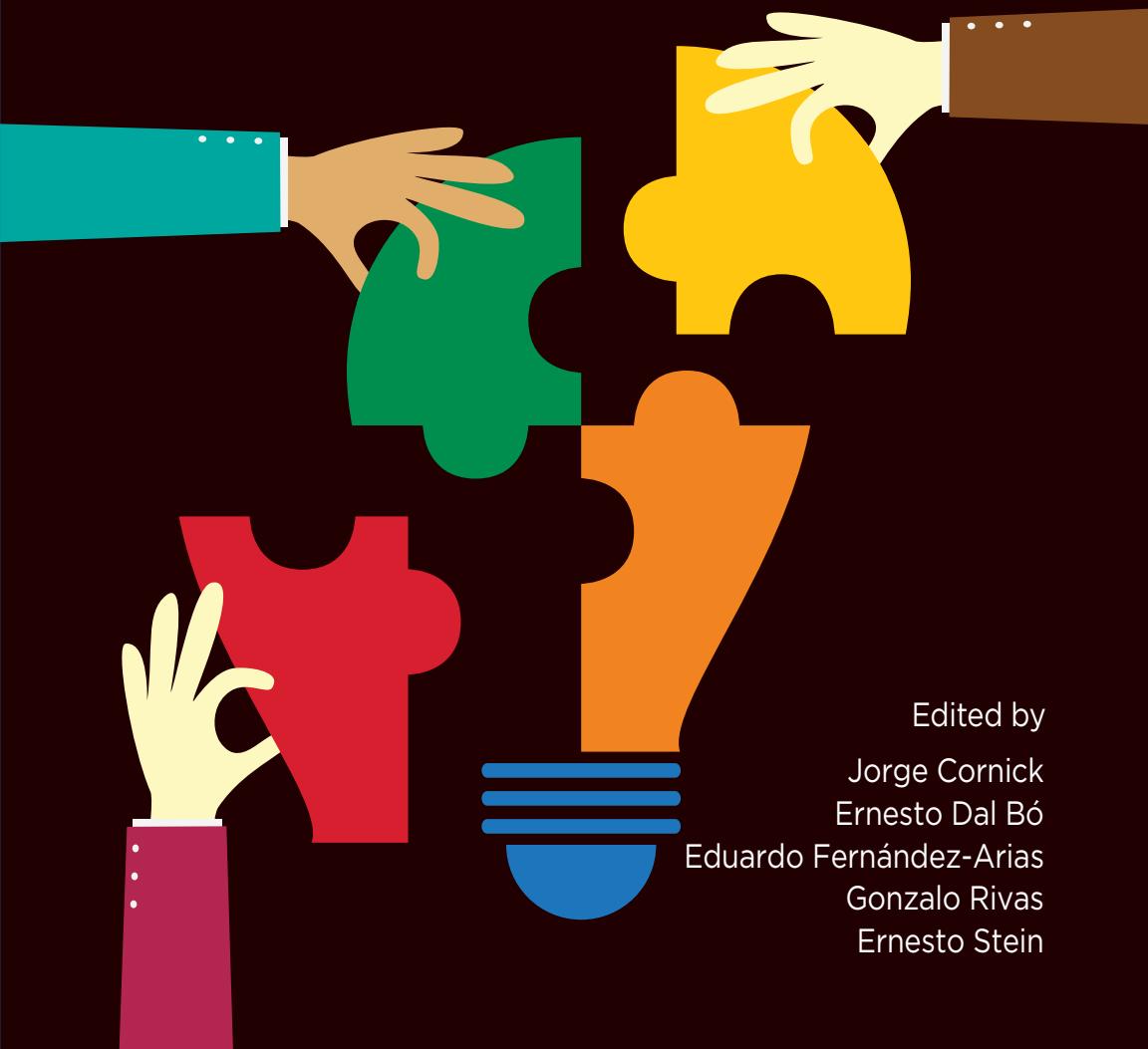


Building Capabilities for Productive Development



Edited by

Jorge Cornick

Ernesto Dal Bó

Eduardo Fernández-Arias

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Foreword

In 2014, our flagship publication, *Rethinking Productive Development: Sound Policies and Institutions for Economic Transformation* (Crespi, Fernández-Arias, and Stein, 2014), presented a thorough examination of the potential role of productive development policies (PDPs) as tools to close the productivity gap that increasingly separates Latin America and the Caribbean from developed and converging economies.

Public-private collaboration was identified as a key requirement for successful PDPs, and so a follow-up volume, *Two to Tango: Public-Private Collaboration for Productive Development Policies* (Fernández-Arias et al., 2016), delved into this subject. Twenty-five examples of mostly successful public-private collaboration were examined in an effort to identify the key features that can render such collaboration successful from a productive development point of view.

Perhaps surprisingly, we found that successful PDPs in general, and examples of successful public-private collaboration for PDPs, could be found in many countries, including some in which the overall performance of the public sector is not particularly good, and in which overall productivity growth has been quite disappointing.

In this discovery we found reasons for hope. We did not think of these cases as *the exceptions that prove the rule* but, rather, as examples that prove that the rule can be broken. Success in productive development is not unheard of in our region. It is just not common enough.

Not surprisingly, strong, highly capable productive development agencies were found in all successful examples. Given the proper mix of technical, organizational and political capabilities, or TOP capabilities for short, many agencies not only showed themselves up to the tough challenges of PDPs, but also, and perhaps more importantly, they were able to become increasingly good at them.

Highly effective productive development agencies, however, are not the norm in the region. This naturally led to the question of how such high-capability agencies and institutions can be developed.

This book provides some preliminary answers, based on detailed analysis of 17 different cases in Argentina, Brazil, Costa Rica, and Uruguay.

Our research suggests that a combination of institutional design features, what we call an *enabling environment*, and good, agency-level practices can lead to more capable agencies with an ability to learn, which in turn can make successful PDPs more common.

In terms of enabling conditions, it turns out that room for experimentation is crucial. Experimentation, however, will necessarily entail some failures. An agency does not become better at its job shielding itself from the possibility of failures, but by making sure to learn from them.

A combination of operational flexibility (something closer to private-sector operational rules than to traditional central government rules) and protection from short-term, partisan political pressures, along with competence, credibility, and the ability to recruit and retain top talent complete the enabling conditions.

An important note on talent recruitment and retention is that compensation is only part of the equation, and frequently not the most important one. A sense of mission, of being part of something important, of working in a highly effective organization, and knowing that working in an agency will enhance rather than reduce career opportunities later on seem more important, and harder to achieve.

Turning to good practices, our results convincingly show that there is no *one way* to arrive at successful PDPs and any such notion should be dismissed from the outset.

Capabilities can be acquired by hiring those who possess them; they can be developed internally, through training, participation in international knowledge and practice networks, mentoring and other methods; and they can also be expanded by integration with other agencies and organizations that have complementary skills.

Similarly, successful PDPs require no particular level of political support. Support from the highest political level has proven indispensable in some cases, while in others it all but guarantees that a program will not survive a change in administration. In still other cases, support from local authorities and public agencies working alongside private sector organizations has proven essential for long-term policy stability.

Goal orientation and a deep-seated organizational desire to accomplish something meaningful are nearly universal features of successful organizations. And this sense of mission, this commitment to high performance standards

is, more often than not, the result of the efforts of policy entrepreneurs and high-caliber leadership at the top of successful agencies.

We all want the recipe for success—a recipe that could be applied anywhere, independently of the individuals heading an organization at any given time. But our results suggest that high-quality leaders are essential. If that is the case, agencies need not rely on good luck to acquire outstanding leaders. Recruitment practices can be deliberately designed to increase the likelihood of hiring exceptional leadership. However, a note of caution: without the correct enabling conditions discussed above, no leader can be effective. Moreover, in certain environments high-quality leadership may be scarce and this *supply side* constraint cannot be eased by good recruitment practices. Training, mentoring, and recruitment outside the local or national economy may need to be considered in those cases.

Finally, good leadership may be irreplaceable, but any organization worth its salt should try to turn capabilities that are originally brought in by individuals into capabilities that reside in the organization. Many tools are available for this purpose, among them the institutionalization of good, but flexible, practices; mentoring; ensuring that individual capabilities are shared; and pairing of new recruits with seasoned veterans. Exceptional leadership, brought from the outside if necessary, may be necessary to jump start a high performance, high capability productive development agency. However, really good agencies eventually should be able to grow high-caliber leadership and ensure the smooth transfer of institutional knowledge internally.

**Jorge Cornick, Eduardo Fernández-Arias,
and Ernesto Stein**

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Building Public Capability for Productive Development

Jorge Cornick, Eduardo Fernández-Arias, and Ernesto Stein

Latin America and the Caribbean are not closing the income gap that separates the region from the developed world; low productivity growth is largely responsible.¹ As a result, the region has seen renewed interest in productive development policies (PDPs) because these policies can help countries catch up.² At the same time, many countries are struggling to deploy new policies that avoid past mistakes—particularly policies that reward inefficiency instead of increasing productivity, oftentimes through the capture of institutions.³

How can the region negotiate this promising but hazardous path?

Simply arguing that Latin America and the Caribbean need new and better PDPs is not enough. Good policies demand capable institutions and an enabling institutional framework. The question then becomes, how can a region where public sector performance is generally poor,⁴ and where the risks and costs of capture are painfully evident, develop highly capable, public-good-oriented productive development agencies and institutions?

To shed some light on these issues, the Inter-American Development Bank (IDB) launched a research project that involved five local teams working in four different Latin American countries—Argentina, Brazil, Costa Rica, and Uruguay—plus a central team of senior IDB research staff and outside

¹ Crespi, Fernández-Arias, and Stein (2014); and Pagés (2010).

² Navarro and Zúñiga (2011); Crespi, Fernández-Arias, and Stein (2014); and Cornick (2016).

³ *Capture* is the term used by economists when an institution becomes an instrument to promote the interests of a particular group, instead of being an instrument to promote the public interest.

⁴ See Crespi, Fernández-Arias, and Stein (2014, 400–402).

experts. The goal was to understand how a few productive development agencies were able to acquire and accumulate the capabilities that eventually led to productive development success. Were the successes the result of sheer luck, or the product of special circumstances that cannot be replicated? Or do these unlikely and somewhat isolated cases contain the seeds of larger and more frequent successes that governments can cultivate and grow in the future? This book interprets the overall project's results, summarizes the main lessons and hypotheses that can be derived from it, and presents abridged versions of selected country reports in the chapters that follow.

1.1. The Research Project

For this project, the IDB put out a Call for Proposals on Building Institutional Capabilities for Productive Development Policies to its Regional Research Network,⁵ with four research objectives:

- i. Understanding the nature of the capabilities critical for the work of productive development agencies
- ii. Understanding how these capabilities interrelate and what factors make them relevant in any given context or for a given policy intervention
- iii. Understanding the link between building capabilities and the evolution of successful interventions by productive development agencies
- iv. Understanding how to create and expand these capabilities

A small group of productive development agencies was selected for study in each country, and researchers were asked to analyze how the agencies' institutional capabilities conditioned their performance. Furthermore, the researchers were asked to discuss the dynamic process through which these capabilities accumulated, as well as the contextual factors that contributed to (or hindered) their development, in order to learn how capabilities are built.

Given the incipient knowledge of the issues tackled by the project, a case study approach was considered more useful than a quantitative approach. Furthermore, neither a well-developed theory nor the data to test it were available to benchmark against.

Rather than develop broad cases covering long time spans, researchers were encouraged to focus each case study on specific episodes that show

⁵ A committee comprised of Eduardo Fernández-Arias and Ernesto Stein as technical directors, Juan Carlos Cortázar and Juan Carlos Navarro as internal advisors, and Gonzalo Rivas and Ernesto Dal Bó as external advisors was set up to evaluate the proposals, select the ones to be funded, and provide advice and feedback to the research teams throughout the project.

these agencies engaging in the public policymaking process, deploying their capabilities in specific tasks, or expanding those capabilities to tackle new, presumably harder, tasks. Whenever feasible, research teams were asked to identify counterfactual cases, with many factors in common but with other factors that differed in some crucial aspect from the cases under study, in order to illuminate the mechanisms at work.

These episodes were selected carefully based on team proposals and feedback from the technical directors and project advisors who oversaw the project and provided guidance and feedback to the research teams from start to finish in order to infer or validate their analysis of the capabilities at play in each productive development agency.

Within this broad approach, each research team was encouraged to adapt its methodologies according to the particular features of the cases under study and the professional criteria of the researchers. The ensuing variations imply that the results from each country are not strictly comparable to those of the other countries. However, this disparity should be regarded as a strength rather than a weakness of this project. In the absence of a generally accepted theory and widely accepted methods of empirical research on the development of public capabilities, researchers need to compare the results of different approaches, just as many of the agencies in this study have resorted to trial and error to discover the best ways of achieving their goals.

1.2. The Country Case Studies

The most interesting results of the country case studies are presented in detail in the chapters that follow. However, a brief initial review will provide an overview of the scope of the research project and at the same time provide key information that clarifies references to countries, cases, and productive development agencies in the remainder of this chapter.

- In the first chapter on **Costa Rica**, Jorge Cornick and Alberto Trejos study a short-lived Presidential Council on Competitiveness and Innovation. This case highlights the complementarities between policy entrepreneurs who champion policy initiatives and the high-level political support that makes these initiatives possible. In addition, the authors describe the Linkages Program run by PROCOMER (*Promotora de Comercio Exterior de Costa Rica*), Costa Rica's export promotion agency, which has evolved slowly but recently was transformed and modernized. Another case is CINDE (*Coalición Costarricense de Iniciativas de Desarrollo*), the country's foreign direct investment (FDI) promotion agency. CINDE has evolved from an agency that focused on attracting and supporting investment during the

installation phase of foreign companies into a full-service agency that supports and promotes the expansion of already established companies, both in terms of their scale and the complexity of their local operations (Chapter 2).

- In **Uruguay**, Carlos Bianchi, Lucía Pittaluga, and Guillermo Fuentes examine the transformation of the National Directorate of Renewable Natural Resources (*Dirección General de Recursos Naturales Renovables* – RENARE), the agency responsible for soil conservation practices under a new soil conservation and management law; the Consejos Sectoriales (Sectoral Councils) and their contrasting performance when promoting an emerging sector or reforming an existing sector accustomed to old-style incentives; and, finally, the challenges of Uruguay's National Research and Innovation Agency (ANII) as it tries to reach an audience—the private sector—that is very different from ANII's traditional partners, mainly scientists and research institutions (Chapter 3). One interesting contribution of the chapter is that while the studies in Argentina and Brazil emphasize the identification of capabilities required for different types of policy, the Uruguay researchers also point out that different capabilities may be required at different stages in the policy life-cycle. Once this dimension is taken into account, otherwise contradictory conclusions on issues such as the role played by high-level political support in the two Argentinean studies can be easily reconciled, as will be shown later in this chapter.
- In **Brazil**, a large research team led by Paulo Furquim de Azevedo and Maria Sylvia Saes focused its attention on the Brazilian Agricultural Research Company (*Empresa Brasileira de Pesquisa Agropecuária* – Embrapa), one of the region's most successful and globally respected agriculture research, technology and extension institutions; the Brazilian Innovation Agency (*Financiadora de Estudos e Projetos* – Finep), a foundation created for the promotion of science, technology and innovation; and ABC Foundation, a successful research and extension center created by three agricultural cooperatives in the Campos Gerais Region of Southern Brazil (Chapter 4). These cases highlight the integration of capabilities from different organizations as an efficient and cost-effective way to expand capabilities under certain circumstances; they also highlight the advantages and disadvantages of labor regimes that provide for stable employment and point out the tradeoffs between rigid and flexible organizational designs.
- In the first of the final two studies from **Argentina**, Mariana Chudnovsky, Andrea González, Juan Carlos Hallak, Mercedes Sidders, and Mariano Tommasi analyze several design-promotion PDPs: the National Design

Plan of the Secretariat of Industry in the Ministry of Industry; two programs within the National Industrial Technology Institute (INTI), namely the *Design Map*, managed by INTI Textiles, one of the specialized centers within INTI, and the Design Management as an Innovation Factor Program, managed by INTI's Industrial Design Center; and, finally, the IncuBA (business incubation) and Incorporation of Design Program, carried out by the Metropolitan Design Center under the Ministry of Economic Development of the city of Buenos Aires (Chapter 5).

While all these PDPs are concerned with the promotion of design as a source of competitive advantage, the institutional framework under which each one operates is quite different. These differences allow the research team to compare the advantages and disadvantages of each: a national-level ministry (in the case of the National Design Plan); an autonomous institution formally under the authority of a national-level ministry in the case of the programs executed by INTI centers; and a local government in the last cases.

- In the final **Argentinian** study, Lucio Castro and Paula Szenkman examine the cases of the Technological District in the city of Buenos Aires; the Export.AR Foundation, one of several competing export promotion agencies at the national level; and the creation of the Ministry of Science and Technology, an effort to bring unity and coherence to a national policy previously under the aegis of several independent agencies and programs (Chapter 6). Once again, the institutional frameworks and the roles played by high-level political authorities are different in each case. The differences allow for further insight into when and how different configurations of institutions and political support help or hinder the development of highly capable productive development agencies and successful PDPs. This chapter makes good use of counterfactual cases. For example, as a counterfactual to the Technological District program, which sought to develop a technology cluster in an underdeveloped area of Buenos Aires, the research team looked at the Audiovisual District Program, a similar program that had been applied to an established sector with strong lobby capabilities, and which produced strikingly different results from the Technological District program.

This book is directed at policymakers as well as academics. For the first group, there might be interesting lessons to be learned (or at the very least, interesting ideas to explore) about the core capabilities needed for the design and effective implementation of PDPs. For the second group, the hope is to open interesting new areas of research. The conclusions and conjectures on how Latin American and Caribbean countries might best develop public

capabilities for PDPs, based on a series of case studies, are preliminary. Further research using a mix of qualitative and quantitative techniques, as well as more rigorous development of the conceptual framework outlined both in this book and in the IDB Working Papers that this project generated, is needed to provide a stronger basis for policymaking in the future.

1.3. Historical Context and Conceptual Framework

After the debt crisis of the 1980s, most Latin American countries embarked on an ambitious program of structural reforms, at high cost but with high hopes. Once the policy mistakes that led to the crisis were corrected, the region expected to travel along a path of sustained and rapid growth, leading eventually to convergence with developed countries and significant reductions in poverty. Nothing of the sort happened: growth remained insufficient and unsatisfactory even as investment (that is, the accumulation of factors of production) increased relative to the developed world. The culprit, clearly, was an increasing productivity gap in relation to the developed world.⁶

However, while overall productivity performance has been lackluster, one can find specific cases in almost any Latin American country of remarkable productivity achievement. And behind these success stories, almost without exception, can be found strong and highly capable public institutions.

These success stories are not the exceptions that prove the rule, but the exceptions that may show how to break the rule and prosper.

The hypothesis in this book is that strong and high-capability productive development agencies are behind almost every productivity success story in the region, from salmon in Chile to medical devices in Costa Rica. In most of these cases, successful policies and strong agencies went hand-in-hand.⁷ If the hypothesis holds, two questions arise. First, how did these highly capable agencies become so good at what they do? And second, can something be learned from their experience that will help in developing other highly capable and effective productive development agencies in the region?

Before attempting to answer these questions, the next section explores the difficulties and challenges associated with successful productive development policies.

⁶ Several IDB publications have documented this. See Daude and Fernández-Arias (2010); Pagés (2010); and Crespi, Fernández-Arias, and Stein (2014).

⁷ Flowers in Colombia is a good counter-example of a new export sector that succeeded with little public sector intervention. See Sabel et al. (2012).

1.4. What Makes Productive Development Policies So Difficult?⁸

Productive development policies have a number of distinctive features that make them particularly difficult to design and implement. Some important features are discussed below.

1.4.1. *Well-designed Policy Discovery Processes*

At the starting point of a PDP, it is usually the case that neither the problems holding back private sector development nor the best ways to solve them are fully known. Therefore, as noted by Rodrik (2008), one should not think of productive development policies as traditional planning exercises in which technocrats somehow select and design policies with ex-ante certainty, and bureaucrats faithfully implement them. Rather, they need to be seen as processes of incremental identification of problems and solutions by trial and error and ongoing adjustments in policy goals and means, in most cases through collaboration between the public and private sectors.

From this perspective, the main challenge is not to identify the right goals and policies from the beginning but to set out on a fruitful process of exploration. The goal is to discard bad policies and improve defective ones as soon as possible, and to expand, strengthen, and adapt the more successful ones to changing needs. The policy discovery process, rather than the initial policy decision, is the real challenge.

1.4.2. *In-depth, Detailed, and Sometimes Sector- or Activity-specific Technical Knowledge and Skills*

Overcoming the obstacles that prevent private sector development and increased productivity may require a combination of incentives and public inputs. While it may be easy to put forth arguments at the theoretical level regarding the nature of those incentives and the content of those inputs, the details of such institutional and policy design may be devilishly difficult, even for horizontal policies. For example, a matching grant scheme for research and development (R&D) requires some knowledge within the public sector regarding the projects that are more promising and have the potential to generate externalities. As the policy focus narrows either geographically or in terms of

⁸ This section summarizes arguments developed, at greater length, in Crespi, Fernández-Arias, and Stein (2014).

sectors and products, the idiosyncratic details of each sector, region, and activity become more relevant, and the likelihood increases that both identifying and designing policies will require specialized, sector-specific knowledge and skills. Moreover, a meaningful policy dialogue between the private and public sectors may be almost impossible if the public sector lacks know-how about sector-specific problems and policy options.

