minenergia.cl/>
<http://www.ministeriodesarrollosocial.gob.cl/>
<http://sni.ministeriodesarrollosocial.gob.cl/>

Mexico

<http://pnd.gob.mx/>
<http://www.shcp.gob.mx/Paginas/default.aspx>
<http://www.shcp.gob.mx/EGRESOS/ppi/Paginas/SIP.aspx>
<http://www.cepep.gob.mx/>
<http://www.sct.gob.mx/>
<http://www.sener.gob.mx/>
<http://www.semarnat.gob.mx/>

Peru

<http://www.ceplan.gob.pe/>
<http://www.minem.gob.pe/>
<http://www.mtc.gob.pe/>
<http://www.siss.gob.cl/577/w3-channel.html>
<http://www.proinversion.gob.pe/modulos/LAN/landing.aspx?are=0&pfl=1&lan=10&tit=proinversi%C3%B3n-institucional>
<http://www.mef.gob.pe/>

Uruguay

<https://www2.opp.gub.uy/principal.php>
<http://snip.opp.gub.uy/>
<http://www.mtop.gub.uy/>
<http://www.miem.gub.uy/>
<http://www.mvotma.gub.uy/>
<http://www.ancap.com.uy/>
<http://www.ose.com.uy/>
<http://www.ute.com.uy/index.html>

Australia

<http://www.infrastructureaustralia.gov.au/>

<http://www.comlaw.gov.au/Details/C2008A00154>

Canada

<http://www.infrastructure.gc.ca/plan/plan-eng.html>

<http://www.infrastructureontario.ca/>

United Kingdom

<https://www.gov.uk/government/organisations/infrastructure-uk>

<http://infrastructure.planningportal.gov.uk/>

References

- Barbero, J. 2012. La Infraestructura en el Desarrollo Integral de América Latina Caracas: Corporación Andina de Fomento.
- Bardach E. 2004. The Extrapolation Problem: How Can We Learn From the Experience of Others? *Journal of Policy Analysis and Management* 23 (Spring): 205–20.
- Bardach E. 2008. A Practical Guide for Policy Analysis: The Eightfold Path to Problem Solving. Third Edition. Washington, DC: CQ Press.
- Bryson J. 2004. Strategic Planning for Public and Nonprofit Organizations: A Guide to Strengthening and Sustaining Organizational Achievement. Third Edition. San Francisco: John Wiley & Sons.
- Calderón C., and L. Servén. 2010. Infrastructure in Latin America. Policy Research Working Paper 5317. Washington, DC: World Bank.
- Coase, R.H. 1937. The Nature of the Firm. *Economica* 4: 386–405.
- Coase, R.H. 1959. The Federal Communications Commission. *The Journal of Law and Economics* 2 (October): 1–40.
- Coase, R.H. 1960. The Problem of Social Cost. *The Journal of Law and Economics* 3 (October): 1–44.
- Coase, R.H. 1998. New Institutional Economics. *American Economic Review* 88 (2): 72–74.
- Cohen, E., and R. Martínez. 2004. Formulación, Evaluación y Monitoreo de Proyectos Sociales. Santiago: United Nations Economic Commission for Latin America and the Caribbean. Available at: http://www.cepal.org/dds/noticias/paginas/8/15448/Manual_dds_200408.pdf.
- Esfahani H., and M. Ramírez. 2003. Institutions, Infrastructure, and Economic Growth. *Journal of Development Economics* 70 (2): 443–77.
- Fay, M., and T. Yepes. 2003. Investing in Infrastructure: What Is Needed from 2000 to 2010? Policy Research Working Paper 3102. Washington, DC: World Bank.
- Flyberg, B. 2007. Policy and Planning for Large Infrastructure Projects: Problems, Causes, Cures. *Environment and Planning B: Planning and Design* 34 (4): 578–97.
- Inter-American Development Bank (IDB). 2013. Sustainable Infrastructure for Competitiveness and Inclusive Growth. IDB Infrastructure Strategy Document GN-2710-5. Inter-American Development Bank, Washington, DC

Jonassen, D. 2004. Learning to Solve Problems – An Instructional Design Guide. Pfeiffer Instructional Technology and Training Series.

Kelly, E.D. 1994. Planning, Growth, and Public Facilities: A Primer for Local Officials. American Planning Association Planning Advisory Service Report No. 447 (September).

Kelly, T., J. Peerenboom, and S. Rinaldi. 2001. Identifying, Understanding, and Analyzing Critical Infrastructure Interdependencies. IEEE Control Systems Magazine (December).

Levy, B., and P. Spiller. 1994. The Institutional Foundations of Regulatory Commitment. Journal of Law, Economics and Organization 9 (Fall): 201–46.

Marlowe, J., W. Rivenbark, and J. Vogt. 2004. Capital Budgeting and Finance – A Guide for Local Governments. Second Edition. Washington, DC: ICMA Press.

Ménard, C., and M. Shirley. 2011. New Institutional Economics: From Early Intuitions to a New Paradigm? Working Paper No. 8. Ronald Coase Institute.

North, D.C. 1981. Structure and Change. New York: W.W. Norton.

North, D.C. 1990. Institutions, Institutional Change, and Economic Performance. New York: Cambridge University Press.

North, D.C., and B.R. Weingast. 1989. Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England. The Journal of Economic History 49 (4): 803–32.

Ostrom, E. 1990. Governing the Commons: The Evolution of Institutions for Collective Action. Cambridge, UK: Cambridge University Press.

Perroti, D., and R. Sanchez. 2011. La brecha de infraestructura en América Latina y el Caribe. Santiago: United Nations Economic Commission for Latin America and the Caribbean.

Priemus, H. 2007. Development and Design of Large Infrastructure Projects: Disregarded Alternatives and Issues of Spatial Planning. Environment and Planning B: Planning and Design 34(4): 626–44

Rozas, P., and R. Sánchez. 2004. Desarrollo de infraestructura y crecimiento económico: revisión conceptual. Natural Resources and Infrastructure Series. Santiago: United Nations Economic Commission for Latin America and the Caribbean.

Sclar, E. 2000. You Don't Always Get What You Pay For. Ithaca, NY: Cornell University Press.

Spiller, P. 1996. A Positive Political Theory of Regulatory Instruments: Contracts, Administrative Law or Regulatory Specificity? *Southern California Law Review* 69: 477–515.

Spiller, P. 2008. An Institutional Theory of Public Contracts: Regulatory Implications. NBER Working Paper 14152. Cambridge, MA: National Bureau of Economic Research.

Spiller, P. 2013. Transaction Cost Regulation. *Journal of Economic Behavior and Organization* 89 (C): 232–42.

Williamson, Oliver E. 1999. Public and Private Bureaucracies: A Transaction Cost Economics Perspective. *Journal of Law, Economics, and Organization* 15 (1): 306-342.

Williamson, Oliver E. 2000. The New Institutional Economics: Taking Stock/Looking Ahead. *Journal of Economic Literature* 37 (3): 595–613.

Williamson, Oliver E. 2002. The Theory of the Firm as Governance Structure: From Choice to Contract. *Journal of Economic Perspectives* 16 (3): 171–95.

World Economic Forum (WEF). 2012. Strategic Infrastructure - Steps to Prioritize and Deliver Infrastructure Effectively and Efficiently. Geneva: World Economic Forum.

Yin, R. 2013. Case Study Research: Design and Methods. Fifth Edition. Thousand Oaks, CA: SAGE Publications.