1.4.3. *Long-term Horizons*

The long-term horizons often required for PDPs to succeed pose two challenges for policymakers. In some contexts, policies may shift dramatically or be discontinued altogether in response to short-term political considerations and disruptions (including elections). In such environments, sustaining a consistent policy over many years will undoubtedly be difficult (but not impossible, as will be shown later). At the same time, policymakers need to ensure that policies are producing the intended results and discard those that fail to do so. What sorts of short-term monitoring or feedback mechanism can be used when policies are not expected to yield those results in the short term? One example is the *Mesas Ejecutivas* in Peru, where the commitment of the private sector, reflected by its continued participation in weekly meetings to identify problems and devise solutions, may be used as a clear indication of progress (Box 1.1).⁹ Focusing on producing at least a few quick wins may be an important part of the recipe. The Peru example aside, there is no one-size-fits-all answer to address the need for long-term horizons for PDPs, and each policy and program ultimately will be faced with the challenge of finding a working solution, however imperfect, to this problem.

1.4.4. *Cooperation across Multiple Public Agencies*

While there are many *narrow* PDPs—that is, policies undertaken by a single productive development agency—most PDPs are *wide*, in the sense that they call for the cooperation of many public agencies. For example, an agency in charge of promoting tourism needs the cooperation of the Ministry of Transportation to build access roads, utilities to provide water, sewage, power, and telecommunications, in addition to the Ministry of Labor and perhaps educational institutions to train qualified personnel, and so on. Typically, productive development agencies do not have authority over all these other

⁹ Peru is not one of the countries covered in the research project, but as shown in Box 1.1, the success of the *Mesas Ejecutivas* in Peru tells an important story about commitment and perseverance.

Box 1.1 Sustaining Peru's *Mesas Ejecutivas*

Peru's *Mesas Ejecutivas* (Executive Roundtables) were created by Piero Ghezzi, Minister of Production during the last two years of the government of President Ollanta Humala. The roundtables are spaces for private-public interaction where obstacles to the development of a sector can be quickly identified and solutions put into practice. The focus is on rapidly implementing solutions.

In forestry, the most successful sector in which the *Mesas Ejecutivas* were involved, a number of problems were quickly solved, including the simplification of procedures, regulatory changes, and access to credit on conditions appropriate to the sector's needs. Private sector participants included the most important plantation and logging entrepreneurs. Public sector participants (in addition to the Ministry of Production, which plays a lead role) included all agencies that have a role in the sector, such as Serfor (regulatory agency), Osinfor (enforcement), and the Ministry of Agriculture.

Prior to the establishment of the *mesas*, forestry had been ignored despite its great potential. For this reason, as the change in government approached, functioning *mesas* were championed by a private sector fearful that the situation would revert to the inertia of previous governments. The incoming government, and in particular the new Minister of Production, indeed decided not to continue the *mesas*. However, private sector actors, together with the public sector team that had supported the forestry *mesa* in the previous government, managed to get the forestry *mesa* adopted, first by the Ministry of Agriculture, and then by the Ministry of Economics and Finance (MEF).

Although the last chapter of this story has not yet been written, the situation appears promising. The same team that handled the *mesas* in the Ministry of Production, and which had accumulated important capabilities, was then hired by the Ministry of Agriculture, with the support of the Inter-American Development Bank (IDB) and, more recently, by MEF. The forestry roundtable, with the participation of additional private players—including small and medium-sized primary forest dealers who had not participated previously—has already had several sessions under the auspices of its new home.

Several elements were important for the sustainability of the forestry roundtable:

1. *Quick wins.* Instead of spending a lot of time identifying the ideal sectors with which to work, the production ministry chose those where

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Box 1.1 Sustaining Peru's *Mesas Ejecutivas* (continued)

there was clear interest and ideas from the private sector, and quickly began to work with them. Instead of developing detailed roadmaps or master plans, the *mesa* set out to identify and solve immediate problems. Quick resolution of these problems, some of which involved regulations or permits, led to the strong commitment and even enthusiasm of the private sector, which participated intensely in the process.

2. *Documentation of the experience.* Minister Ghezzi and his team did not have a set recipe on how to proceed with the *mesas*, nor did they copy formulas from abroad. They experimented and learned as they progressed with implementation. However, in the absence of a recipe, it was important to document exactly what they were doing and how they were doing it if the *mesas* were to have any hope of sustainability. The minister devoted a great deal of time and effort to preparing detailed presentations. The minister even published a small book documenting what the *Mesas Ejecutivas* were and how they worked.
3. *Dissemination of the experience.* In a country where state intervention provokes considerable resistance, it was important to change the perception of vertical policies. Both the minister and the private sector disseminated news of the success of the *mesas* in several forums, and the minister organized a large event with the IDB to present progress and results. Participating in this event were international experts who shared their favorable opinions on the value of the program, as well as opinion leaders from Peru, who were asked to moderate the panels. This led to changes in attitude regarding policies in sectors that traditionally would have been against any state intervention, particularly of a vertical nature.
4. *Support from international institutions.* The IDB has worked in support of the policy developments promoted by the roundtables since early in the process of implementing the *Mesas Ejecutivas*, and was also involved in trying to facilitate the transition to the new government. The involvement of an external and credible institution that conveys why a policy is important can be an important contribution to sustainability. The ability of an external player like the IDB to conduct a dialogue with the new authorities can also help in preserving effective productive policies and the capabilities related to them over the political cycle.
5. *A management team with strong capabilities.* Peru's forestry *mesa* survived a change of government because a small but highly trained team was able to coordinate with the private sector and knew what

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Box 1.1 Sustaining Peru's *Mesas Ejecutivas* (continued)

key levers to use to mobilize solutions to problems. This team kept the *mesa* alive by working with subnational governments when there was still no commitment from the new government at the national level, and it is now working with the MEF.

6. *Fully committed private stakeholders.* The fundamental element in this process has been the full commitment of the private sector in support of the policy. The private sector forcefully expressed its hope that the new government would preserve the *mesa*, demanding that it be moved to the Ministry of Agriculture and then the MEF when the Ministry of Production showed insufficient support and asking the government to re-up the team that had handled the *mesa* from the start.

In summary, it is important to remember that, no matter how successful policies may be, their sustainability is not assured when governments change. Many factors can influence policy sustainability and the preservation of newly acquired policy capabilities. The case of Peru's *Mesas Ejecutivas* shows that policy sustainability likely requires the involvement of multiple actors working along multiple fronts. While no strategy can guarantee success, not having a strategy puts the sustainability of policies and their related capabilities at unnecessary risk.

institutions, so the success of a PDP requires voluntary collaborative behavior from the public sector. Success may also hinge on having the means to influence the behavior of other agencies within the public sector; establishing a high-level authority to command the required changes is another option. The problem of in-adequate public-public coordination in the pursuit of PDPs is one of the most difficult problems to overcome.

1.4.5. Voluntary Changes in Private Sector Behavior

PDPs frequently escape the logic of command and control normally found in other areas of public action. However beneficial innovation might be for the common good, there is no way to force a business to innovate, associate with others, or train its workers. When PDPs are aimed at modifying the behavior of actors, they must be implemented through incentives (positive or negative) and even persuasion, which opens up the possibility for greater uncertainty about the transformation

of public actions into results than is the case when, say, the government decides to build a road and can specify and control the desired outcome.

1.4.6. Collaboration with the Private Sector

There are several reasons why collaboration is so important. For starters, crucial information for policy success often resides in the private sector, particularly when the obstacles to further private sector development are not well known *ex-ante*. In these cases, a well-designed process for collaboration between the public and private sectors may play a critical role in identifying those obstacles, and in determining whether public intervention can effectively help the private sector overcome them. None of this is easy, and in some cases public-private dialogues may bring more dangers than opportunities (at least in democratic societies).

There are several constraints on collaboration with the private sector. First, mutual suspicion rather than mutual trust between the private and public sectors seems to be the norm in Latin America and the Caribbean. Second, participation in policy processes is usually time-consuming, and for several reasons the public sector may have a hard time convincing the private sector that such an investment of time is worthwhile. Lastly, while it is easy to talk about the private sector as if it were a homogenous entity, the reality is not so simple: the private sector is heterogeneous, and what is in the best interest of one group of producers may be detrimental to others. Additionally, in many cases the segment of the private sector relevant for a given PDP may not be well organized, so extracting the valuable information can be challenging.

Regarding the dangers of collaboration, well-organized and entrenched sectors—especially those that are on their way out due to technological change, or those that flourished behind a wall of protection and incentives but never became competitive on their own—may be more interested in preserving the status quo than in changing it. This was the case of the Audiovisual Districts in Buenos Aires, discussed in Chapter 6, and the automotive and pharmaceutical sectors in Uruguay, described in Chapter 3.

In other words, public-private collaboration may prove more fruitful when the task is to create or grow the new than when the task is to reform or, in isolated cases, phase out the old.

1.4.7. The Ever-Present Risk of Capture

By definition, PDPs seek either to increase the competitiveness of existing sectors and activities or to develop new and competitive ones. To do this,

they benefit in many cases from close cooperation with the private sector, as just discussed. However, innovation and increased productivity are just two of several ways for the private sector to increase its profitability: capturing rents would also do the trick nicely. At the same time, rent distribution as part of a strategy of political patronage is always a temptation in politics. Hence the challenge for PDPs is to increase private sector profitability and growth through increased competitiveness, productivity, and innovation, without falling into the trap of socially unproductive rent distribution—a risk that is alive and well in Latin America and the Caribbean.

1.5. Public Capabilities Needed for Productive Development Policies¹⁰

What, then, are the specific capabilities needed by productive development agencies to surmount the difficulties associated with PDPs? A comprehensive list would be difficult to compile. But there are three broad types of capabilities: technical, organizational,¹¹ and political.

1.5.1. *Technical Capabilities*

Technical capabilities include all knowledge and expertise required to design, implement, evaluate, and adjust PDPs, including scientific expertise at research centers (such as INTA, the main agricultural extension public institute in Argentina, and Embrapa in Brazil), specialized sector-specific know-how and experience, and specialized skills in areas such as training, investment attraction, and export promotion. Professional skills in relevant legal areas, technology, advanced manufacturing, and quality control may also be among the required technical capabilities for a successful productive development agency.

1.5.2. *Organizational Capabilities*

These capabilities include convening, dialogue, and persuasion—each a skill that brings to the table all the relevant players, builds trust among them, induces meaningful interaction, and, finally, persuades them to work toward shared policy goals. These skills are needed within the public sector to lead relevant players outside the productive development agencies' formal authority

¹⁰ This section is based on Crespi, Fernández-Arias, and Stein (2014).

¹¹ Readers of earlier publications on this topic may recall that *organizational* was referred to as *operational*. However, this volume has adopted the term *organizational* used in the chapter on Brazil because it more clearly reflects the capabilities required.

to collaborate in a policy initiative. It is also necessary to be able to experiment and learn from the results of experimentation, that is to say, to shake off organizational routines and well-trodden paths and go where policymakers have not necessarily gone before. Administrative capabilities are also needed to engage in strategic planning, set organizational goals, and generally, get things done. One last skill in this area is perhaps the most important of all: the capability to attract and retain high-caliber and talented personnel. Good salaries and job stability may help, but creating an environment with a reputation as a career-enhancing workplace where staff can thrive is critical.

1.5.3. *Political Capabilities*

This area includes capabilities to secure political support to accomplish policy goals and protect the policy process from capture; and to access, engage, influence, and secure support of the relevant authorities to ensure a long-term mandate, the institutional setting required to pursue it,¹² and the institutional backing to evaluate and discard failed policies on purely technical grounds.¹³

Political capabilities must be considered because although a given political economy context can make it more difficult to carry out certain policies, there is almost always some wiggle room (Rodrik 2013), as the case studies will illustrate. Able and determined policy entrepreneurs can use this wiggle room not only to make the unlikely a reality, but also to induce productivity-enhancing changes even in environments where stagnation is not just the rule but, even more insidiously, is all but accepted as a fact of life.

A tentative list of capabilities required for successful PDPs might be a useful thing to have, but the key question is how to acquire those capabilities, if they are not available in the first place, and then how to develop, expand, and strengthen them. This book aspires to make a contribution to this intellectual enterprise.

A reading of the cases presented in the following chapters (and the broader case study literature available) suggests that certain practices may lead to increased capabilities over time. However, engaging in those practices is not just a matter of deciding to do so: certain enabling conditions are required to facilitate those practices, two topics that are taken up in the two sections that follow.

¹² Which may or may not entail support from the highest political level.

¹³ While this section has discussed the general capabilities needed, specific types of policies (vertical versus horizontal, public inputs versus market intervention) may require different capabilities in different intensities. See Crespi, Fernández-Arias, and Stein (2014, Chapter 10).

1.6. Enabling Conditions: Key Elements of Institutional Design

1.6.1. Room for Experimentation

Establishing clearly defined procedures and thoroughly documenting compliance with them are generally viewed as hallmarks of well-run organizations. In all large bureaucracies—especially in the public sector, where the dangers of capture, rent-seeking, and corruption are high—ex-ante and ex-post controls help to ensure compliance not just with operating procedures but also, more generally, with relevant regulations and ethical norms.

More broadly, in traditional public administration it is considered desirable to strictly separate the planning, execution, and evaluation phases of the policymaking process. The most vexing problem facing planners is implementation: how to ensure that the relevant executive agencies faithfully and competently implement the plan. In this view, deviations from procedures or plans are always detrimental, and every effort should be made to avoid them and to detect and correct them when they occur.

This approach has proven useful for well-defined problems with well-defined solutions. A different approach, however, is needed for complex problems that involve substantial uncertainty. If neither the problems nor the solutions are well known or stable, as is typically the case with PDPs, strict adherence to previously defined procedure and rigid implementation of long-term plans are counterproductive. Instead, public agencies need room to experiment and test new approaches so as to gradually uncover the true nature of the problems at hand and develop the capabilities and policy options required to overcome them.

This will allow learning by doing and, crucially, learning by failing, as by definition the outcomes of experiments cannot be fully known before the experiment is conducted. Thus, the focus needs to shift from compliance with procedures and plans to achievement of well-defined but broad and regularly updated goals. Some of the new approaches undertaken to achieve such goals will work, and some will not. That is the nature of experimentation.

However, even flexibility and room for experimentation are not enough. They must be coupled with evaluation, feedback, and policy adjustment in response to results and in view of broad policy goals.

1.6.2. Operational Flexibility

The legality principle in administrative law indicates that a public entity can do only what the law specifically allows it to do. Rules and regulations, on top

of laws and constitutional principles, tend to make administrative procedures slow and rigid in the public sector, with little room for experimentation regarding means, let alone goals, at least if the normative apparatus is followed to the letter.

But this is just the opposite of what we have just argued that productive development agencies need to do: experiment and try new approaches. Not surprisingly, therefore, successful productive development agencies often operate under special regimes. The export and FDI promotion regime in Costa Rica is a good example: it is made up of a public institution, the Ministry of Foreign Trade, which sets overall policy; a public non-state institution, the Trade Promotion Agency; and a private organization, CINDE, in charge of promoting FDI.

Other examples abound. In Brazil, a state-owned enterprise, Finep, operating under the Ministry of Science, Technology and Innovation, was created to supply funds for innovation to private sector firms. But under the law, Finep could not allocate funds directly to firms: it had to do so through universities and research institutions. Because the link between these institutions and the private sector was weak, the funds meant to help firms become more innovative went unused. So a social organization was created to fill this void. Operating under private sector rules, it is called the Brazilian Agency for Industrial Research and Innovation (*Empresa Brasileira de Pesquisa e Inovação Industrial* – Embrapii).

Similarly, in Argentina, both INTI, the national industrial technology agency, and INTA, the national agricultural technology institute, are decentralized entities operating under the industry and agriculture ministries, respectively, but with somewhat more flexible operational rules.

In these examples of successful productive development agencies, the institutions work under administrative and, in some cases, labor regimes that are considerably more flexible than typical central government regimes. The evidence from the case studies suggests that this is no coincidence; operational flexibility seems to be a key elements in the success of these agencies.

1.6.3. *Stability and Independence from Short-term and Partisan Political Pressures*

Closing the productivity gap between developing and developed countries, and achieving a degree of economic diversification and knowledge intensity akin to that found in developed countries, is a long-term game. Several years are required for initial results, decades for game-changing achievements. This poses a very real challenge in countries where short-term political shifts

ensuing from the electoral process are the rule rather than the exception, and where whole programs are thrown out, restructured, or frozen in their tracks when there is a change in government.

Latin America and the Caribbean is a particularly volatile region, economically and politically. And yet, against the odds, its record shows that long-term PDPs are feasible and can be successful even in the region's most volatile countries. Enabling conditions can sometimes be found even under unfavorable circumstances.

The success of Embraer (a state-owned enterprise that was later privatized) is the result of a decade-long process of capacity development by the Brazilian public sector. Brazil made a deliberate decision to create a local aeronautics industry and to use its military as a captive market during the initial stages of the industry's development. When the air-travel industry was deregulated in the United States and the hub-and-spoke system requiring regional aircraft was created, Brazil was ready because it had steadily pursued an aeronautics development policy for decades.

Or take the case of INTA, Argentina's national agricultural technology institute, which has had successes in areas ranging from rice technology to the adoption of precision agriculture. This is perhaps the clearest example of an institution that has worked with remarkable consistency for decades, despite frequent and profound political changes that lead to substantial disruptions, not just in policy and programs, but also in personnel and institutional organization.

Stability has been achieved in some of the region's PDPs, reinforcing the earlier point that neither political economy nor the broad features of institutional design necessarily constitute destiny. Rather, they are broad but somewhat pliable frameworks of opportunities and constraints, where capable policymakers and policy entrepreneurs can create enabling conditions for their policy initiatives that, if successful, eventually redefine the initial framework (Cornick and Trejos 2016).

Institutional and policy stability need not be the initial point of a policy initiative; on the contrary, stability may be the result of doggedly pursuing broad but well-defined goals and gradually building a constituency. The competitiveness dialogues in Colombia are a good example of this. Several attempts were made to set up such dialogues, but they were discontinued with each change of government. Eventually, a Private Council for Competitiveness was created, and this institution, whose membership, goals, and accumulation of skills do not depend on electoral results, has provided continuity to the public-private sector dialogue on productivity and competitiveness over several changes of government (Eslava, Meléndez, and Perry 2014).

1.6.4. *Competence, Credibility, and Authority*

It is one thing for the public sector to understand the need for dialogue with the private sector. It is quite another for the private sector to engage in such dialogue.

In the first place, some segments of the private sector may have direct and perhaps personal access to the relevant parts of the public sector, and thus may have no incentive to engage in a formal dialogue open to more public scrutiny. Even if that is not the case, the public sector faces the challenge of convincing the private sector that it is worth its time to participate in joint policy discovery and implementation.

Competence seems to be the first indispensable prerequisite for the public sector to succeed in this task: it must show the private sector that it knows what it is talking about. That is certainly the case of Embrapa when it engages Brazilian agricultural producers, of CINDE when it seeks out potential foreign direct investors in Costa Rica, of the ABC Foundation in Brazil, and of the team in charge of the Technology District in Buenos Aires.

A second issue is credibility. Specifically, the private sector must believe that the public sector representatives in a dialogue will be able to deliver on whatever agreements emerge from their dialogue. In many cases, there is no way to establish credibility beforehand, so in the initial stages of the process it might be a good idea to pick low-hanging fruit, as this helps build credibility. This is exactly what the Consejo Presidencial de Competitividad e Innovación in Costa Rica did,¹⁴ and what the *Mesas Ejecutivas* in Peru have done more recently in sectors such as forestry.

The final issue is the ability to deliver. If the agency in charge of the dialogue is not capable of mobilizing resources needed by other entities and required for policy success, either through authority, persuasion, or some mix of the two, the policy process may stagnate. This is exactly what happened with the Consejo Sectorial de Biotecnología in Uruguay. As a result of its efforts, a biotechnology law badly needed by the emerging sector was approved. However, the next step, registration of bioproducts, required the collaboration of the Ministries of Health and Agriculture, whose priorities lay elsewhere and whose collaboration, therefore, was not forthcoming.

¹⁴ And though the competitiveness council did not survive in its original form after President Laura Chinchilla's term expired, a variant of it, with more private sector participation, was created after President Luis Guillermo Solis was sworn into office.

1.6.5. *Human Resource Management*

Given the challenges associated with PDPs, recruitment and retention of qualified personnel is a key factor for success. Although it is a challenge to recruit high-caliber professionals to the public sector, the challenge is not insurmountable.

Strong, goal-oriented organizations tend to generate a virtuous circle. The Ministry of International Trade in Costa Rica (Comex) and Embrapa in Brazil are two examples. Both are high-performance organizations that are well-regarded. Embrapa, in addition, is a large entity that offers long and stable career paths. Ambitious young professionals who want to have an impact and make a difference are attracted to these two entities (even though, in the case of Comex, salaries are below what they could make in the private sector) because working for either one of them is a career enhancement move—that is, they are prestigious organizations that select their personnel carefully and offer ample opportunities to learn, become a better professional, and develop valuable professional networks. As they do so, these professionals improve the organization itself, which in turn makes it easier to continue recruiting top talent in the future.

These two cases suggest that during the first few years of a productive development agency's existence, its initial organization and staff will make a big difference over the long term. An organization with a reputation for accomplishing little and having low professional standards may have a hard time attracting new talent and reforming itself. Policymakers may want to consider assigning the responsibility for a new PDP to a new organization, rather than an old one with a poor reputation, even though this may present political difficulties of its own.

1.7. *Good Practices Leading to Capabilities*

Enabling conditions are not destiny. Good practices that make effective use of existing enabling conditions can go a long way toward achieving successful results and, perhaps more importantly, expanding the enabling conditions. This virtuous dialectic between conditions and practices is at the root of building public sector capabilities.

1.7.1. *The Many Roads to Increased Capabilities*

It has been argued that capabilities have to be developed internally rather than acquired.¹⁵ However, there are several options that can lead to increased

¹⁵ A brief discussion of this argument can be found in Chapter 4 on Brazil.

institutional capabilities, including but not limited to the development of capabilities internally.

Acquiring Capabilities

Productive development agencies can acquire or import capabilities by bringing in staff that possess them. This is what happened when PROCOMER, Costa Rica's export promotion agency, hired Jorge Sequeira as its CEO. Sequeira was a successful information and communications technology (ICT) entrepreneur who had recently sold the firm he had founded to a larger software company. He was used to the challenges of entrepreneurship, had proved capable of navigating them, and was accustomed to dealing with the international quality standards required in the enterprise resource planning business in which his company competed. In addition, as a manager he was used to working in a context of performance evaluation, strategic planning, and well-defined goals and objectives, and he had the ability to reorganize and change an institution on short notice if circumstances demanded it.

It is not surprising, then, that when he was appointed CEO of PROCOMER, Sequeira led the creation of a strategic plan with measurable goals for all units and individuals, the digitalization of procedures, and in some cases a shift from low-value-added activities (matching potential suppliers in these activities to potential multinational clients) to higher-value-added ones (development of new suppliers that could move into higher-value-added activities within global value chains). He also renewed some of his personnel, bringing in skills that were lacking in the organization.

This is a clear example, then, of capabilities that were not developed internally, but rather were brought into the organization by hiring the people who had them. However, three observations are in order.

First, at the time Sequeira was hired, PROCOMER already was a capable and well-staffed organization, and therefore it was ready to absorb and incorporate the new skills, routines, and procedures that Sequeira introduced. It is easy to think of many other entities in the Costa Rican public sector that would have collapsed under similar initiatives because they didn't have the technical skills required to implement them, or the can-do corporate culture that PROCOMER already had in place.

Second, while capabilities can be increased almost instantly by bringing in individuals who already possess them, organizations that aspire to long-term stability and effectiveness face the challenge of transforming capabilities that reside in individuals into capabilities that reside, to the greatest extent possible, within the organization.

Third, there is interaction between what in the previous section were referred to as enabling conditions of institutional design and different means of capability accumulation available to an organization. For example, PROCOMER operates under special legislation. It is a public but non-state organization that is required to operate in the spirit of public sector regulations regarding purchases and personnel, but which does not have to follow the law to the letter. One key implication of this is that the CEO can reorganize and restructure the organization as needed and can renew personnel and replace nonperforming workers when necessary.

In other words, PROCOMER has the operational flexibility discussed earlier in this chapter. Without it, Sequeira would not have been able to accomplish deep institutional transformations in a short time period. A traditional central government institution in Costa Rica might have been able to acquire external skills by hiring the right people, just as PROCOMER did, but it would not have been able to deploy and use those skills to the same extent. Other highly successful managers and entrepreneurs have led other institutions and failed to make even a fraction of the progress that PROCOMER made during Sequeira's tenure.

Last but not least, while this section has examined the example of PROCOMER in some detail, the same path has been followed by several productive development agencies in the other case studies. After the new Soil Conservation and Management Law was approved in Uruguay, RENARE, the productive development agency in charge of policy implementation, was reorganized and its technical capabilities expanded by hiring new technical personnel. Likewise, when Brazil's Finep determined that it lacked both the legal framework to achieve its goal to directly fund firm-level innovation as well as the technical skills required to evaluate private sector proposals, it created a new institution with a better-suited legal framework, hired the required technical personnel, and routinely used external experts to evaluate projects submitted for funding.

Developing Capabilities Internally

Capabilities can also be internally developed through goal-oriented and systematically evaluated trial and error, combined with training and participation in global knowledge/practice networks. This is quite a mouthful, so it might be good to discuss each of its elements separately.

First and quite obviously, an organization that does not try new approaches (including procedural innovations), and one that just keeps doing the same thing over and over again, even if it does so under high-performance standards, will, by definition, never learn to do new things and consequently will tend to decline over time if the environment or needs change.

Second, trying new approaches is useless without determining that these approaches work better, and under what circumstances, than the old ones. Something needs to be in place to evaluate the substantive results of these new approaches.¹⁶

Third, substantive evaluation can only take place against the benchmark of clearly defined goals.

These three elements seem to be, at least conceptually, indispensable requirements for developing capabilities. If they are present, training and participation in global networks may speed up the development of capabilities. If not, it is doubtful that any one of them alone would make a substantial difference over time.

While these arguments may sound like theoretical speculation, they are directly inspired and confirmed by the case studies. Just a few examples are discussed below.

The government of the City of Buenos Aires is a good example of experimentation guided by goals. Over the course of different administrations, the city attempted to establish a technology cluster through different approaches, drawing lessons from failed attempts to design such clusters. After the failure of the Polo Tecnológico initiative (from a previous administration) and a program that sought to attract investment using horizontal policy instruments. Both ended in failure. The succeeding government launched the Distrito Tecnológico initiative, which eventually succeeded (Box 1.2). In doing so, it did not simply try to do the same thing as the previous initiatives and by some combination of luck and effort succeed where others had previously failed. Rather, those undertaking the new initiative learned from the failures, and in the second attempt created a law that provided stability to the productive development agency, designed a geographically focused program instead of making it city-wide, and paid careful attention to private sector feedback in the definition and actual implementation of site selection criteria.

The same observation about goal orientation can be made about Brazil's policy of making innovation funds available directly to the private sector. When the effort to do this via Finep failed, Brazil neither abandoned nor conveniently redefined its goal. Instead, it developed a more suitable instrument, Embrapii, and engaged with outside experts, research centers, and the private sector under new contractual forms and cooperation agreements that were possible for Embrapii, but not for Finep itself.

When these elements are present—a goal-oriented organization that has the flexibility to adjust its policies and even its own organizational structure as

¹⁶ This does not necessarily refer to formal evaluations, such as compliance with procedure, important as they may be in some circumstances.

Box 1.2 A Technology District Brings Urban Renewal in Buenos Aires

In 2008, Parque de los Patricios, Boedo and Pompeya in the city of Buenos Aires were neighborhoods in decline, with many unoccupied buildings and public infrastructure in poor condition. Against this backdrop, the government of the City of Buenos Aires decided to promote the development of a *Distrito Tecnológico* (Technological District) in the area.

Success was far from guaranteed. Only a handful of information and communications technology (ICT) companies were located in the area, and an earlier project to create a technology corridor in another part of Buenos Aires had failed. The new initiative would require securing the co-operation of numerous public agencies—often an impossible obstacle to overcome—and conducting a dialogue with the private sector, which had little reason to get involved with a project that depended on the commitment and institutional capacity of the city government (*Ciudad Autónoma de Buenos Aires – CABA*).

Flash forward to 2014: 184 ICT companies had settled in the district. Their investment is projected to reach US\$157 million by 2018, with an additional investment of US\$60 million by non-technology companies. Real estate values are on the rise, the new headquarters of the city government has been located in the district, and a Metropolitan Technological Center has been built that houses the Universidad del Salvador, the Technological Institute of Buenos Aires, and space for use by ICT industry associations (including an auditorium, meeting rooms, and classrooms) and for hosting special events. Security and access to public transport—and with it connectivity with the rest of the city—has also improved noticeably.

This didn't all just happen—it is the result in large part of successful productive development policies and the agencies that design and implement them. Chapter 6 will tell you how it happened.

needed in the pursuit of its goals—training and participation in international knowledge and practice networks can be extremely useful. In the absence of these elements, they may turn into a waste of resources. Endless seminars and workshops take place every day, often at prestigious locations in attractive cities and attended by bureaucrats from every continent of the developing world, with nothing to show for in terms of institutional performance back home.

Contrast this with the very large and fruitful investment in training (frequently at the Ph.D. level) at Embrapa, and the continuing effort to keep its personnel up to date through further training at Embrapa and the ABC Foundation. Yet, as readers of the Embrapa case will note, even in such a

goal-oriented and successful organization, when training becomes dissociated from the organization's goals and mission, it may result in better scientists, but not in more capable organizations.

A corollary of this discussion could be that while organizations with limited capabilities but a solid core may engage in these development practices and gradually become better at all their tasks (including discovering what exactly it is that they should be doing), it is not clear that this core capability to develop new or stronger capabilities always exists. In truly dysfunctional organizations, development of internal capabilities through training, participation in global networks, and goal-oriented trial and error may not be an option. What to do in those cases? As the discussion on hiring and retaining talent presented earlier suggested, in some cases the creation of new institutions that gradually replace old ones may be the only option. A less traumatic option that may also have the advantage of greater political feasibility could be to launch pilot projects within existing institutions or to create executive units that can do what the main institutions cannot do.

One could think of the creation of Embrapii as an example of this option, even though operational flexibility rather than accumulating capabilities was the main driver of the initiative in this case. As explained in more detail in the Brazil case studies, when the Brazilian government decided to use sectoral funds to promote industry-level innovation, it assigned the responsibility of managing those funds to Finep, the Brazilian innovation agency. Finep had a strong record of financing university-based research, but little experience with the private sector, and its legal framework prohibited it from disbursing funds directly to the private sector. It also lacked personnel with the qualifications required to properly evaluate private sector projects. In response to this situation, Finep itself, together with the Ministry of Science and Technology, promoted the creation of Embrapii, which has both the flexibility and the skills that Finep lacks.

Interestingly, this case also illustrates the virtues of experimentation, as a pilot project was launched and evaluated before Embrapii was created. It also reflects participation in international knowledge networks: the design of Embrapii was informed by careful study of the experiences of the Fraunhofer-Gesellschaft in Germany and Embrapa in Brazil.

Integrating Capabilities

Finally, external capabilities can be integrated or articulated with internal capabilities through cooperation and alliances with external organizations whose capabilities are different but still complement those of the productive development agency. This is an alternative to trying to have all the required

capabilities in house. The ABC Foundation in Brazil could not possibly expect to develop internally all the research and scientific capabilities that it can tap through collaboration with other research institutions, Embrapa, and multinational corporations that are engaged in collaborative projects with Embrapa. Similarly, the leaders of the Technology District in Buenos Aires were able to tap the specialized knowledge of seven different ministries in the city. The advice received from urban planners seems to have been crucial to the project's success, and it would have made very little sense to try to develop urban planning expertise within the project itself.

1.7.2. Securing Support from the Appropriate Political Level

It is frequently argued that political support from the highest possible level is essential if productive development policies are to succeed. Once again, the cases presented in this book and in the broader case study literature suggest a less clear-cut conclusion: securing support from the appropriate political level is essential, but only in some cases is the highest level the appropriate one.

Take the case of export promotion in Argentina. Unlike other countries, where a single agency oversees export promotion, there were many such institutions in Argentina: four organizations at the federal level worked in export promotion, as did several state-level organizations. Two of them, Fundación Argentina Exporta (Export.AR) and the Sub-Secretariat of International Trade (Surci) operated under the General Directorate of Export Promotion (DGPEX) of the Ministry of Foreign Affairs and Worship. The Ministry of the Economy ran its own export promotion program, Proargentina, as did the Ministry of Agriculture (ProArgex).

When Marcelo Elizondo was appointed Executive Director of Export.AR, with support from Martín Redrado, who at the time was Secretary of Trade and International Economic Relations, Export.AR entered into a period of increased activity, raised its profile, expanded its payroll, and started cooperating with other institutions. While he was two levels removed from the highest level, Redrado had sufficient clout to protect the foundation so it could expand and accumulate capabilities. When Redrado moved on and another secretary was appointed, tensions between Export.AR and the new secretary began to emerge. Finally, when Redrado, then at the helm of the Central Bank, resigned his position, Elizondo lost this political champion and was removed from his position. The whole process was reversed, and Export.AR was reduced to its former self. Support from the appropriate political level led to a strong start, but dependence on such support also led to a short-lived program, which was discontinued soon after the balance of power changed.

This is a case, then, in which higher-level political support was essential in launching a PDP and allowing for capability building. But, given that the high-level support disappeared before the changes could take root within the organization, and that the changes were not enacted into law, the initial support proved insufficient to guarantee continuity. Or, perhaps, it was precisely because the expansion of Export.AR depended on higher-level political support that the program was doomed as soon as the high-level political authorities changed.

Be that as it may, under other circumstances, the role of such high-level support can be constructive.

Sometimes, completion of a one-time project may even induce long-lasting changes in the dynamics of a sector or policy area. If that is the case, short-lived political support from the highest possible level may be all that is needed. That was the case, for example, of the presidential task force created in Costa Rica to convince Intel to open a manufacturing plant there and to ensure that it was successfully installed. Once the project was completed, the task force was dissolved. By then, the positioning of Costa Rica as a destination for high-tech FDI, and the credibility of the country's FDI promotion agency (CINDE) as a partner that could ensure the success of investment projects, had been permanently changed (Larraín, López-Calva, and Rodríguez-Clare 2001).

In the Costa Rican case, political support from the highest level was temporary but indispensable. Without the president's direct involvement, ensuring cooperation and on-time delivery by the participating agencies would have been impossible, and the project would have floundered.

In the case of the Technology District in Buenos Aires, political support from the highest level (Mauricio Macri, who at the time headed the City of Buenos Aires) was essential for launching the policy in the first place and for ensuring the cooperation of an array of city-level agencies. However, learning from the failure of the Polo Tecnológico (Technology Cluster), the city government enacted the new policy by law, thus contributing to its institutionalization and increasing the chances of continuity. In short, high-level political support made the policy possible, but institutionalization is what provided stability in the face of changing political authorities.

On the other hand, organizations such as the ABC Foundation and Embrapa in Brazil, or INTA and INTI in Argentina, are successful partly because they operate at a considerable distance from the political lime-light. Once their technical competence and usefulness were established, their work has gone on for the most part undisturbed by electoral results and changes in political authorities. In fact, Breznitz and Ornston (2016) have argued that sometimes the peripheral agencies, farther removed

from the political sphere, can produce a lot of radical policy innovation under the radar.

In sum, when discretionary political support at the appropriate level does not lead to institutionalization—as was the case of Export.AR, which depended on an individual’s appointment—policy initiatives will tend to be short-lived and thus insufficient for sustained economic transformation. However, once institutionalization has been achieved, productive development agencies are well advised to keep a healthy distance from the limelight and high-level political authorities. Organizations such as CINDE and Embrapa derive their success, in part, from stability over many political cycles, and stake their credibility on their professionalism and objectivity, which could be compromised if they were seen as instruments of a short-term, political agenda.¹⁷

1.7.3. Goal Orientation, Accountability, and Evaluation

Organizational flexibility, autonomy, and room for experimentation should not be—and in the successful cases in this volume are not—one-way deals. Rather, they are part of a reciprocity contract: on the one hand, organizations are given considerable leeway to pursue their goals; on the other hand, they are expected to account for their actions, learn from their mistakes, and make tangible contributions to the achievement of the goal set for them or, as the case may be, the goal jointly agreed upon by the productive development agency and its private sector counterparts.

Mechanisms and institutional design features that create room for experimentation are needed only to the extent that they are put to the service of meaningful, goal-oriented, and real-time learning derived from experimentation,¹⁸ which in turn is used to reorient the agency’s work and increase its effectiveness.¹⁹

¹⁷ See Breznitz and Ornston (2016) for a detailed discussion of the possible trade-offs faced by productive development agencies between a low profile with lots of room for experimentation but little influence in policy implementation, or a high profile with constrained experimentation space but greater influence (in less radically ambitious) policy implementation.

¹⁸ Formal impact evaluation studies may have an important role to play, but their results take too long to be useful for day-to-day management and policy decisions. Here we are referring to imperfect but close to real-time performance indicators that help steer the work of agencies and improve the design and implementation of policies.

¹⁹ In other words, governance mechanisms akin to what Sabel and Simon (2011) have called “experimentalist governance,” what Andrews, Pritchett, and Woolcock (2012) refer to as problem-driven iterative adaptation, and Crespi, Fernández-Arias, and Stein (2014) refer to as experimentation, feedback and adaptation cycles.

In some cases, this goal orientation can be guided partly by the private actors that the productive development agency serves. In order to do this, putting private money at risk and giving the private sector a role in agency governance²⁰ are ideas that under some circumstances seem to work quite well.

For example, in the case of the ABC Foundation, an agricultural research and technical assistance institution created by three agricultural cooperatives in Brazil (see Chapter 4 for details), a third of the foundation's budget comes directly from co-op members, so the ultimate beneficiaries of the foundation's activities are putting their own money into play (Box 1.3). Since the foundation is made up of the cooperatives, the administration and research team are directly accountable to its members, who are at the same time one of the main funding sources and the direct beneficiaries of their work.

Similarly, Argentina's INTA has been quite successful in developing research and extension projects through agreements with the private sector, whose money is at stake, creating an incentive to ensure that the projects yield productivity results (Sánchez, Butler, and Rozemberg 2011). The Coffee Institute of Costa Rica (*Instituto del Café de Costa Rica - Icafe*) has also had good results using similar mechanisms (coffee growers fund the institute and have a majority participation in its governance; see Cornick, Jiménez, and Román 2014). In Costa Rica, tourism promotion is funded via a tax on hotels, and the tourism sector, in turn, participates in the management of the promotion funds and campaigns, once again quite successfully.

More generally, producers' participation in the governance of programs or institutions that cannot distribute rents (such as subsidized credit, tax incentives, or grants), but which have funds that when properly used can contribute to productivity gains, appears to be an effective mechanism to ensure that organizations and programs stay focused on their mission and strive to achieve their goals. This and other forms of partnership with the private sector work particularly well if, at the same time, the public institutions offer their workers strong incentives for professional excellence, measured in terms that are aligned with the (productivity) mission. Embrapa in Brazil is a good example of this. It is a state-owned enterprise whose personnel have strong academic credentials and are expected to regularly publish in recognized scientific journals. At the same time, Embrapa frequently enters into partnerships and joint projects with the private sector (including the ABC Foundation). Those projects are mission-oriented, and have yielded remarkable results in many cases.

²⁰ Giving the private sector a say in or, worse, control over productive development agency governance may be a recipe for disaster. See Cornick, Jiménez, and Román (2014). Simply putting private money at risk for technocrats to do with as they please will not do either.

Box 1.3 From Down-and-Out to Over-the-Top: Brazilian Cooperatives are Matching U.S. Corn Belt productivity

The ABC Foundation in Brazil was originally created by the Central Dairy Cooperative of Paraná in 1984 to provide technical assistance and extension services to three cooperatives that together constitute the ABC Group in the state's Campos Gerais region.

Times were good: the cooperatives received generous subsidies that enhanced their profitability, which in turn allowed them to fund the foundation through member contributions.

Unfortunately, around 1995 the good times stopped rolling: commodity prices on the international market declined, the *Real* Plan was implemented, and subsidies were phased out. To make matters worse, the foundation's technological research had stalled and the benefits of the no-tillage system had already been realized. The members of the three cooperatives—AgroPecuaria Capal, Batavo, and Castrolanda—found themselves unable to finance the foundation exclusively out of their own (no longer subsidized) pockets.

To survive, the foundation would need to revitalize the capabilities of its members to reach the next technological frontier and find the financial resources to remain viable, precisely at a time when everyone needed to tighten their belts.

This could well have been the end of the story for ABC. The foundation could easily have faded into an ever-smaller scale and eventually become irrelevant.

But exactly the opposite happened. The ABC Foundation was thoroughly reorganized, after which it proactively sought out research partners and new sources of income. In the course of a few years, it went from being fully financed by producers to being funded equally by producers, external partners, and with resources generated by the foundation's own agricultural production and laboratory services.

The end results could hardly be more remarkable: for its members' three main products—soybeans, wheat, and corn—the ABC Foundation's productivity today equals and in some years exceeds production in the U.S. Corn Belt, traditionally the highest-productivity region in the world for these crops.

How did this happen? Productive development policies and the agencies that design and implement them certainly played a part. Chapter 4 has the full story.

1.7.4. *The Role of Policy Entrepreneurs and the Quality of Top Leadership*

There is nothing automatic about launching new PDP initiatives. In all the cases in this book, policy initiatives developed under the leadership of clearly identified champions who tried to do something new—be it creating a new policy and/or productive development agency, or setting and achieving new and more ambitious goals within existing organizations and under the broad framework of existing policies. Leadership examples include Ricardo Monge in the case of the Costa Rican Competitiveness Council, Jorge Sequeira in the case of PROCOMER in Costa Rica, and Marcelo Elizondo in the case of the Fundación Export.AR in Argentina. In fact, it appears that the creation of goal-oriented, high-performance organizations is inseparably associated with the quality of their top leadership. There seems to be no substitute.

But what exactly is the role played by these policy entrepreneurs and their supporters at the political level? In the first place, they challenge the status quo. They do not accept the current state of affairs—such as a sluggish, perhaps ill-prepared bureaucracy, politicians focused on short-term issues and political gain, or policies subject to radical changes or termination in response to short-term political changes—as an unchangeable given, but rather as a starting point for change.

Second, they are able to navigate within that challenged and changeable status quo. In particular, they are able to cooperate with traditional political operators; when necessary they can also negotiate with the bureaucracy and interest groups. In other words, these entrepreneurs are not antagonistic outsiders who believe that unless you change everything you change nothing. On the contrary, these pragmatic leaders operate on the principle that change is incremental and needs to start somewhere.

Third, they can create support for their initiatives and minimize opposition to them. They are policy entrepreneurs, not just technocrats. The successful ones know how to play the political game.²¹

And finally, in the best cases, they work hard for institutionalization, so that the policies and agencies they helped launch can eventually do their work without them, an issue analyzed in the next section.

²¹ Some have political champions, people higher up within governments who provide the political space needed for the initiatives to thrive. Examples of such champions include Anabel González, Minister of Foreign Trade, for the Competitiveness Council in Costa Rica, and Martín Redrado, Secretary of Trade and Economic Relations in the Ministry of Foreign Affairs, for the Fundación Export.AR in Argentina.

The evidence at hand suggests that policy entrepreneurs share certain characteristics, though it is left for further research to determine whether the following tentative observations are more broadly true:

- Most have done graduate studies in developed countries. Beyond the specific knowledge acquired during their studies, they have been exposed to institutions and societies where performance standards are, generally speaking, higher than in their countries of origin.
- They participate in global knowledge and practice communities, and some have either worked abroad, worked with global institutions or companies, or participated in export markets.
- They have technical credibility both inside and outside the public sector.
- They are close to or have been part of the policymaking process—in other words, they know the ropes of the policymaking process, but usually as technocrats or executives rather than as pure politicians.
- They are goal-oriented, high-achievement professionals or, in some cases, business leaders.

1.7.5. Institutionalization of Capabilities

Even if to a certain and inevitable extent capabilities reside in individuals, organizational capabilities are much more than the sum of the individual capabilities of the people working in those organizations. Organizations provide specific contexts, rules, and procedures for those capabilities to interact and complement each other. They may help regenerate capabilities that are lost when an individual leaves.²² In other words, knowledge and capabilities can be institutionalized—that is, made to reside to a great extent in the organization rather than in individuals—in the following ways:

- By being codified in manuals, standard operating procedures, and so on.
- By being embedded in organizational routines, habits, and cultural norms that are not necessarily codified (written down) but form part of the way things are done at a certain organization.
- By being embedded in software, software-driven procedures, internal wikis and knowledge repositories, artificial intelligence applications, and so on.

²² There are limits to this process, of course. No organization could continue operating normally if 80 percent of its personnel were to leave. But in robust organizations, the normal turnover of personnel or the occasional loss of a star should not lead to significant changes in organizational performance.

- Through stability with personnel, which does not mean life-long tenure but does imply extended periods of continuous service, without regard to changes in political authorities, coupled with mentoring or apprenticeship of new hires to facilitate the transfer of capabilities.
- Through the use of work groups where knowledge resides in the team rather than in any single individual.

Unfortunately, in many instances in which capabilities for PDPs have been successfully developed in the region, these capabilities are subsequently lost when the champions are moved aside due to political disagreements or simply changes in government. The Competitiveness Council and the Fundación Export.AR are two clear examples from the cases in the book. The recent example of the *Mesa Ejecutiva* for the forestry sector in Peru illustrates clearly that the institutionalization of good policies and related capabilities doesn't just happen—it requires strategy and hard work (Box 1.1).

1.7.6. *Engaging the Right Partners*

The purpose of public-private collaboration on PDPs is to share meaningful information and jointly discover new information regarding productive development policies. But who in the private sector possesses or has access to the relevant information?

The answer will vary according to the scope of the PDP in question. On the one hand, dialogues centered on competitiveness concern themselves with general competitiveness in an economy. On the other hand, regional-level sectoral policies may concern themselves with one specific product in a particular region. Cluster policies, which deal with multiple but closely related products and services, occupy an intermediate position.

Therefore, in most cases a first step is to dispense with the notion of *the* private sector, since it is heterogeneous and includes groups whose interests sometimes conflict. Instead, it is helpful to think of the relevant portion of the private sector involved, as in the cases of the *Mesas Sectoriales* in Uruguay (see Chapter 3), or the *Mesas Ejecutivas* in Peru.

But sometimes a second step might be needed, which is to devise a mechanism to identify the specific actors within each sector that can provide the relevant information and engage in a meaningful dialogue. These may or may not be traditional business sector organizations such as Chambers of Commerce or Industry.

Take the case of CINDE and multinational corporations operating in Costa Rica. One of CINDE's goals is to have these companies expand and upgrade their operations and develop a deep, high-value-added local supply chain

where suppliers can be either other multinationals that CINDE would have to lure into the country, or local companies that in most cases would need to upgrade their own capabilities to meet their potential clients' standards and certification requirements.

But what do these multinationals need in order to undertake such expansion and upgrading? There is no chamber of multinationals in Costa Rica, and in most cases such companies would be reluctant to engage in an organized joint dialogue to identify and present to the government their needs out of concern that such an initiative might be deemed an anti-competitive practice. So, in this case, the right partners are the multinationals themselves, both those already in Costa Rica as well as those that are likely targets for CINDE's efforts to attract FDI. Meanwhile, CINDE turns itself into the information gatherer, and it is CINDE, not the multinationals, that will present to the government the problems identified by the private sector and work with different agencies to solve them. This could involve everything from increasing English-language courses to working with a public university to create a master's program in the manufacturing of medical devices.

In the case of the *Mesas Ejecutivas* in Peru, the private sector counterparts that actively participate are a select group of owners, CEOs, and general managers of the most important firms in their respective sectors. In the experience of the team at the Ministry of Production that created the *mesas*, it is these high-ranking executives, and not the managers of industry associations, who understand in greater detail the opportunities and obstacles faced by their respective sectors.

1.7.7. *Partnering with Emerging Sectors versus Reforming Entrenched Sectors*

Low-productivity performance is sometimes a consequence of obstacles put in place by the public sector, or inadequate provision of public inputs or incentives. But in other cases, it may be the result of PDPs that have channeled rents rather than supported higher private sector productivity.

Several experiences in the region suggest that the organization of public-private dialogues in the first case—public sector obstacles or lack of public goods—might be useful. Sometimes they function best with an open agenda (“let's sit down and discuss what the problems are and how they can be overcome”). In the second case—when sectors are profitable only as a result of subsidies or protection—such dialogue might not be so useful, as it can hardly be expected that the private sector beneficiaries will voluntarily renounce incentives that increase their profits regardless of productivity performance. The contrasting cases of the Distrito Tecnológico and

the Distrito Audiovisual Buenos Aires illustrate the point. In the first case, an emerging technology sector engaged the public sector and identified key obstacles to and requirements for sector development. This led to a surge in investment, new firms setting up shop in the district, increased land values, and the revitalization of a once-rundown part of the city. In the case of audiovisual firms, many incumbents were well established long before the Distrito Audiovisual was launched. But their establishments were dispersed over a wide area, so neither urban renewal nor increased investment took place: the incumbents were interested in receiving incentives, if they were available, not in relocating or significantly expanding the scale or complexity of their operations.

The contrasting experiences of the Consejo Sectorial Automotriz and the Consejo Sectorial de Biotecnología in Uruguay (Chapter 3) is another clear example that the challenge is likely to be harder when the public sector is dealing with a well-organized, entrenched sector that is either mature or on the way to obsolescence.

Broadly speaking, then, an institutional design centered on dialogue and cooperation between the private and public sectors may be appropriate in the case of sectors held back by the wrong policies or lack of public inputs. But such an approach is unlikely to succeed if the goal is to reform sectors that have prospered through the (socially unproductive) capture of public rents. Still, there are potential efficiency gains from defensive PDPs that help to phase out nonviable sectors or sustain viable sectors during temporary downturns if there is a credible commitment not to yield to rent-seeking demands. A possible recent example is the Productive Transformation Program in Argentina, where firms in need of transformation in the context of a gradual process of reducing rents negotiated support for a project with competitive potential while shedding part of their workforce that was subsequently absorbed by firms in more dynamic sectors of the economy.

1.7.8. *Engagement without Capture*

If engagement and dialogue with the private sector are indispensable, they are also fraught with peril. After all, the goal of good PDPs, as understood in this book, is to increase productivity by addressing market failures that prevent productive firms and sectors from growing. But from the point of view of private firms, their goal is to maximize profits. Well-designed policies and policy processes aim to align both goals. But misalignment can easily occur, and PDPs may be distorted into socially unproductive rent-distribution mechanisms that do not result in increased productivity and make no inroads into useful economic transformation.

The cases selected for this book, by design, provide no egregious examples of policy capture by rent seekers, but, unfortunately, such instances are all too common in a wide variety of sectors in nearly all countries, from rice and fisheries in Costa Rica to computers and cellphones in Tierra del Fuego, Argentina.²³ Among the cases discussed in this book, the Distrito Audiovisual is a good example of a sector that not only had considerable and unbalanced influence in preparing the law for the district, but also tried to turn the program into a set of financial incentives for the sector to continue doing what it was already doing in the very same places where it was doing it.

The danger of PDPs being captured by their beneficiaries—that is to say, turned into instruments of socially unproductive rent distribution that result in private profits but no increase in productivity or economic transformation—varies according to the type of policy and instruments used.

As discussed in Crespi, Fernández-Arias, and Stein (2014), there is minimal risk of capture in horizontal policies that provide for public goods or for the removal of public *bads*, as the case may be. At the other end of the spectrum, in vertical policies consisting of market interventions such as subsidies or protection, the danger is at its highest.

The question, therefore, is how to be close enough to the private actors, but not too close. To achieve the ideal of “embedded autonomy” (Evans 1995) or, in the older terminology coined by Amsden (1989) “reciprocal control mechanisms,” it is necessary to ensure that in return for public support, firms commit themselves to well-defined, ambitious performance results, with full knowledge that if performance goals are not met, public support will be withdrawn.

One can hope for public institutions that will walk the straight and narrow and never yield to temptation, and such resolve indeed exists. But a more prudent approach, illustrated by some of the case studies in this book, is to design policy and incentives that minimize opportunities for unproductive rent distribution.

A good example is agricultural research, technical assistance, and extension that engages producers who contribute to funding and participate in governance of the research and extension institutions, as illustrated in the case of the ABC Foundation in Brazil (Chapter 4). In this case, there is little danger that the scientists will hijack the research program and make contributions that may be scientifically interesting but are not immediately relevant for producers in terms of higher productivity for current crops or diversification into higher-value-added new crops.

²³ For the cases of rice and fisheries in Costa Rica, see Cornick, Jiménez, and Román (2014).

1.8. Enabling Conditions and Good Practices: Case Studies

This first chapter has made some preliminary observations based on the results of the empirical case studies but also informed by a large body of previous productive development policy case studies undertaken at the IDB and other development institutions, and by the recent literature on PDP. In particular, Sections 1.6 and 1.7 outlined a general framework distilled from case studies regarding institutional conditions and practices that facilitate the expansion of capabilities through acquisition, development, and integration.

While the country studies were guided by the broad goals, conceptual framework, and methodological approach envisaged in the design of this project, each case provides interesting variations on these themes. Far from trying to contain such variations, the coordinators of the project encouraged them. As discussed earlier, knowledge about the development of capabilities associated with PDPs is at an early stage. Trying different variations within a broadly defined common framework, rather than forcing a monolithic methodological approach on all the research teams, provides a richer and more diversified toolbox for further understanding in this area. The research teams, in other words, were allowed the same room for experimentation that is advocated here for productive development agencies.

In some areas, researchers from different teams arrived at somewhat different, or even outright opposing, conclusions. The hope is that this initial chapter has provided an integrated interpretive framework that makes sense of the variations. The aim is for the conceptual framework laid out in this chapter to be a useful lens through which to examine the evidence, but readers are encouraged to point out weaknesses, inconsistencies, or better ways to interpret the evidence. After all, as the saying goes, no research project is ever finished—there simply comes a time when one stops working on it. The research agenda remains wide open, and the challenge of building public sector capabilities for successful productive development policies remains a pressing and urgent one.

Costa Rica: Building on Successes to Address New Productive Development Policy Challenges

Jorge Cornick and Alberto Trejos

Costa Rica's success at diversifying its production and export structure, attracting high-quality foreign direct investment (FDI), increasing the knowledge content of its exports, and developing an increasingly high-value-added export services sector has been extensively studied and well documented. Recent examples include ECLAC (2014), OECD (2012), and World Bank (2014).

Some of the limitations of the production and export diversification model have also been studied, particularly the failure to develop strong and numerous linkages between local companies and multinational corporations (MNCs) operating in the country's free trade zones. Paus (2005) explored this issue early on and revisited it more recently (Paus 2014) from the perspective of Costa Rica's global industrialization strategy. Monge and Rodríguez (2013) and Vargas Madrigal et al. (2010) specifically evaluated Costa Rica's programs aimed at developing linkages between local companies and MNCs operating in free trade zones. Padilla Pérez and Alvarado Vargas (2014) also address the issue from the perspective of the structural heterogeneity of Costa Rica's economic structure, while Rivera (2011) analyzes the export performance of small and medium-sized businesses.

Some of the institutions and programs that have driven Costa Rica's success have also been studied in depth. Clark (2001) provided a detailed account of the emergence of the Costa Rican Investment Promotion Agency (*Coalición Costarricense de Iniciativas de Desarrollo - CINDE*) and its role

in the transformation of the Costa Rican economy. That study remains the standard reference on this topic. Monge, Vargas, and Mata (2008) provided a detailed account of CINDE's history and contributions. Cornick, Jiménez, and Román (2014) presented a study on FDI attraction in Costa Rica that discusses the role played by CINDE.

Whatever the limitations of Costa Rica's economic strategy, it is indisputable that it has resulted in significant achievements over the past 30 years, and the country now enjoys a solid middle-income status. However, like other countries that have achieved as much, Costa Rica now faces the danger of falling into the middle-income trap, albeit a somewhat atypical one: it is not the trap besetting resource-rich economies that grow quickly over a number of years and then fail to diversify outside the resource-based economy, but rather a public policy and public capabilities trap.¹

The overall performance of Costa Rica's public sector is poor. An increasingly complex web of institutions with varying degrees of autonomy and subject to cumbersome and inefficient control mechanisms frequently leads to paralysis. This is dramatically exemplified by the infrastructure sector, where roads designed decades ago are today only partially built, in spite of an abundance of funds for this purpose, particularly from the Inter-American Development Bank (IDB). The issue was discussed by Cornick and Trejos (2009) and more recently revisited by Academia de Centroamérica (2014).

Policy studies such as OECD (2012) and Gereffi et al. (2013) recognize that in order for Costa Rica to achieve continued success in knowledge-based economic growth, attract FDI, and diversify (and integrate) its productive infrastructure, the country will need to deploy increasingly complex and hard-to-implement public policies. This is not because a break with past policies is needed, but rather because those past policies have been to an important degree successful and now need to be adjusted to the conditions of a changed country. They also need to be complemented with policy initiatives in some areas that have been somewhat neglected in the past or where success has been elusive.

In facing up to these new challenges, Costa Rica is dealing with four emerging and crucial difficulties. First, while Costa Rica has successfully deployed *narrow* policies requiring the targeted intervention of one or at most a few public institutions, the country has been less effective at deploying the *wide* policies that are now needed.

¹ See ECLAC (2014) and Trejos (2013) for a discussion of some of the peculiarities of Costa Rica's recent development experience.

Second, while Costa Rica has been good at taking advantage of preexisting stocks of public and private capabilities and productive capacity² and deploying them in the service of its economic transformation strategy, it has been less effective at developing new capabilities and capacity at the pace and on the scale currently needed.

Third, Costa Rica has been quite successful at developing a few highly effective public agencies, but all of them are small. It has been less adept at developing highly effective, large public institutions, and to a certain extent these may well be precisely what it now needs.

Fourth, Costa Rica's record of public-private cooperation is spotty (Cornick, Jiménez, and Román 2014). International experience suggests that success in wider and more ambitious productive development policies will require much deeper and more successful public-private cooperation (Devlin and Moguillansky 2010).

Although this chapter does not directly tackle the issue of how to overcome these four difficulties, it sheds some light on them indirectly. The chapter will focus on three success stories from Costa Rica's productive development strategy in an effort to elucidate the key capabilities that enabled success and how they were acquired. Guiding the analysis is the conceptual framework of technical, organizational, and political (TOP) capabilities.

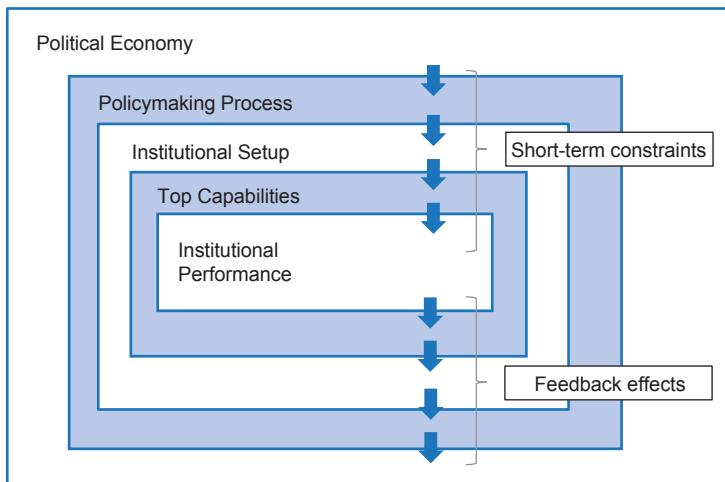
To a certain extent, therefore, the chapter focuses on what could be described as *how Costa Rica became good at the things it is good at* in terms of productive development policies (PDPs). However, the cases will also illustrate efforts currently under way for Costa Rica to become good at new things, or, to put it more precisely, efforts to expand and upgrade public sector capabilities in order to meet the new challenges of productive development policy.

2.1. Conceptual and Methodological Issues

Conceptually, this chapter uses and to a certain extent puts to the test the conceptual framework regarding public capabilities developed in Cornick (2013), with some adaptations and the incorporation of some of the ideas developed in Nübler (2014).

In short, Cornick argues that the performance of productive development agencies can be explained to a considerable degree by their TOP capabilities. Moreover, borrowing from ideas developed by Sabel and Reddy (2007), Pritchett, Samji, and Hammer (2012), and Andrews (2013), among others,

² This chapter follows Nübler's (2014) suggestion to use *capabilities* to refer to "tangible production factors and infrastructure" and *capabilities* to refer to different forms of individual or collective knowledge.

Figure 2.1 From Political Economy to Institutional Performance

Source: Prepared by the authors.

he argues that capabilities are increased and new capabilities are acquired through cycles of experimentation, feedback, and adaptation.

It should be noted, however, that the explanatory power of TOP capabilities regarding the performance of productive development agencies and, more generally, the public sector, is bounded by the political economy, the institutional context, and the features of the policymaking process within which they operate.³ Figure 2.1 may help clarify these relationships.

The political economy—that is, the balance of political and economic power at any given moment—defines the most general framework for politics and policymaking. A given political economy balance, however, may express itself in policymaking processes with different features, as discussed by Spiller, Stein, and Tommasi (2008). Even within a given policymaking process, different institutional designs are possible, and they need not be uniform across all parts of the public sector, all levels of government, or all regions within a country. As discussed in Cornick (2013), TOP capabilities help explain the performance of public agencies within the limits set by the political economy, the policymaking process, and the specific institutional design in each case. It is reasonable to assume that in the long run there can be feedback effects: a successful productive development agency and successful PDPs may be the

³ Some of these issues have been studied in detail in Stein et al. (2005) and Stein and Tommasi (2008).

starting point for processes that eventually result in changes in institutional design, policymaking processes, and even political economy, as the recent experience of China so richly illustrates (Dinh et al. 2013; Pascha, Storz, and Taube 2011).

Methodologically, this chapter uses a case study approach as opposed to statistical analysis. This choice is justified on three grounds: the paucity of available data, which prevents us from applying statistical techniques; the unfeasibility of conducting formal experiments at this time; and our rudimentary understanding of the problems at hand at this stage. It is hoped that these case studies and similar ones carried out simultaneously in other Latin American countries will allow us to sharpen this understanding, improve the conceptual framework and, perhaps, devise formal hypotheses and tests.

The question, then, is how to approach the case studies so that they serve these purposes. The answer—in accordance with the guidelines used by all project participants—has been to study specific episodes that highlight the processes of capability acquisition or, alternatively, failure to acquire key capabilities. The analysis of these episodes is expected to improve understanding not only of the cases themselves but also of two related conceptual questions: first, whether the key capabilities match the TOP capabilities of the conceptual framework, and, second, whether the conditions are in place for capabilities to be developed.

While many sources of information have been tapped in the course of our research, personal interviews with key policymakers have proved to be particularly illuminating, as the issues in this analysis are often neglected in institutional reports and official data. Much of the relevant knowledge resides in the people who head institutions, and we hope to have captured some of it in our interviews.

2.2. An Overview of the Cases

A reading of the chapter can be facilitated by first clarifying the terminology used:

- *Episodes* refers to processes of institutional change. For this chapter, episodes have been chosen in which each institution or program assumed an ambitious set of goals and objectives and achieved at least partial success in the pursuit of them. This is taken as *prima facie* evidence of upgrading capabilities within each institution, and the chapter endeavors to explore whether the available evidence is consistent with this assumption.

- *Institutions* is a term that, despite the best efforts of institutionalists, is used in different and sometimes confusing senses in the literature. In some cases, it is intended to refer to formal and informal rules that regulate interactions between agents, while in others—perhaps particularly in Latin America—it is used synonymously with *public sector organizations* such as ministries, decentralized agencies, local governments, and so on. Lacking a good alternative, the term will be used in this chapter in one sense or the other, as needed, with an effort made to be as clear as possible regarding the meaning intended.
- The term *institutional design* refers to the organizational chart of the public sector and the assignment of decision-making and implementation responsibilities within it. That includes the distribution of power and responsibilities among different branches and levels of government; the organization within each one in terms of ministries, departments, agencies, and other offices; the lines of authority between them; and the allocation of roles regarding who decides what, and who is in charge of executing what.
- *Institutionalization* refers to the transition from an ad hoc and temporary institutional design to a stable, long-term design, perhaps anchored by a (difficult to change) law. For example, when a small-scale, short-term pilot program funded by international cooperation and executed by an ad hoc and temporary team is transformed into a permanent program, assigned to a ministry, agency, or other suitable institution, and becomes funded through the national budget, the chapter will refer to the process as the institutionalization of the program.

The Costa Rican institutions studied in this chapter are the Presidential Council on Competitiveness and Innovation (PCCI), the Linkages Program in the country's foreign trade promotion agency (*Promotora de Comercio Exterior de Costa Rica - PROCOMER*), and the Medical Devices Section of CINDE. The sections that follow provide brief descriptions of each institution and of the episode to be studied.

2.2.1. *The Presidential Council on Competitiveness and Innovation*

Several recent studies of PDPs in Costa Rica have highlighted that *narrow* policies based largely on preexisting stocks of capacities and capabilities, while successful to date, may not be enough to overcome the challenges Costa Rica must address if it wishes to transition from a reasonably successful middle-income country to a successful high-income one. The country needs *wide* policies, which by definition demand concerted action by many different public institutions, and which are probably more complex than existing

policies. These issues are explored in detail in ECLAC (2014), Cornick, Jiménez, and Román (2014), Monge, Rivera, and Rosales-Tijerino (2010), and OECD (2012), among others.

The creation of the PCCI marked an attempt to solve the public-public coordination issues within the central government and to a certain degree between the central government and other public institutions with various degrees of autonomy. It can be described as an *upgrading event* that attempted to overcome a well-known problem, using what for Costa Rica was an innovative solution. This upgrading event took into account the lessons from previous attempts at solving the same problem. Those attempts included the sub-cabinets created during the administration of José María Figueres (1994-1998), the Programa Impulso during the administration of Ángel Rodríguez (1998-2002), the Competitiveness Council during the administration of Abel Pacheco (2002-2006), and the appointment of a cabinet-level competitiveness minister (but no Competitiveness Ministry) during the second administration of Óscar Arias (2006-2010). The PCCI was successful, within limits to be discussed later, as evidenced by Costa Rica's improved rankings on the World Economic Forum's competitiveness indicators and the World Bank's Doing Business indicators. The case of the competitiveness minister during the Arias administration is discussed as a counterfactual in Box 2.1.

Box 2.1 A Counterfactual: The Competitiveness Minister under the Arias Administration^a

During the second administration of President Oscar Arias (2006-2010) immediately preceding the administration of President Laura Chinchilla (2010-2014), Costa Rica tried a different approach to competitiveness policy. Jorge Woodbridge, a former industrialist and former chair of the Costa Rican Chamber of Industry, was appointed as Minister of Competitiveness and provided with a secretary and an assistant. The creation of an institution, or at least a Technical Secretariat, was not foreseen. Instead, the minister had three tasks: identify strategic sectors for Costa Rica's future development, identify key constraints to the country's competitiveness (and prepare bills of law to address them), and act as a *champion* for foreign investors and help them navigate Costa Rica's public sector bureaucracy. In particular, it was expected that the minister, acting on behalf of the president, would work with (and cajole, as needed) multiple institutions in order to clear the way for strategic investment projects. In other words, it was expected that the minister would provide, on an ad hoc basis, the

(continued on the next page)

Box 2.1 A Counterfactual: The Competitiveness Minister under the Arias Administration^a (continued)

public-public coordination for which there were no permanent, institutional mechanisms.

As it turns out, the minister indeed identified a number of strategic investment sectors, including aerospace, robotics, nanotechnology, audiovisual, and medical tourism, and produced a number of bills of law focused on reform of the public sector and the reduction of red tape (*simplificación de trámites*). Alas, the bills were not even submitted to the Legislative Assembly for discussion, as the executive's priority at the time was to pass the legislation needed for the Central America-Dominican Republic Free Trade Agreement (CAFTA-DR). The minister did not have the resources to transform the identification of a potentially strategic sector into an actual working priority for the Costa Rican public sector. So even though the minister's work on behalf of specific projects may have made an important difference for those projects, the overall picture of Costa Rica's competitiveness did not change.

Perhaps a key difference with respect to the Presidential Council on Competitiveness and Innovation (PCCI) under President Chinchilla is the relationship between the minister of competitiveness and the president, on the one hand, and the relationship between the council and the president, on the other. While the minister had the full support of the president, the president himself was not involved in its work, and there were no institutional mechanisms for reporting and follow-up. The president pretty much expected the minister to solve whatever issues an investor might have, without direct participation of the president, whose main priorities were elsewhere. In contrast, as described in the main text, President Chinchilla chaired almost every meeting of the PCCI, and all participants knew they were responding directly to her.

One could say that in order to confront long-standing competitiveness problems, President Arias appointed a sharpshooter, while President Chinchilla created a war council. Considerable learning took place in both experiences, but Costa Rica has failed, so far, to institutionalize its competitiveness policy.

^a The description of the counterfactual presented in this box is based on Jorge's Cornick's interactions with Minister of Competitiveness Jorge Woodbridge on behalf of a foreign private investor, and on an interview by Cornick with the minister on March 24, 2015.

2.2.2. *The Linkages Program at PROCOMER*

Created in 1996, PROCOMER is a public institution in charge of promoting exports and facilitating foreign trade (PROCOMER 2014). Its predecessor was the Center for Export and Investment Promotion (CENPRO), created in 1968 within the Ministry of Economics, which at the time was mainly concerned with import-substitution industrialization.

As a trade facilitator, PROCOMER manages Costa Rica's special export regimes (*zonas francas*, or free trade zones, and *Perfeccionamiento Activo*).⁴ It also provides a one-stop digital portal for exporters that links 16 different institutions that need foreign trade permits and authorizations, provides commercial intelligence, issues certificates of origin as required by the country's various free trade agreements, and cooperates with the Ministry of Foreign Trade and other institutions in logistics- and customs-related issues. As export promoter, PROCOMER supports both direct exports by domestic producers and indirect exports through linkages to (mostly foreign) exporting companies.

The status of the promotion of linkages, which started in the context of Costa Rica's economic transformation policies beginning in the early 1980s, has gradually changed. In the very early stages of Costa Rica's economic reform strategy, from 1982 to 1999, linkages between local companies and MNCs were not even on the policy agenda. Economic policy was focused on stability, FDI attraction, and employment creation. Then, in 1999, a small, five-year Linkages Program was set up with IDB funding. In 2005, when funding expired, the program was transferred to the Ministry of Foreign Trade/ PROCOMER and set up as a permanent program, funded by fees on free trade zones and customs declarations. During this stage, all linkages were treated as equal; the analogy with the early stages of export promotion is instructive. A new stage began in 2010 when PROCOMER for the first time defined a formal institutional strategy and decided to focus the Linkages Program exclusively on tradables, with a special focus on high-value-added linkages. At the same time, PROCOMER decided to go beyond its early matchmaking functions and started to work on supply development in conjunction with other public institutions.

Simultaneously, an Inter-Ministerial Linkages Commission was established in order to deal with broad policy issues. This upgrading episode (from the promotion of generic to focused linkages, and from matchmaking to matchmaking plus supply development) will be the focus of the section of the chapter on the Linkages Program.

⁴ *Perfeccionamiento Activo* is a regime that allows exporters to import inputs without paying import duties or value-added taxes, so long as the final product is exported.

The medical devices industry discussed in the next section neatly illustrates the process by which good institutional performance leads to increased capabilities, then to changes in the institutional setup and even further to modification in (policy-specific) policymaking processes.

2.2.3. Anchoring the Medical Devices Cluster: The Role of Sterilization Services

The medical devices industry has a long history in Costa Rica dating to 1987, when Baxter set up a production facility in the country. A few other companies set up operations in the years that followed, but in 2004 the sector took off: the number of new firms investing in Costa Rica each year started to increase, while the scale and complexity of operations of firms already in the country grew. Moreover, suppliers of medical device manufacturers operating in Costa Rica followed their clients and started to set up their own operations in the country.

A landmark was achieved when, as a result of joint efforts by CINDE and firms in the sector, first one and then a second sterilization services firm opened in Costa Rica, thus allowing firms in the sector the opportunity to ship their products directly to final customers, instead of shipping them to a sterilization facility abroad and only after that to final customers. This also offered firms the opportunity to integrate downstream and set up distribution centers and marketing operations frequently associated with them. Perhaps even more importantly, once sterilization services became established in Costa Rica, the country became attractive to new firms not previously operating there and to new activities not previously undertaken.

Thus, CINDE has gone beyond efforts to attract exporters. It is now not only working to attract suppliers for those exporters, but also targeting strategic suppliers that anchor the sector by strengthening its competitive advantages (in this case, by reducing inventory costs and shortening delivery times to final clients) and offering it new possibilities for further development (in this case, downstream vertical integration). This is the episode studied in this chapter.

2.3. The Presidential Council on Competitiveness and Innovation⁵

Costa Rica's public sector has long been plagued by serious difficulties in the deployment of wide policies and even in the execution of projects that are

⁵ Most of the information in this section comes from an interview by Jorge Cornick with Ricardo Monge on June 17, 2014.

simple but require the collaboration of multiple institutions, such as enlarging an existing urban road. Such a project may be relatively easy from an engineering standpoint, but it still requires the collaboration of the utilities in charge of public lighting, potable water, sewage, and telecom towers, whose assets need to be moved to a new location before road enlargement can proceed. Many solutions have been attempted, but none have been long-lasting, even if some were effective in the short term.

In the case of Intel's first manufacturing plant in Costa Rica, inter-institutional coordination was achieved via a task force chaired by President José María Figueres (1994–1998) (Spar 1998). The task force was dissolved once its goal was accomplished. Afterwards, an attempt at public-public coordination was made by dividing the cabinet into two subcabinets, a social cabinet and an economic cabinet, each headed by a vice president. The social cabinet focused more on macro issues than on the micro inter-institutional issues typically involved in wide PDPs. This mechanism, whatever its merits or faults, was discontinued after the Figueres administration.

Instead, President Ángel Rodríguez (1998–2002) created the *Programa Impulso* to deal with multi- and inter-institutional issues relating to competitiveness and the cost of doing business. This program was coordinated by the president's son, Andrés Rodríguez, who could speak with full authority on the president's behalf, and it was relatively successful.⁶ So, like the Intel task force, inasmuch as the program was successful, part of the success could be attributed to the fact that, for all intents and purposes, *Impulso* was headed by the president himself. At the end of the Rodríguez administration, the program was transferred to the Ministry of the Economy, Industry, and Commerce (MEIC), where the minister delegated it to a lower-ranking official and it rapidly faded away.

President Abel Pacheco (2002–2006) also tried to tackle the issue of broad policy coordination, in this case by means of a Competitiveness Council chaired by the minister of MEIC, under which *Programa Impulso* now operated. Perhaps unsurprisingly, fellow ministers⁷ and heads of Costa Rica's numerous decentralized institutions, some of whom had considerable political influence themselves, did not feel that they needed to report to or follow instructions from a peer. Gradually, ministers started to send delegates instead of attending meetings personally, until the council simply stopped having meetings altogether.

⁶ One of the authors of this chapter, Jorge Cornick, worked as an advisor to Rodríguez and helped prepare the final report for *Programa Impulso*.

⁷ One of the authors of this chapter, Alberto Trejos, was Costa Rica's foreign trade minister at the time.

President Óscar Arias (2006–2010) tried a similar approach, but he assigned the task to a newly designated competitiveness minister. The title may suggest a powerful position, but the competitiveness minister was, quite literally, a minister without a ministry (*ministro sin cartera*). His situation, therefore, was even worse than that of the MEIC minister under the Pacheco administration: like her, he was a peer whose work depended entirely on the collaboration of peers over whom he had no authority; unlike her, he did not even have an institution and its bureaucracy working for him. Despite the minister's best efforts, the program, not surprisingly, went nowhere.

Enter the administration of President Laura Chinchilla (2010–2014). But first a short prelude that starts with Ricardo Monge, who has written extensively on PDP issues in Costa Rica. He not only noted the importance of these wide coordination issues in a paper on PDPs in Costa Rica (Monge, Rivera, and Rosales-Tijerino 2010), but went a step further to present its main results to all candidates for Costa Rica's 2010 presidential elections. The Partido Liberación Nacional went on to win the elections, and when the Chinchilla administration took office Monge found an ally in Anabel González, one of the president's most influential advisors who would become the foreign trade minister.

It is interesting to note that both Monge and González have some of the very qualities of policy entrepreneurs outlined in Section 1.7.4 in Chapter 1 of this volume: post-graduate studies outside Costa Rica, background as technocrats, active participation in an international knowledge and policy-practice network at the forefront of the issues it addresses, and extensive experience as, or working with, policymakers.

González arranged a meeting between Monge and future President Chinchilla where he proposed the Competitiveness and Innovation Council. Monge's case was two-fold. First, Costa Rica could not hope to solve a host of competitiveness issues through the individual actions of specialized agencies. Removing the binding constraints on productivity increases demanded the concerted action of many public agencies, that is to say, well-coordinated wide public policies. Second, Costa Rica's own experience as well as international experience with similar councils⁸ clearly indicated that the presence of the highest political authority was essential to the council's success.

The conceptual proposal was well received by Chinchilla and her advisors, and a more concrete proposal was then put forward for a council that regularly would include all key economic policy ministers and other ministers or the heads of other public institutions as needed. The council, chaired by

⁸ See Devlin and Moguillansky (2010) for a review of similar councils in developed and developing countries.

President Chinchilla herself, would meet once a month; Monge would head a small Technical Secretariat.

As is not entirely atypical in Costa Rican policy experience, what should have been almost impossible to achieve was instead easily achieved, whereas what in almost any other country would have been a trivial task proved to be almost impossible. According to Monge, President Chinchilla attended all but four meetings during her four-year term of what became the Presidential Council on Competitiveness and Innovation (PCCI). She asked her two vice presidents to join her and to take charge of following up on the council's decisions, as it was understood that her role was to provide strategic direction and make key decisions, but not to get involved in the operational details of implementing those decisions. The role of Minister González was critical in addressing those details. A technocratic initiative, by itself, would hardly have been enough to warrant such an important place on the president's agenda. González had tremendous political weight within President Chinchilla's cabinet and was running one of the government's most successful programs, namely, foreign trade, FDI attraction, and export promotion, as well as leading Costa Rica's effort to join the Organization for Economic Cooperation and Economic Development (OECD).

On the other hand, the council never had a properly funded and staffed Technical Secretariat. Monge developed a tracking system for the council's decisions and the advances in their implementation, but for most of the four years he worked alone with no supporting staff. He did not even have a regular salary, but instead alternated between *ad honorem* work and periods when he received an honorarium as an independent consultant.

The PCCI was created by presidential decree, which has the advantage of expediency in that it requires only the signature of the president and one cabinet member. The method, however, has two important disadvantages: first, in contrast to laws approved by Congress, presidential decrees can be undone as easily as they are made, and second, while the president could create the council on her own authority, she could not allocate budget funds to it without congressional approval.

Moreover, the council was not designed as a public-private cooperation mechanism. It was made up exclusively of public officials, including, besides the president and two vice presidents, several ministers and CEOs of utilities and other government institutes. The private sector was not entirely happy with this situation, and a Private Competitiveness Council (Consejo de Promoción de la Competitividad) was created in November 2011 in part as a reaction to the PCCI's exclusion of the private sector, and in part because some business leaders wanted to promote a private sector agenda focused on general competitiveness issues, as opposed to sector-specific issues championed by

sector-specific organizations such as the Chambers of Commerce, Industry, and Tourism. Eventually, the PCCI opened up to the private sector, and one representative from the Private Competitiveness Council and one from the *Unión Costarricense de Cámaras y Asociaciones del Sector Empresarial Privado* were incorporated as regular members.

The PCCI was to focus on five priority areas: human capital and innovation, foreign trade and FDI, access to finance and stock markets, infrastructure, and regulatory reform and paperwork reduction. However, infrastructure was removed from the council's responsibilities soon after the start of the new administration, and the PCCI focused on the other four areas for the rest of the presidential term.

Gradually, the council found a modus operandi. The president defined priorities, and the technical secretary helped translate those priorities into goals and objectives, and kept track of progress on all the issues tackled by the council. The other public sector members were responsible for developing plans or identifying the actions required to achieve those objectives.

The council had no formal authority by itself, and while the president of course had authority over cabinet members, under Costa Rican law her formal authority over the heads of independent agencies is limited. Informal leadership is of course another matter, and the president developed what might be called a carrot and stick method that relied entirely on informal authority.

An example helps illustrate the point. Opening a new business is a cumbersome and lengthy procedure in Costa Rica, and this hurts the country's ranking on the World Bank's Doing Business Index, not to mention its economic performance. This is typical of the sorts of problems the council was designed to address: no single authority can make the procedures simpler and faster because many different issues under the purview of many different agencies are involved. These can include environmental and land use regulations, construction codes, health and safety standards, industry-specific construction and design regulations, operating permits, firm and worker registration for tax and social security purposes, and many other issues. Some of these issues are under the responsibility of local governments (municipalities), which not only are not under the direct authority of the president, but in fact are endowed by the constitution with autonomy from the central government.

At some point, the council arrived at the conclusion that without changes in municipal procedures Costa Rica could neither reduce the time required to register a new business nor improve its Doing Business ranking. Previous efforts to enlist municipal collaboration had gone nowhere. The council therefore invited the mayor of San José, the country's largest municipality, to attend a council meeting, presented the problem to him, and explained the importance for the country of solving it and the need for his collaboration in doing so.

Because the meeting was public and included the presence of a large number of cabinet members, heads of independent agencies, representatives from key private sector institutions, and a good portion of his party's leadership whose approval and support were important for the mayor, his collaboration was secured on the spot. And lest that collaboration be reduced to words rather than deeds, he was invited to make progress reports to the council several times after the initial meeting.

The point is that the PCCI created a context in which it became difficult for the leaders of public agencies not to collaborate with the president's program, particularly because the initial invitation was certain to be followed by others in which progress reports were expected. As a matter of fact, this method proved quite effective even with ministers who, while formally under the president's authority, in fact had a large portfolio that included many issues that may have been a priority from the minister's point of view but not from the president's.

The council, in short, exhibited three key features:

- The Technical Secretariat, while understaffed, had the technical capability required to identify actionable items that could result in tangible progress on the issues tackled by the council.
- The president's commitment was unwavering. Council sessions were well attended, as all members knew that the president and her two vice presidents would attend. Had the president delegated attendance or coordination to a minister or technical staff, attendance would have dropped immediately, or heads of agencies would have started delegating attendance as well, and the whole peer + president pressure system would have collapsed.
- The Technical Secretariat devised an effective tracking system that included council agreements, commitments by the relevant agencies or institutions, and progress reports. If any of the members hoped that the council would lose track or fail to follow up on their commitments, they were soon disavowed of such a notion. On the contrary, they could be certain that they would be called to present a progress report to the council and the president on whatever task had been assigned to them.

A few additional features of the PCCI's working methods are also worth mentioning:

- Particularly in its initial stages, the council was challenged with proving its effectiveness and gaining legitimacy. After all, it was imposing severe demands on the president's schedule, and it had to prove to

her that her time was being put to good use. The council's strategy was to focus on low-hanging fruit first and tackle more ambitious tasks later on. For example, it was discovered that Costa Rica's ranking on the World Economic Forum's Global Competitiveness Index was being hurt by the fact that only attendance at public universities was being reported. No one in the government had seen any reason to trouble themselves to collect statistics on private university attendance. This was corrected at the council's urging, and Costa Rica gained a few points in the competitiveness ranking by doing nothing more than improving its reporting procedures.

- While the Technical Secretariat lacked the staff to undertake substantial technical work on issues under the council's purview, the technical secretary's well-developed network of contacts within the international development community proved crucial for the council's success. Regulatory reform is a good example. For years, Costa Rica had failed to make any progress on this front. Within the council's work, the Minister of Economy, Industry, and Commerce received a renewed mandate to improve matters. The technical secretary connected her to a team of World Bank experts, and a technical cooperation program was put in place. The results did not prove to be as useful as expected, so a new technical cooperation program was organized this time involving the IDB. The results of this second technical cooperation became the road-map that enabled Costa Rica to make steady and significant progress on the Doing Business and World Competitiveness indexes during the Chinchilla administration.
- When needed, the attention of the council could be relentless. Regulatory reform and paperwork reduction has proved a particularly tricky issue in Costa Rica. A number of agencies can issue regulations, and some of them actually seem eager to issue new ones whenever possible. Simplification is the cause of one (the executive) against many (all institutions with the power to issue regulations). Therefore, regulatory reform became a permanent item on the council agenda. The president let it be known that she meant business on this, and the combination of her commitment, a highly driven minister of economy, and the detailed tracking system developed by the technical secretary made progress possible in an area where Costa Rica had seemed hopeless for many years.

All in all, the PCCI proved to be relatively successful. It set for itself the goals of improving Costa Rica's ranking on the Global Competitiveness Index, which indeed went from 61st on the 2011/12 index to 54th on the 2013/14 index. It also set the goal of improving the country's Doing Business ranking,

and in this case the country went from the 125th to 102nd position. Progress on these two indexes is remarkable if only because Costa Rica had failed to make progress on either of them for many years previously.

Success must be qualified, however, because progress was achieved by a series of well selected but narrow interventions. The PCCI did not become a forum for a broad public-private dialogue, nor did it produce a comprehensive competitiveness strategy for Costa Rica.

By the end of Chinchilla's administration, another technical cooperation financing was secured, this time from the IDB. The purpose was to evaluate the work of the council and propose ways to strengthen it and make it more effective. The results obtained during the council's first few years seemed encouraging, so it seemed worthwhile to ensure its continuity. Alas, and not unlike other Latin American experiences,⁹ the new authorities were not interested. The new administration did not officially abolish the council, it simply did not convene it. The technical secretary's appointment was not renewed, and the PCCI simply faded out of existence.¹⁰

2.3.1. Analysis

Was the availability of TOP capabilities—or the lack thereof—a key factor in explaining the relative success, as well as the limitations, of the PCCI? Was the initial stock of capabilities enough to accomplish its goals, or was it necessary to increase and/or upgrade that stock?¹¹ What role was played by the way the public sector organized itself (the organizational design) for the tasks assigned to the PCCI? Several points go toward answering these questions.

First, the idea of creating the PCCI was explicitly the result of an in-depth evaluation of earlier PDPs and broad policy coordination in Costa Rica. Neither the evaluation itself nor the feedback into policymaking were built into the policy process. Rather, they took place as a result of IDB-funded research for evaluation, and of policy entrepreneurship that consisted of using the evaluation as the basis for a policy proposal and then convincing policymakers to implement it. Ultimately the process bears clear resemblance to the

⁹ Such as the initial attempts at creating a permanent competitiveness council in Colombia.

¹⁰ Since this chapter was written, a new Presidential Competitiveness Council has been created. Its structure is different, with fewer attendees, and it is explicitly conceived as a mechanism to foster public-private dialogue and cooperation. Perhaps, like Colombia, Costa Rica is on its way to creating, by trial and error, a more stable mechanism for public-private cooperation and for the coordination of wide productive development policies.

¹¹ By *increase* we mean, literally, acquiring more of the capabilities the institution already had; by *upgrade* we mean acquiring new capabilities, or taking the existing ones to a higher level.

experimentation, feedback, and adaptation cycle described in the conceptual framework: experiments in broad policy coordination took place over the course of several administrations. The results were found wanting, and adaptation took place in that a new mechanism for wide public coordination was designed and then deployed.

Second, the two initial policy champions, namely, Monge and González, had high-level technical capabilities that included post-graduate studies in well-regarded U.S. universities, years of expertise in their fields, and active participation in international knowledge and practice networks. Both had been either close to policymaking or had first-hand experience with how the Costa Rican public sector works.

Third, a conscious effort was made to present both the proposal and the research on which it was based in an objective, non-politicized manner. When the proposal for the PCCI was first presented, there were no reasons to suspect that either Monge and González were doing it as a way to further either their private agendas or those of their reference groups. The proposal was, clearly, an objective endeavor to contribute to the solution of a chronic problem in Costa Rica's public administration, not some sort of lobbying effort, and it had solid technical foundations. This helped give it strong legitimacy, even in the eyes of those who were not initially enthusiastic about it.

Fourth, the president's commitment to the council was unwavering, and this made a very significant difference compared to earlier efforts in which coordination was delegated to a minister, as described in the previous subsection. Minister González, a heavyweight within the Chinchilla administration, was key in keeping the president focused on the council's work.

Fifth, a key strength of the council's Technical Secretariat was access to expert knowledge. The technical secretary's extensive network of contacts within the development community allowed him to quickly locate and identify expert knowledge when needed, and his familiarity with the workings of such institutions as the IDB and the World Bank was put to good use to make sure that the required technical cooperation was secured and delivered in a timely fashion.

Finally, the question of good mechanisms for public-public coordination has beset practitioners and students of public policy. The inability to secure and enforce good inter-institutional coordination is often blamed for the failure of policy initiatives. The PCCI illustrates the importance of sheer political leadership—rather than the design of a formal administrative mechanism—in achieving such coordination. Many of the actions that led to the council's successes could not have been ordered by the president to her subordinates, let alone the heads of independent agencies. What is more, success in many cases required the collaboration of agencies that, while formally under the

authority of a minister, are by law granted so much independence that the real authority of the minister is minimal. What the combination of the council design and working mechanics did was to provide the president with a type of bully pulpit that she could use to convince, cajole, persuade, and to some extent even shame key decision-makers into implementing her agenda.

In short, outstanding technical and political capabilities, as well as a clever organizational design, were key elements of the council's success. Organizational or managerial capabilities do not figure prominently in this story, mostly because there barely was an organization to manage, other than the one-man Technical Secretariat and the council's meetings.

In terms of the factors that limited the council's success, the first was the failure to create a permanent, properly funded Technical Secretariat. As stated earlier, the council was an example of a case in which something that should have been very hard was easily achieved—namely, securing the president's commitment to and attendance at the council's meetings—whereas something that should have been extremely easy, and probably would have been easy in almost any other country—namely, securing the modest funding required for a small Technical Secretariat—proved impossible. In fact, had Monge not been willing to work for many months without a salary, the whole project would have collapsed before even getting started.

The second limiting factor was the failure to turn the PCCI into a permanent institution with a long-term mandate, stable funding, and a stable core of professionals in the Technical Secretariat. To understand this failure, it is necessary to look into two sets of factors: the first set mostly outside the Chinchilla administration's control—which could simply be called bad luck—and the second set at least partially within its control.

What the Chinchilla administration could not control was the polarized political climate that eventually led to the electoral victory in 2014 of the Partido Acción Ciudadana (PAC), a party that had not previously won any elections, and which was founded in part as a reaction to what its leaders saw as pervasive corruption within the Partido Liberación Nacional—the party that got Chinchilla elected—and an abandonment of the party's founding principles regarding social justice. Moreover, the PAC represented a view that was in direct opposition to the main features of the economic policy that Costa Rica had followed over the previous 30 years.

In this political climate, the new government was likely to reject an economic policy initiative whose two initial champions were well-known and influential members of the pro-reform block (neoliberals, in their opponent's view) and who had been part of the signature modus operandi of a particularly unpopular incumbent. Lacking strong institutionalization, it was quite predictable that the PCCI would be abandoned by the new authorities.

However adverse the political climate, there was something the government could have done, but failed to do: create a strong constituency, outside the political party system, that would demand the continuity of the council. Given the council's mandate, that constituency would have had to be the private sector. However, as indicated earlier, the private sector was not even part of the original design of the PCCI and, moreover, the Chinchilla government did not have a particularly good working relationship with it. Besides, the private sector was not deeply committed to the council as the ideal instrument for public-private cooperation and for the coordination of wide PDPs.

In other words, when the Chinchilla government ended, there was no one out there willing to demand the continuity of the council and powerful enough to convince or compel the government to comply with such a demand.

The story of the PCCI thus reveals the power of an alliance of highly qualified technocrats with highly experienced policymakers, combined with the full political support of a president who provided strong leadership within her own government, but who was not able to elicit the external support that would have been required to give continuity, let alone formally institutionalize, one of her clearly successful initiatives. Without enough supporters in Congress to turn the decree that created the PCCI into a law, without an external constituency with the strength and commitment required to demand its continuity, and in a highly polarized political climate, the PCCI was doomed to share the fate of previous, ad hoc, and noninstitutionalized attempts to achieve broad policy coordination and effective public partnership in Costa Rica's economic policymaking (for example, Programa Impulso or the designation of a minister of competitiveness). The creation of permanent, effective institutions for broad policy coordination and effective public-private policy partnership thus remains a pending task in Costa Rica.

Given that the creation of the PCCI by decree rendered it a fragile institution, it seems useful to ask why the Chinchilla administration did not attempt to create it by law. A detailed answer would go beyond the scope of this chapter, but the conceptual framework summarized in Figure 2.1 allows for a preliminary hypothesis. The Chinchilla administration did not enjoy a congressional majority, and given the features of the Costa Rican policymaking processes, filibustering is easy. Had the Chinchilla administration submitted a bill of law for the creation of the PCCI, the bill might have lingered there for years. The administration tried a different route: create the PCCI by decree, put it to work from day one, show significant results, and then attempt to institutionalize it.

It was not an unheard-of strategy. In fact, this is exactly what happened with the institutions in charge of trade and export-promotion policies. They were created by bypassing Congress and endowed with considerable TOP

capabilities that resulted in outstanding institutional performance, which then made it feasible to modify the institutional setup—that is, temporary, ad hoc institutions were transformed into permanent institutions, funded by the national budget and/or with independent sources of funding. This in turn modified, as far as the specific policies were concerned, some features of the policymaking process in that ongoing congressional intervention is no longer needed to ensure the continuity of the programs and the institutions in charge of them, other than the annual process of national budget approval.

Something similar might have worked in the case of the PCCI. However, unlike the Minex (the precursor of the Ministry of Foreign Trade) and the IDB-funded Linkages Program (the precursor of the Linkages Division at PROCOMER), the PCCI was never properly funded or staffed. Even when President Chinchilla was sworn into office, Congress had already become a more fragmented and polarized institution than it was at the time the Ministry of Foreign Trade was created. Alas, it is not entirely surprising that the institutionalization effort failed in this case, despite a serious attempt to garner multi-party support for a permanent PCCI during the final months of the Chinchilla administration.

2.4. The Linkages Program at Costa Rica's Trade Promotion Agency (PROCOMER)

Linkage-oriented PDPs were a late arrival in Costa Rica's economic diversification and export promotion strategy and up until today they remain a spirited but small part of the country's export promotion and FDI attraction policies.

The switch from an inward-looking to an outward-looking economic strategy, it must be remembered, took place in the immediate aftermath of the debt crisis in the 1980s. Once the first pieces of an export promotion policy were quickly put in place, the country never looked back.¹² While policies and instruments gradually became more refined and effective, the thrust and direction of the policy have not changed over 30 years, and the institutions in charge of them have become gradually more specialized and effective in their deployment (ECLAC 2014).

Not so with the promotion of linkages between local businesses and MNCs, as ECLAC (2014), Paus (2005, 2014), and Padilla Pérez and Alvarado Vargas (2014), among others, have noted. The creation of linkages between

¹² The 2014 national elections were won by the PAC, a political party that had opposed Costa Rica's trade and FDI attraction policies since the party was created in December 2000. However, since coming to power, the PAC has made it clear that it will not attempt to renegotiate Costa Rica's numerous trade agreements, nor is it planning to overhaul the country's FDI attraction policy.

local companies and MNCs was not a priority in the early years of economic reform, and while efforts to promote them since then have been successful in terms of returns per dollar invested, the linkages are limited in scale. In fact, it was only in 2001, some 18 years after the economic development strategy was changed, that a formal program was put in place to promote linkages between local and multinational companies. This might seem a surprising omission from today's perspective: why not take advantage of the opportunity to create high-value-added linkages between Costa Rican firms and high technology multinationals investing in the country?

It is easy to detect policy omissions with the benefit of hindsight. But back in the late 1980s, the crucial challenges facing the country's economic authorities were to restore macroeconomic equilibrium and reduce inflation, poverty, and unemployment, all of which had soared during the debt crisis. FDI policies were aimed at attracting companies that would create as many jobs as possible, as quickly as possible, jobs that could be filled by people with relatively little education who had been hard hit by the crisis. Trade and economic authorities today might be concerned with climbing up the value chain, but back then their concern was more urgent: climbing out of the big hole into which the economy had fallen.

Regardless, significant, albeit low-value-added linkages between local companies and multinationals developed spontaneously, and to this day most local purchases by MNCs are unrelated to public policy efforts to promote them, as MNCs will inevitably purchase nontradables locally, including cleaning services, food, security, and some logistics, as well as the supplies required to provide such services. Likewise, they will necessarily buy water, electricity, and telecommunications services from local suppliers and in some cases they are likely to purchase packaging materials locally as well.

What did not happen spontaneously was the development of significant linkages in tradable goods and services that would have involved local companies gradually climbing up the value chain and providing increasingly complex, knowledge-intensive inputs, parts, finished products and services to MNCs. Costa Rica has not been taking full advantage of the knowledge spillover effects of FDI, and on this front its performance pales against that of other developing countries that have been successful in attracting high-tech FDI and developing local capabilities as well.

However, some efforts have been undertaken in this regard, as it was clear as early as 2000 that Costa Rica could and should get more ambitious regarding linkages between local and multinational companies. A small project called the Development of Suppliers for High Technology Multinational Corporations was finally launched in 2001 by the National High Technology Foundation (FUNCENAT), with IDB funding and a steering committee made

up of representatives of FUNCENAT, the Costa Rican Chamber of Industry, CINDE, and PROCOMER (ECLAC 2014). The composition of the steering committee was explicitly designed to foster interinstitutional coordination within the public sector as well as public-private cooperation.

The project had three components: a pilot program whose goal was to establish durable linkages between 45 local small and medium-sized enterprises (SMEs) and high-technology MNCs; the development of an information system that could match supply and demand between SMEs and MNCs; and an institutional component whose aim was the creation of a National Office for the Development of Suppliers to MNCs, which came to be known as Costa Rica Provee. Funding was modest, with an initial budget of US\$1.5 million, of which the IDB contributed US\$900,000 (Vargas Madrigal et al. 2010).

At this stage, the program did not focus on a specific type of linkages. This is perhaps surprising: Because linkages had been taking place spontaneously, it would have made sense to launch a PDP that focused precisely on those linkages that could not happen spontaneously. The emphasis at the time, however, was on fostering more linkages rather than upgrading existing ones.

The origins of this program display several features that are common to several other successful attempts at developing highly capable PDP agencies in Costa Rica:

- As in the case of many of the activities originally undertaken by CINDE, the initial funding came from foreign technical cooperation, and the initial projects were small-scale pilot projects.
- Room for experimentation was explicitly built into the project, which is precisely the nature of a pilot.
- Because funding came from outside the public sector, the project enjoyed a more flexible management framework than the typical central government program or agency in Costa Rica.¹³
- Just as in the case of exports, where promotion was initially open to all and only later focused on specific sectors and activities, the promotion of linkages initially treated all linkages as equal, with an emphasis on the number of linkages created, regardless of whether these involved tradables or nontradables, small or large transactions, or high- or low-value-added activities.

¹³ Projects funded through international cooperation used to have considerable flexibility in terms of administrative procedures, and the creation of executing entities was seen as a way to bypass the rigidities and slow response time of traditional public sector procedures. Such flexibility has been lost, to a great extent, and funds lent or donated by multilateral institutions and cooperation entities are subject to basically the same rules as other public sector funds.

Unlike the CINDE case, and perhaps reflecting institutional learning, the eventual institutionalization of the program—that is, its transformation from a short-term, small-scale, and foreign-funded project into a permanent and locally funded one assigned to a specialized public agency—was an explicit goal of the project from the start. In 2003, Costa Rica Provee became a PROCOMER project, therefore finding an institutional home closer to its mission. Finally, when the last portion of IDB funding was disbursed, Costa Rica Provee was transformed into the Linkages Division within the Ministry of Foreign Trade (ECLAC 2014). The program had become fully institutionalized.

Nevertheless, there were no substantial changes in the program's strategy from 2005 to 2010, during which time it continued to focus on the amount of linkages it could promote, not on the types of linkages or the value of the ensuing transactions. That started to change quickly around 2010 in the context of an overall redefinition of PROCOMER's strategy, methods, and organization.

While the focus here is on the changes in the Linkages Program, a few words on this overall strategy renewal at PROCOMER are necessary to provide the relevant context.

The new government that took office in 2010 appointed Jorge Sequeira as CEO of PROCOMER, something of a breach of tradition at an agency where public sector technocrats with public policy experience generally served as CEO. Sequeira came straight from the private sector, where he had built a software company from the ground up, turned it into an international software and information technology services provider, and eventually sold it to an MNC. He had no previous policymaking, political, or policy studies experience whatsoever.

Prior to Sequeira's appointment, PROCOMER did not engage in formal strategic planning exercises, let alone develop and monitor performance indicators. Shortly after Sequeira's appointment, PROCOMER came out with its first strategic plan, which was updated two years later and programmed to be updated every two years (PROCOMER 2011, 2013). Along with the strategic plans came reorganization of the institution, a strong emphasis on monitoring and accountability, development of key performance indicators for every department, program, and person within the institution, and extensive use of information technology to modernize management, including a customer relationship management system, enterprise resource planning for management and financial purposes, and Web-based training tools for PROCOMER's personnel and its customers. Perhaps more important, the organization was given a more precise focus.

The changes at PROCOMER had a profound effect on its Linkages Division, which was led by its director, Rolando Dobles, who, like Sequeira, had a private sector background. The two key changes in the linkages strategy

were a shift from generic to focused linkage promotion, and from matchmaking to business development.

Before the 2010 strategic planning exercises, PROCOMER treated all linkages alike, regardless of whether they involved tradable or nontradable goods and services, low or high knowledge content and value added, were related or not to strategic FDI attraction sectors, or involved large or small transactions. The number of linkages achieved each year was all that mattered.

This changed radically with the new strategy. PROCOMER created a Web-based tool, Market Place, where buyers and suppliers of nontradables can meet and do business. This digitized the matchmaking function, which allowed for assigning highly qualified personnel to a more knowledge-intensive task: promoting high-value-added linkages in tradable goods and services, particularly in high-priority sectors in the FDI attraction strategy, and developing the local business capabilities required to make such linkages possible.

The new strategy was explicitly demand driven. While PROCOMER previously had simply identified (at best) local capabilities and then tried to match them to the demands of multinationals operating in free trade zones, under the new strategy PROCOMER first identified MNCs' needs, then surveyed local capabilities. If such capabilities were lacking but developing them was deemed feasible, it worked with potential suppliers to do so.

As the role of the Linkages Program evolved from matchmaking to project development and management, the skills of the Linkages Division needed to be adjusted accordingly. The position of linkages promotor was transformed into project manager. Mastery of English and formal training in project management were established as requirements. Today, six of seven project managers are proficient in English, two are certified in project management, two more are in the process of being certified, and three are in the process of obtaining their master's degree in medical devices, management, and economics, respectively.

The Linkages Program also changed the metrics for job performance evaluation. Under the previous strategy, the number of transactions was the key indicator—which meant that a US\$200 contract for a paint job was the same, for evaluation purposes, as a US\$200,000 contract for the supply of specialized metal parts—a set of nine different indicators are now used, including customer satisfaction, volume of transactions, development of suppliers, and fundraising for new projects.

A key requirement for the success of the new strategy was to go beyond PROCOMER's borders, so to speak, and work in cooperation with a large set of other public institutions, as the task of developing suppliers clearly was beyond what PROCOMER could do by itself. For example, potential local suppliers may have the narrow technical skills required by their potential clients

(say, the skills to produce metal parts according to specification) but lack the managerial skills required for just-in-time delivery. PROCOMER is not set up to train managers, so developing suppliers requires the cooperation either of the National Training Institute or public universities. As another example, private firms may have all the required skills but lack the certifications required to become suppliers in the medical devices or aerospace fields. Again, helping companies get quality certification is beyond PROCOMER's mandate and know-how; the Instituto Nacional de Normas Técnicas is the organization in charge, and private consultants are available to firms that want to obtain a certification. As a final example, some companies may need to scale up their operations to satisfy client demands, but they may be too credit-constrained to do so. And once again, supplying credit or promoting access to capital for potential suppliers is a task beyond PROCOMER's portfolio. It would be up to the financial sector regulatory authorities to create the regulations that would ease access to credit and/or capital.

Wide policies were needed to achieve these new policy goals, and the context at the time was favorable to achieving broader policy coordination. The changes at the Linkages Program were taking place at the same time that the Presidential Council on Competitiveness and Innovation was starting its work (see Section 2.3). The idea of creating mechanisms for broad policy coordination had caught on in Costa Rica.

A major step toward better interinstitutional coordination was taken when an Inter-Ministerial Linkages Commission was created with the participation of PROCOMER, CINDE, MEIC, the Ministry of Foreign Trade, the Ministry of Science, Technology and Communication, Consejo Nacional para Investigaciones Científicas y Tecnológicas de Costa Rica, Cámara de Industrias de Costa Rica, Cámara de Exportadores de Costa Rica, Asociación de Empresas de Zonas Francas de Costa Rica, Cámara de Tecnologías de Información y Comunicación, Instituto Tecnológico de Costa Rica, and Instituto Nacional de Aprendizaje.

With World Bank cooperation secured through the PCCI, this commission prepared a National Linkages Plan, the first of its kind, that was finished near the end of the Chinchilla administration and was pending evaluation by the new authorities at the time of this writing. Since the commission began its work, cooperation with the private sector has gone beyond the broad issues the country tackled in the past and moved into specific programs and projects. For example, the Innovex program for the development of new direct or indirect exporters is executed jointly by the Costa Rican Chamber of Industry and PROCOMER's Linkages Division.

To date, the new strategy seems to be working, but the program remains fairly small. PROCOMER (2014) reported 11 projects under the new strategy

as of early 2014, and a little more than US\$10 million in new high-value-added linkages. This figure corresponds to first sales and does not accurately represent the eventual impact of the initial linkage (PROCOMER does not track sales of linked companies after the first sale), but even allowing for that, the figure is almost negligible.

However, PROCOMER has mapped in detail the potential demand for high-value-added, locally produced tradable goods and services, and it has found two obstacles to further development of linkages, neither of which can be overcome by assigning more resources to the Linkages Division.

First, not all high-tech activities carried out by MNCs in Costa Rica's free trade zones have the same linkage potential, as documented in a series of Duke University studies regarding Costa Rica's participation in global value chains (see Gereffi et al. 2013, for an overview). In electronics, for example, the potential is limited because Costa Rica does not produce the raw materials the industry needs, nor does it have the scale, number, or variety of manufactures it would need to compete with China in major segments of this industry. Other sectors such as services—the fastest-growing segment of Costa Rica's free trade zone exports—by their very nature do not have a strong demand for inputs, machinery, or parts, locally produced or otherwise. In contrast, Costa Rica's well-established medical devices cluster and its budding aerospace cluster have strong potential for linkages. In sum, a necessary condition for faster growth in the number and value of high-value-added linkages is the growth of clusters and activities with high local linkage potential.

Second, there are limits in the supply of MNC-ready local suppliers. In some cases, technical capabilities may be lacking. In others, the binding constraints can involve questions of scale, availability of finance, willingness to incur risks, or lack of general quality certifications and/or sector-specific and relatively costly certifications. Additionally, the availability of qualified personnel at competitive salaries seems to be an increasingly significant constraint (World Bank 2014).

Some of these concerns can be addressed through education. At the vocational or technical high school level the government can intervene directly, assigning more resources, increasing the number of technical high schools, and even transforming conventional academic high schools into vocational ones.¹⁴ But it will take time before the new graduates start entering the market. The tertiary level is more complicated: public universities enjoy considerable autonomy, and the best the government can do is try to persuade them to

¹⁴ This was in fact done during the Arias and Chinchilla administrations (Ministerio de Educación Pública 2014).

graduate more professionals in high-demand careers, something these universities have not been particularly inclined to do in the past. The quality of education at private universities, on the other hand, is uneven and most MNCs prefer to hire public university graduates.¹⁵ Besides, the public sector does not have the tools required to increase the quality of private universities, let alone change their academic portfolio. And again, even if the government succeeded in ensuring both high standards and university offerings more in line with the needs of the productive sector, it would take quite some time before new graduates reached the market.

To sum up, the binding constraints on creating more linkages cannot be alleviated by investing more money in the Linkages Program, but rather through long-term, broad policies that address both the demand and the supply side of local (tradable) goods and services. The National Linkages Plan, which, as mentioned above, is being reviewed by the current administration, attempts to do precisely that, in conjunction with efforts by CINDE and the Ministry of Foreign Trade to attract industries with greater potential for linkages and to ease supply constraints by taking advantage of free trade agreements with other Latin American countries.

Finally, it should be noted that while the Linkages Program focuses on linkages between domestic producers and MNCs, linkages can also take place between MNCs themselves. In fact, such linkages are being sought out by some MNCs and actively promoted by CINDE, as shall be discussed later in this chapter.

2.4.1. Analysis

What have been the keys to the success of PROCOMER's Linkages Program to date? What has been the role of TOP capabilities? PROCOMER CEO Jorge Sequeira has pointed to three key elements that make the difference:¹⁶

- PROCOMER is an independent institution, with a board of directors made up of five private sector and four public sector representatives, including one from the Ministry of Foreign Trade who acts as chairman of the board. This independence and the composition of the board

¹⁵ Over the course of several research projects, one of the authors of this chapter, Jorge Cornick interviewed many high-ranking executives from MNCs who have consistently stated their preference for public university graduates, to the extent that some will not even consider private university graduates.

¹⁶ Interview with Jorge Sequeira by Jorge Cornick, July 2017.

allow for policy stability: short-term politics has little or no impact on PROCOMER's work.

- PROCOMER is financially independent, funded by a canon paid by free trade zones and by a US\$3 tax on customs declarations. Therefore, its budget is not subject to short-term variations as a function of political decisions or the cash flow situation at the Treasury.
- PROCOMER operates under flexible procurement and hiring rules that are required to comply with the spirit of public sector regulations (openness, objectivity, transparency, competitive bidding, and so on) but not with the minutiae of standard regulations. This allows PROCOMER to make purchases and enter into contracts, including labor contracts, at a pace that is close to that of the private sector, rather than at the glacial pace subject to multiple stops and possible derailment typical of most of the Costa Rican public sector. With regard to personnel, in particular, operation under this relatively flexible set of administrative rules allows PROCOMER to hire qualified personnel quickly, offer competitive compensation packages, and do what is virtually impossible in most public offices in Costa Rica: demand performance, help underperformers improve their work, and, if needed, fire those who fall short of the organization's standards and goals as defined in individual key performance indicators.

These features shed light on the interactions between TOP capabilities, on the one hand, and the institutional setup in which they operate, on the other. They seem to suggest that the effectiveness of a given stock of capabilities will be constrained (or enhanced) by the specific institutional context in which those capabilities operate, and that effectiveness depends on the availability of adequate, stable, and predictable funding for the relevant institutions. On the other hand, an enabling institutional setup is required for the development of new capabilities or the strengthening of existing ones. To put it another way: managerial flexibility and room for experimentation were key elements for the development of capabilities at PROCOMER and, at the same time, such flexibility was of the essence for PROCOMER to be able to put its capabilities to good use.

The relevance of the institutional context and of funding mechanisms may be more evident in this case than in the others analyzed in this chapter. This points to the role of three factors in the success of productive development agencies: (1) the institutional context; (2) conceptual and procedural knowledge that resides in individuals, companies, public institutions, and other entities; and (3) resources. And while the institutional context itself is inserted in the wider context of the policymaking process and the political economy of a given society (Figure 2.1), it makes sense to focus on that context along with TOP capabilities and resources when trying to design a

productive development agency or improve an existing one, since these three factors can be modified to a certain extent in the relatively short term and by focused actions that address critical issues. Meanwhile, trying to change the policymaking process or the political economy, while noble enterprises, are much larger undertakings.

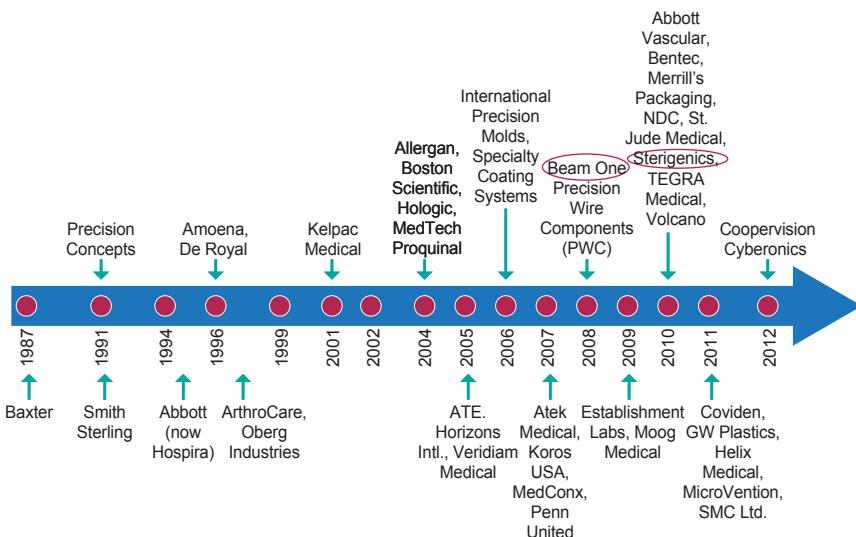
In the case of the success of PROCOMER and its Linkages Program, a fourth key factor needs to be added: quality of leadership. Just as the success of PCCI, as far as it went, drew on the personal policy entrepreneurship, high-level academic credentials, experience in global practice and knowledge networks, and previous policy experience of Anabel González and Ricardo Monge, the success of the Linkages Program would be difficult to explain without looking to the qualifications, experience, managerial skills, technological know-how, and drive of Jorge Sequeira. While the authors of this chapter do not particularly favor the great men (or women) theories of history, the two Costa Rican cases discussed so far seem to suggest that even with a favorable institutional context, adequate funding, and the right TOP capabilities, the chances of institutional success in these two cases were clearly correlated with the quality of their leadership. Hiring the right people—and in these cases, the people at the top—turns out to be a key element for success.

2.5. The Medical Devices Sector and the Costa Rican Investment Promotion Agency (CINDE)

The development of the medical devices sector is one of Costa Rica's and CINDE's great success stories, and it has been the subject of an in-depth study (Bamber and Gereffi 2013), the main results of which are briefly summarized here. The focus in this analysis will then shift to how the organization was capable of achieving a particular landmark in the development of the medical devices sector in Costa Rica: the installation of two plants that offer sterilization services (i.e., sterilization of medical devices so that they can be packaged and sent to final customers or wholesalers) to medical device manufacturers operating in Costa Rica, using two out of three key technologies in the field.

The development of the medical devices sector in Costa Rica can be traced to 1987, when Baxter opened a production plant in the country. However, for many years after that, no other medical device firm started operations in Costa Rica. Figure 2.2 illustrates the evolution of the sector (sterilization firms are highlighted with red ovals).

Interestingly, just as in the case of Intel, Costa Rica's success as a tourism destination was instrumental in the eventual development of a manufacturing industry. Baxter's first contact with Costa Rica was through an executive who visited the country as a tourist, and as luck would have it, this happened at a

Figure 2.2 Evolution of the Medical Devices Sector in Costa Rica, 1987–2012

Source: <http://www.cinde.org/en/investment-sectors/life-sciences>.

time when Baxter was concerned with the potential disruptions that hurricanes could cause to its operations in the Caribbean. Close to the United States but not subject to the impact of hurricanes,¹⁷ Costa Rica became a candidate and eventually was chosen as an investment destination.¹⁸

No new investments took place until 1991, and from then until 2001 a steady trickle of new firms invested in Costa Rica. After 2001, however, growth of the sector accelerated, the complexity of operations performed in Costa Rica started to increase, and both exports and employment grew at a fast clip. Employment in the sector went from 1,500 jobs in 2000 (CINDE 2012) to 15,633 by 2012,¹⁹ while exports grew rapidly and became increasingly more diversified, and with a greater share of higher-value-added products (Bamber and Gereffi 2013).

Unlike what had happened in other sectors, suppliers of major medical device firms soon started setting up their own operations in Costa Rica.

¹⁷ Caribbean hurricanes may have a slight impact on Costa Rica's Caribbean coast, but they have no impact other than some heavy rains in the country's central region, where most manufacturing is located.

¹⁸ While we cannot elaborate on the point here, one of Costa Rica's competitive advantages seems to be simply that people like to live there, and this applies both to foreigners and Costa Ricans, including highly qualified ones who would have no trouble developing a successful career abroad.

¹⁹ Interview with Gabriela Llobet, former CEO of CINDE, by Jorge Cornick, November 2013.

Sales from foreign suppliers operating in Costa Rica to manufacturing firms in the sector for 2008–2010 reached approximately US\$7.5 million—a modest sum, certainly, but approximately 10 times as much as sales from local suppliers.

There were two drivers behind the decision of suppliers to set up operations in Costa Rica. The first was the growth of the sector and the presence in Costa Rica of some of the top global manufacturers, along with the increased volume and complexity of their operations and the sector's strong growth prospects. In short, the first driver was the existence of strong and growing demand.

But there was a second driver as well. In 2008, CINDE created an After Care Division (CINDE 2010) to facilitate installation and start-up of operations of firms that decide to invest in Costa Rica, and to look after their needs once operations start. The aim was to:

- Ensure a successful experience for the company, in turn helping strengthen Costa Rica's reputation as a highly desirable investment destination
- Encourage expansion and upgrading of the company's operations
- Monitor and help improve the factors that make Costa Rica and the firms operating there competitive in their specific sectors and activities.

Ensuring a successful experience after the start of operations is particularly important for Costa Rica, where more than half of each year's FDI takes the form of reinvestment by companies already operating in the country. Such companies typically start operations on a small scale focused on simple tasks and gradually expand the volume and complexity of their operations as they either verify or discover that the country is capable of supporting larger and more complex projects than they had originally envisioned.²⁰

One of the tasks of the After Care Division is to identify the opportunities for local and foreign suppliers to operate in Costa Rica and facilitate agglomeration economies and spillover effects.

In the case of medical devices and other high-tech sectors, Costa Rica's competitiveness hinges, among other things, on the productivity and qualifications of its labor force rather than on cheap labor. This competitive advantage can be eroded if demand for properly qualified labor grows quickly and the supply does not keep up, as some evidence suggests has been the

²⁰ As one company representative put it: "You don't have to give your bosses a reason to invest in China; everybody is investing in China. But you have to give them a good reason to invest in Costa Rica, and the track record of the operations in the country is the best reason you can give to them."

case in recent years. Industries that rely on low-cost labor such as textiles and basic-function call centers have already ceased to be competitive given Costa Rica's labor and other operational costs.

In this context, CINDE has been working on several fronts to strengthen Costa Rica's competitive advantages. In the particular case of medical devices, an opportunity was identified: while the sector was thriving, there were no sterilization services in Costa Rica. This imposed a cost on all companies operating in Costa Rica, as production had to be sent for sterilization elsewhere, increasing inventory costs and extending the production cycle. Moreover, lack of sterilization services prevented the installation in Costa Rica of distribution centers and the logistics and marketing functions that can be associated with them.

Working in cooperation with manufacturers already operating in Costa Rica, CINDE mapped the sterilization industry and set out to systematically approach the companies in it, one by one, and convince at least one to open a plant in Costa Rica. Today, CINDE regularly approaches not only firms that are the ultimate target of its effort to attract business to Costa Rica, but also their key suppliers. The aim is to anchor the investments, as the costs of moving an operation from one location to another are higher if there is a well-developed supply chain in the first location. However, after such efforts began, some seven years passed between the initial contacts with sterilization companies and the first firm's decision to open a facility in Costa Rica. Fortunately, CINDE was playing (and continues to play) a long-term game and thus can pursue projects that will not yield results for many years, as was the case of sterilization companies.

For the firm in question, BeamOne (later acquired by Synergy Health), the decision to start operations in Costa Rica was simple: it was an opportunity to acquire new clients and increase sales. CINDE pushed the process forward by approaching BeamOne jointly with a potential client. In other words, if BeamOne decided to invest in Costa Rica, it would have its first client even before ground was broken at the site where it would build its plant. The deal was sweetened when El Coyol, the free trade zone where BeamOne built its plant, offered the company a competitive deal. The construction and permitting process took place smoothly, with CINDE's help. BeamOne had only the one client when its electron-beam sterilization plant opened in 2008, but it landed a second one within seven months and today has more than 20 clients, including some outside Costa Rica that send their products for sterilization there. Between 2010 and 2011, BeamOne opened a second electron-beam sterilization operation as well as an ethylene oxide operation.

In 2010, Sterigenics, another sterilization provider, started offering its services in Costa Rica. Several of the company's clients were already operating

in Costa Rica, and by 2010 the scale of their operations was large enough to justify Sterigenics opening a plant in Costa Rica.

For Sterigenics and BeamOne, there is still ample room for growth today without further capital investments, as plants are not yet operating 24/7.

While the establishment of sterilization services made the medical devices firms operating in Costa Rica more competitive, perhaps the most important impact was that it made the country more attractive to new firms not previously established in the country, and allowed them to undertake more ambitious operations. This hypothesis is validated by the large number of new firms that have opened plants in Costa Rica since 2008 and the complexity of their operations, as in the case of Saint Jude Medical and Abbot Vascular (Crespi, Fernández-Arias, and Stein 2014, Box 9.4). Moreover, the fact that these two firms set up shop in the same free trade zone where one of the sterilization companies is located would seem to indicate that the medical devices cluster is beginning to reap significant economies of agglomeration.

2.5.1. Analysis

Among the various episodes discussed in this chapter, the opening of the sterilization plants to provide services to medical device manufacturers in Costa Rica is probably the one with the greatest potential impact on the country's competitiveness and export performance. Having these services in Costa Rica allows manufacturers to reduce inventory costs and achieve faster delivery times to final clients. It also opens up opportunities for the establishment of distribution centers in Costa Rica, adding another link to the value chain, expanding the volume of business taking place in the country, and possibly reducing logistics costs and further reducing delivery times to final clients.

It might be expected that this case would have been associated with a significant, discrete capability upgrading at CINDE, as in the previously discussed case of PROCOMER. Indeed, improvements have been steady, but they have been incremental, reflecting an organization that, with regard to technical skills, operates using a process of ongoing improvement. The lesson is important. Constant capability upgrading and small but continuous improvements—rather than a dramatic episode of capability upgrading such as closing down an institution and replacing it with a new one with supposedly better capabilities—are what have led to remarkable results at CINDE (Box 2.2).

Unlike the case of Intel, where a first-ever, one-of-a-kind, and all-out campaign was launched to convince the company to open a plant in Costa Rica, searching for and promoting investments by key suppliers to firms operating in Costa Rica was already business as usual at CINDE in 2008. Besides consistency and a long-term strategy, the key for CINDE is that business as usual

Box 2.2 Continuous Capability Development at Costa Rica's Investment Promotion Agency

Costa Rica's Investment Promotion Agency (*Coalición Costarricense de Iniciativas de Desarrollo* – CINDE) has had to reinvent itself on several occasions, as documented by Clark (2001) and Monge, Vargas, and Mata (2008). Of particular interest for the purposes of this chapter is how CINDE has adapted and increased its technical capabilities in response to a changing environment, budget, and mission. The central elements of CINDE's continuous improvement system for technical capabilities are continuity of key personnel, well-instituted mentoring practices, use of top-level foreign advisors, participation in global knowledge networks, performance management, and careful selection of personnel that looks as much at hard skills as it does soft skills.

CINDE's current staff is made up of about 45 employees, 40 of them with university degrees. Four have been with the organization for more than 15 years, and they play the double role of mentors of new personnel and repositories of institutional memory in addition to their formal duties in senior positions.

CINDE estimates that a new hire needs at least 18 months to get up to speed with colleagues, and it has a formal *two-person-per-meeting policy* at all levels: that is, meetings are always attended by at least a senior officer and a junior officer. The latter learns by observing and will not be assigned substantial responsibilities until the mentor thinks the junior officer is ready for them.

From its very start as an agency to attract foreign direct investment, CINDE tried to mold and measure itself against the best agencies in the world rather than against a local or regional standard. Technical cooperation from IDA Ireland was secured early on, and a new consultant from that agency was recently hired. In addition, CINDE tries to keep its personnel abreast of industry and sector developments by having them train at international events and trade fairs.

Finally, CINDE is careful in its selection of personnel and tries to hire young professionals who are eager to learn new skills and want to make a mark with their work. It subjects its employees to rigorous performance evaluations with consequences: about one professional is let go each year, but on the other hand performance bonuses at CINDE can equal up to two months' salary.

is conducted at an unusually high level. In other words, CINDE has reached a point where it can achieve extraordinary results by doing its ordinary work. This is exactly where you would want an institution to be, since great results that demand heroic efforts by definition can only be undertaken so often.

CINDE has a long history of adapting to changing circumstances, including providing services that reach a mature stage and then are transferred to another institution, closing down programs that have fulfilled their purpose and are no longer needed, adapting to dwindling budgets, and developing new skills and increased levels of specialization as the profile of the Costa Rican export sector and the country's competitive advantages change.

Two key organizational changes occurred that eventually led to the service model that allowed CINDE to identify the need and opportunity to establish sterilization services for the medical devices industry.

The first change took place in 2000, when budget cuts forced CINDE to close its foreign offices and to deploy its FDI-attraction efforts from Costa Rica. Up until then, CINDE had a number of offices outside of Costa Rica, and those offices were in charge of seeking investments from all companies operating within a certain area. Specialization was geographical, not sectoral, and CINDE had sector experts back in Costa Rica who worked in conjunction with those regional offices.

With the budget cuts, geographical specialization was no longer possible, and CINDE shifted to sectoral specialization, a shift that turned out to be fortuitous. A key to CINDE's success since then has been its in-depth knowledge of the sectors on which it focuses, and of the needs and requirements of companies operating in those sectors. Sector specialists plus a Business Intelligence Unit ensure that when CINDE approaches a company, it knows everything it needs to know to make a convincing case for investment in Costa Rica.

The second change took place eight years later with the establishment of the After Care Division. If sector specialists and the Business Intelligence Unit make sure that CINDE knows what it needs to know to convince a company to invest in Costa Rica, the After Care Division ensures that CINDE knows what that investor needs in order to prosper in Costa Rica and to expand and upgrade its operations.²¹

It was, therefore, the combined skills of sector specialists, business intelligence, and after-care services that allowed CINDE to identify the need for sterilization services and the impact of those services in terms of the sector's costs, competitiveness, and potential for expansion. These attributes also

²¹ Based on an interview by Jorge Cornick with Irving Gross and Lucía Soto of CINDE on June 17, 2014.

enabled CINDE to partner with a potential client and then work consistently for years until the first sterilization firm started operating in Costa Rica.²² Outstanding TOP capabilities, a favorable institutional framework, and highly qualified, goal-oriented, and committed leadership go a long way toward explaining CINDE's success, as illustrated by the process that led to the establishment of two medical device sterilization companies in Costa Rica.

2.6. What Have We Learned?

2.6.1. *Do Institutional Capabilities Matter for Performance?*

Posed so broadly, this question seems to have an obvious answer: institutional capabilities definitely matter for performance. Things begin to get interesting, however, if one asks a few more specific questions. Which specific capabilities? How do different types of capabilities interact with each other? Under what conditions can institutions improve their capabilities and develop new ones?

These are the questions that have been addressed through the three case studies in this chapter using the TOP capabilities framework. The preliminary conclusions suggested by the research can be summarized as follows:

- Capabilities by themselves do not lead to improved performance, but capabilities in the context of an enabling institutional context do. The TOP capabilities framework works better if integrated within a larger conceptual framework that takes into account the political economy, the features of the policymaking process, and the institutional setup. At the same time, completing a virtuous circle, an enabling institutional context allows institutions to constantly upgrade their capabilities.
- The political economy, the policymaking process, and the institutional setup may be thought of as constraints to capability development and institutional performance in the short run. Over more extended periods, however, outstanding institutional performance that leads to highly successful PDPs can have feedback effects that facilitate or induce changes in the institutional setup, the policymaking process, and the political economy. Constraints are limited to the short term, and clever policy design should lead to a lessening of those constraints.
- Isolated capabilities do not lead to improved performance—rather, it is the right combination of capabilities that does so. In other words, well-run

²² It should be noted that CINDE has responsibilities besides those discussed here, but a description of those activities is beyond the scope of this chapter, except for some work aimed at developing local suppliers that will be discussed in the next section.

institutions that combine good technical and political capabilities lead to improved performance.

- There is no one set of capabilities that is the right set. What is more, successful PDPs will lead to a changing environment in which the institutional capabilities required for successful policymaking will change and, in all likelihood, become more demanding. Here again the institutional context makes all the difference. Institutions that excel are institutions that are able to experiment, learn from their experiments, and adapt as a result of such learning. In other words, experimentation, feedback, and adaptation cycles are key to improving capabilities and institutional performance, but they only work in an enabling institutional setup. It is no coincidence that none of the institutions studied in this chapter work under standard public sector management and procurement rules.
- Participation in global knowledge networks, and exposure to academic, institutional, or business performance standards and practices, plays a crucial role in creating institutions that shoot for the top instead of settling in the middle or sinking to the bottom in terms of performance.
- There is no substitute for high-quality, achievement-oriented, self-motivated personnel, particularly in leadership positions. Personnel management—from personnel selection to performance evaluation, performance-related compensation, and continuous on-the-job learning—is a fundamental requirement for the development of capabilities and for outstanding institutional performance.

2.6.2. Does the TOP Capabilities Framework Help Explain Institutional Performance?

The Role of Technical Capabilities

The technical capabilities of most leaders (and in some cases other personnel) in all the cases studied in this chapter include post-graduate studies in developed countries, participation in international knowledge networks, and often experience as international consultants (and in several cases experience in the private sector). Training and the continuous acquisition of new knowledge are strongly emphasized at CINDE and PROCOMER, in particular.

While this chapter did not establish that these technical capabilities were the direct cause of high institutional performance—and neither did it examine counterfactuals in which, all else being equal, lack of technical capabilities might be a plausible explanation for differential institutional performance—it is at least suggestive that none of the success cases studied had leaders with low technical capabilities. Moreover, interviews conducted by the authors with

representatives from MNCs over the course of many years suggest that, at least in the case of CINDE, high technical capabilities are in fact a key factor explaining good institutional performance.

The commonality observed perhaps goes beyond technical capabilities in a strict sense and includes a goal-oriented, high-performance, and high-standard culture that seems to be at least partially associated with the experience of living, studying, or working abroad in developed countries and at high-quality universities. That is to say, some elements of corporate culture are crucial, in the sense that without them high technical capabilities might not be appreciated or properly used.

The Role of Organizational Capabilities

CINDE and PROCOMER (and the PCCI during its existence) seem to be well-managed organizations, with professional boards of directors and experienced, well-trained managers. Both regularly perform formal strategic planning exercises, produce annual reports, comply with formal accounting procedures, and carry out other standard activities and procedures for professional organizations.

It should be noted, however, that they all are very small institutions. So why has Costa Rica not used its most successful public institutions as templates for the development of other high-performing public institutions? Perhaps part of the answer is that the organizational technology that Costa Rica has mastered is that of creating high-performance small institutions. Successfully running large institutions (say, ICE, the public power utility, or the Ministry of Education) may require different managerial or operational capabilities that, in recent history, are nowhere in evidence in Costa Rica's public sector.

Two additional points need to be made in terms of organizational capabilities, and both point to the limitations of the TOP capabilities framework. First, the choice of terminology does not seem particularly inspired. When the case studies look at organizational capabilities, they end up looking at managerial capabilities, and perhaps this would be the more appropriate term. Not only does it seem to have a clearer meaning than organizational capabilities, it also immediately cross-references the vast literature on management in general and public management in particular that probably should be brought into the conceptual framework to better understand institutional performance.

The second and more substantial point is that the TOP capabilities framework does not provide a clear definition of organizational capabilities, let alone clear guidelines to operationalize the concept. What exactly is meant by operational capabilities? How can they be identified and measured? One of the two weakest links of the TOP capabilities framework is that, in order for

capabilities to serve as explanatory variables of institutional performance, it is necessary to identify and measure capabilities independently of performance. Otherwise, the reasoning is circular. In its current state, the TOP capabilities framework fails this test.

The Role of Political Capabilities

Alliances between policymakers and technocrats (and switching between roles as one or the other) are common in all the cases studied. The general director at CINDE was a former deputy trade minister and had worked for an MNC before assuming her position at CINDE. The PCCI was the result of a joint effort by the Ministry of Foreign Trade and a technocrat who had a long history both as a consultant and policy advisor. In the case of PROCOMER, its board of directors is chaired by the minister of trade.

It would seem, therefore, that all of the cases have indicators of political capabilities at the highest levels, and that these capabilities help to explain the successes these entities have enjoyed.

Again, however, the indicators are imperfect. While politically experienced people play a role in all of the cases, political experience and capabilities are not synonymous. Once again, we do not have the conceptual and/or empirical tools to identify and measure capabilities independently of performance, and until we do, the explanatory power of TOP capabilities will be quite limited. Case studies and intuition point to an important role, but our grasp of exactly what that role is remains tenuous.

2.6.3. The Interaction between TOP Capabilities and the Institutional Framework

The Role of International Cooperation

Another common factor in all the cases, international cooperation, played a key role, particularly in the early stages of policy and institutional development. International cooperation seems to have been a key element in enabling the type of experimentation that is so difficult to find in the Costa Rican public sector, and which plays such a crucial role in developing and upgrading capabilities and policies (as described by the experimentation, feedback, and adaptation cycle).

The pattern in Costa Rica seems clear: programs are launched with international cooperation funds and hence do not compete for general budget funds or face opposition. Once they have reached a certain scale and degree of success and support, the programs are transferred to the public sector, or institutionalized.

Private-Sector-Like Governance Rules

None of the organizations studied work under standard public sector rules. PROCOMER is a public organization, but it works under special, more flexible rules than the standard in the public sector. In effect, PROCOMER is required to follow the spirit but not the letter of normal public sector administrative and procurement procedures.

Crucially, all three entities can fire underperforming personnel, hire under competitive conditions, and offer at least some form of performance-based and variable compensation.²³

Policy Stability: The Result of Political Capabilities as the Prerequisite for Learning

Policy and institutional stability seem to be prerequisites for institutional learning and, therefore, for developing new capabilities or upgrading existing ones. It stands to reason that if policy goals are constantly changing, institutions cannot learn what works best in achieving those goals. Similarly, since at least an important part of institutional knowledge is tacit and resides in people (that is to say, it is not completely captured by institutional routines, operating procedures, manuals, etc.), a stable core of technical personnel seems a prerequisite for achieving high levels of expertise and performance.

Clearly, several entities have benefited from both policy and (key) personnel stability, including CINDE and PROCOMER, as well as the Ministry of Foreign Trade, Costa Rican Tourism Board, and a few other institutions outside the scope of this chapter but analyzed in Cornick, Jiménez, and Román (2014).²⁴ The key question is how this stability was achieved. There seem to be two answers: first, institutionalization, as when a policy is anchored in a law that creates the institutions in charge of the policy and provides them with adequate funding and a strong mandate; and second, a shared vision. These two factors are not mutually exclusive, of course. Shared vision, in particular, is critically important because many laws are routinely ignored, and because it is the main mechanism for policy stability in the case of private institutions, which are free to change mandates, reorganize priorities, and reallocate resources at a moment's notice.

²³ The PCCI is not discussed here, as there was hardly an organization associated with it.

²⁴ That is to say, they have been able to keep key personnel on board for extended periods in a context in which stability and promotion are performance-related, unlike most of the rest of the Costa Rican public sector.

Interestingly, there seems to be an inverse relationship between the stability provided by the institutional context and the features of the policy-making process, on the one hand, and the requirement of at least some political capabilities, on the other. In other words, when the institutional context and the policymaking process do not provide stability, political capabilities at the organization or specific institutional level become crucially important if stability is to be achieved even in an unfavorable context. On the other hand, if the institutional context and the policymaking process do provide such stability, the leaders of productive development agencies do not need to concern themselves with this issue.

Funding

At the risk of stating the obvious, a stable and predictable budget seems to be a key factor to success—and perhaps even more so than a large budget. It is interesting to note, however, how the institutional framework shapes the ways in which such stable funding is available for different institutions.

In purely public institutions, funding may come from three different sources: annual general budget appropriations, which provide stability for the payroll, given the rules governing the Costa Rican public sector; earmarked taxes, which provide a more predictable general stream of income, though the Treasury's cash-flow constraints may cause some disruptions; or some sort of user fee established by law but paid directly by the private sector. The latter is the case of PROCOMER, which is funded by a fee imposed on companies operating in free trade zones, plus a tax on customs declarations. PROCOMER's budget is therefore secure (provided that free trade zones and international trade thrive) and does not need to be approved each year by Congress.

At the other extreme was the PCCI, where stable funding was never found to pay for even a single consultant/technical secretary. This surely represents a Costa Rican peculiarity: in the current political climate, the use of consultants, let alone the discretionary hiring of consultants at competitive salaries, has been cast as synonymous with corruption. It is hard to think of other countries at Costa Rica's income level where the presidency cannot find the funds, and is politically constrained from using international cooperation funds, to hire a reasonably well-paid consultant to work on one of the president's highest priority projects.

The case of CINDE is different than that of PCCI, as it is a private institution.

As has been documented elsewhere (Clark 2001), CINDE had very generous funding from the U.S. Agency for International Development, but that funding was eventually discontinued. Since then CINDE has had to rely on its endowment and, increasingly, on fees it charges for its services. Currently

CINDE receives funding from free trade zone operators through two mechanisms: a regular contribution and a success fee paid when a new company sets up or expands its operations in a particular free trade zone. Additionally, local companies that wish to offer their services to MNCs operating in a free trade zone can advertise their services on CINDE's Web page (for a fee, but after being screened by CINDE).

A point to note is that purely public institutions, no matter how entrepreneurial in spirit, cannot rely on self-funding mechanisms unless expressly authorized by law to do so.

2.6.4. The Relationship between the Institutional Context and TOP Capabilities

The relationship between TOP capabilities and institutional performance, as has been shown, is not independent of the institutional context in which these capabilities are deployed. The same capabilities may lead to outstanding or abysmal performance in different institutional contexts; on the other hand, very different capabilities may lead to similar outcomes, depending on that context.

At a more general level, and as suggested by Figure 2.1, the political economy, policymaking process, institutional setup, and TOP capabilities interact with each other. This chapter has suggested that in the short term, based on the analysis of the performance of specific institutions, the political economy and the policymaking process should be treated as exogenous, fixed variables, while in the long run successful policies (fueled by the right institutional setup and TOP capabilities) may have feedback effects that modify not only the policymaking process but also the political economy of a given society.

However, it must be recognized that at this point we are speculating. Our understanding of the relationships between the political economy, policymaking process, institutional setup, and TOP capabilities is sketchy and imprecise. If we have made a contribution here, it is that of pointing out the interactions between them, highlighting the need to further develop a conceptual understanding and empirical studies of these relationships.

2.6.5. Public-Private Cooperation and Other Alliances

Development-Minded Private Sector Leaders

There are elements of public-private cooperation in all three cases discussed in this chapter. What is worth noting is that the case analysis suggests that a key factor in success has been the participation of a development-minded private sector in these cooperative endeavors. This is not to suggest that business

leaders participating in these processes are selfless agents who disregard their own interests and think only of the greater good. It can be assumed, in fact, that this is not the case. What is interesting is that they *also* think and work for development processes in ways that are not narrowly aligned with their particular sector or company-specific interests.²⁵

If this observation is correct, it poses a set of questions for which there are not even preliminary answers. How does this development-mindedness arise? Is there anything that policymakers can do to encourage it when it is not present or sufficiently strong? What should productive development agency policymakers do if they find that their private sector counterparts are interested in just plain, old fashioned rent-seeking?

The Quality of Leadership

The case studies also suggest that the quality of the managerial and technocratic staff at the institutions studied seems to have been another key success factor. This quality is comprised not only of formal education and technical knowledge, but also leadership and a goal-oriented mentality. In all cases there seems to have been a presence of leaders in search of excellence and who wanted to make a difference with their work. This leads to questions similar to those posed earlier. If hiring the right people is a key to success, what qualities define the right people and how do you identify them? And, crucially, if those qualities are lacking, how do you develop them?

²⁵ This same public-mindedness has been noted, for example, in the case of Colombia's Private Council for Competitiveness.

The Capacity Required by Innovation and Structural Change Policies in Uruguay

Carlos Bianchi, Guillermo Fuentes, and Lucia Pittaluga

In recent years, productive development as an objective of public policy has become more prominent on the agenda of research into the political economy of Latin America. Various studies have reviewed the region's experience with productive development policies (PDPS) since the first half of the 20th century in order to analyze current requirements for capacity development (Peres 2011; Agosin 2013, Crespi, Fernández-Arias, and Stein 2014).

These studies have at least three aspects in common: (1) a critical review of the role of the state; (2) the importance of policy designs that promote implementation by means of public-private collaboration as part of the rooted autonomy of the state; and (3) the need to design specific policy content by sector or activity, identifying strategic sectors in national economies.

The third aspect is intrinsically linked to systematic observation of the importance of the composition of productive structures in explaining production capacity and economic performance by means of historical studies (Bértola and Ocampo 2010), analysis of determinants of productivity at the aggregate level (Daude and Fernández-Arias 2010), and studies on the role of innovation in productivity at the micro level (Crespi and Zúñiga 2012). For this reason, the analyses and methodologies for policy development are oriented toward productive development associated with processes of structural change through creation of new activities or transformation of traditional activities (Hausmann, Rodrik, and Sabel 2008).

States need to develop new and varied skills to lead development policies with the participation of private agents. As its title indicates, this chapter asks what types of capacity are required for a particular type of productive policy, and how this capacity can be built according to the specific institutional trajectory and the objectives that guide the policy.

Based on these questions, the objective of the chapter is to analyze the process of building state capacity to promote PDPs in Uruguay. The chapter uses case studies of three public organizations responsible for the implementation, and in some cases the design, of PDPs.

The concept of state capacity refers to the ability to make appropriate policy decisions and to mobilize resources to achieve a public policy objective (Painter and Pierre 2005). The next section of this chapter develops this concept and distinguishes analytically between political and administrative capacity. Section 3.2 then briefly describes the methodology used in the research. Section 3.3 begins by describing the national context for development and implementation of PDPs in Uruguay during the last decade. It goes on to analyze specific capacity-building processes in the first case study of the National Directorate of Renewable Natural Resources (*Dirección General de Recursos Naturales Renovables* – RENARE) of the Ministry of Livestock, Agriculture and Fisheries (*Ministerio de Ganadería, Agricultura, y Pesca* – MGAP). This is a typical organization of the Uruguayan state, and its jurisdiction covers a specific area in a sectoral ministry organized hierarchically. Since the recent implementation of the soil use and management law, RENARE has had a direct impact on the type, method, and volume of national agricultural production.

The second case study analyzes the state capacity of the sectoral councils, which have been the main tool of industrial policy in Uruguay since 2011. Specifically, the chapter analyzes the cases of the Automotive Sectoral Council (CSA) and the Biotechnology Sectoral Council (CSB). These councils operate under Uruguay's Ministerial Cabinet for Production (GPM), which, unlike the previous case, is a cross-cutting network of eight ministries without a hierarchical organization or legal definition of jurisdiction. Although sectoral councils formally are only consultative, they define the sectoral policy agenda.

The third case study is the National Research and Innovation Agency (ANII), which is responsible for implementing various instruments to promote science, technology, and innovation (STI) at the national level. This case differs from the previous two because the agency functions on a model based on the new public management paradigm (Pollitt and Talbot 2004). ANII is a public entity that operates under private law, so it has a linkage in terms of hierarchical dependence with the state but more flexibility in the legal labor and commercial framework.

The final section of the chapter presents the conclusions by means of a comparative analysis of the process of building state capacity in the three cases studied. The section analyzes the main challenges for structuring PDPs in Uruguay in light of the experience of the last decade. From the analysis of the Uruguayan case, lessons are learned about the role of generic and specific state capacity in the development and implementation of public policies.

3.1. State Capacity for the Design of Productive Policies

The approach to state capacity draws on a variety of theoretical sources from political science and political economy (Besley and Persson 2009), particularly studies on governance and institutional analysis (Painter and Pierre 2005). With different emphases, this approach has been applied to the study of several areas of management and public policy. However, there are few studies on state capacity for PDP. Studies of systemic competitiveness (Esser et al. 1996) were among the first to analyze the state's capacity to coordinate actions of different agents in productive activities. More recently, studies have used these categories for the political economy of development (Karo and Kattel 2014; Oyelaran-Oyeyinka 2014). But these works emphasize the political capacity of states without integrating the administrative dimension. For Latin America, there are works on state capacity to regulate productive sectors that consider political and administrative aspects (Oszlak 2005), and more recently there have been several national studies (Baz et al. 2010; Pittaluga et al. 2014) and regional studies (Crespi, Fernández-Arias, and Stein 2014) that take a similar approach to state capacity specifically applied to PDPs.

The concept of state capacity refers to the bureaucratic capacity of the government apparatus (Repetto 2004) and also to promotion and creation of action networks between public sector organizations, private actors, and civil society (Rosas Huerta 2008). The internal capacity of governments and network building, both within the state (public-public) and between the state and other agents (public-private), is a key aspect for PDPs. In particular, if the main objective of PDPs is to promote the transformation of the economic structure, they must have a support base inside and outside the state apparatus, as well as the technical-administrative capacity to promote new activities and policies. This implies creatively destroying old forms of regulation and instruments of promotion.

This concept of creative destruction is an adaptation of Schumpeter's classic idea of the process of technical change. It was developed by Cimoli and Katz (2003), who emphasized the capacity of the policies and forms of regulation implemented during the structural reforms of the 1990s to destroy the previous systems of incentives and industrial structures and create new

patterns of productive specialization in Latin America. Smits and Kuhlmann (2004, 7) use the concept in a similar sense when they point out that creative destruction is a critical function of certain innovation and production policies. According to these authors, new policies destroy old policies and the agreements they are based on, while being based on new agreements between actors. In the absence of this dual capacity—creation and destruction—innovation and production systems run the risk of reproducing inefficient activities and agreements. This happens both because policies that point in the same direction are applied with different instruments, and also because contradictory measures are laid over each other. Such situations occur when the state does not have the political capacity to prevent special interests being given preference over general interests (for example, restricting benefits to a sector or group of organized actors over time) or if the state lacks the technical and administrative capacity to develop new alternative proposals.

This chapter specifically considers these two types of capacity: administrative and political. Administrative capacity, which encompasses technical and organizational capacity, is linked to the internal organization of a public agency. This type of capacity includes training individuals in terms of their relationship with the organization, as well as defining procedures and the clarity of the mandate. Additionally, administrative capacity covers aspects of infrastructure, types of organization, and the legal framework. This type of capacity critically affects the degree of relative autonomy of public organizations. It permits the public sector to develop proposals and coordinate actions with the private sector and, at the same time, achieve effective coordination of actions with other entities of the state apparatus. Public organizations also need to be flexible enough to try out alternative options based on experience. These three dimensions—public-private coordination, public-public coordination, and flexibility—affect the capacity of organizations to establish and manage their agenda autonomously, without relying on other agents for the definition of content and strategies, and thus control risks of capture.

The implementation of PDPs also requires that the state have political capacity, since, like any other public policy, the implementation of PDPs create winners and losers. This capacity involves being able to align public and private resources to achieve the defined strategic goals (Painter and Pierre 2005, 2). According to this general definition, the state's political capacity must comprise: (1) the credibility of public organizations, so that private actors and other public actors can be confident that agreements will be respected; (2) coalition-building to support the new initiatives in order to prevail over potential losers (which usually benefit from the status quo); and (3) the ability to protect the state from capture, including the capacity for creative destruction, as defined above.

The hypothesis guiding this work holds that different types of capacity are required for solving different problems. These types of capacity differ according to the requirements of the policy. For example, one of the most significant differences relates to the aspects of construction and deconstruction of policies already mentioned. Another critical aspect is that the state capacity needed to achieve a given goal will differ according to the characteristics of the target population of that policy. This is particularly important in PDPs geared to structural transformation, which often affect a population whose objectives are not necessarily aligned with those of the policy. A simple example is when the policy requires agents to change to a more efficient method of production, or change the type of production altogether. This involves a cost for agents. In order to link public with private objectives via incentives or a public mandate as well as future action, specific capabilities will be required.

Table 3.1 details the relevant dimensions and variables in which the concept of state capacity is disaggregated. As explained in the next section, a case-centered research design was followed in which the process of building state capacity is taken as the variable to be explained. For this, the dimensions and variables presented in Table 3.1 are used according to the specific

Table 3.1 Types of Capacity and Critical Variables for Productive Development Policies

Types of Capacity	Dimensions of Analysis	Critical Variables for Productive Development Policies
Administrative	<ul style="list-style-type: none"> Knowledge base Human resource training, forms of recruitment and promotion Types of management Linkage with the environment Public-public and public-private Infrastructure Legal arrangement and institutional mandate 	<ul style="list-style-type: none"> Technical autonomy Capacity for construction and destruction Integration of collaboration networks to avoid technical-administrative blockages Flexibility and legal suitability
Policy	<ul style="list-style-type: none"> Credibility (reduction of uncertainty) Building support coalitions Protection against capture 	<ul style="list-style-type: none"> Alignment of expectations of the results Ex-ante legitimacy and greater probability of effectiveness Political autonomy

Source: Prepared by the authors based on Repetto (2004).

hypothesis that guides each case. Furthermore, the analysis of processes is applied to identify changes throughout the period studied in each case and analyze how the strengthening of one type of capacity affects the potential strengthening of another.

3.1.1. Capacity for Linkage

Historically, the Uruguayan state has been characterized by strong compartmentalization, which has led to the creation of large ministries that act as the competent authorities in their policy sectors, leaving little room for horizontal coordination. This trend, which is not exceptional in the region or in the rest of the world, has been accompanied in recent years by a number of reforms backed by new public management guidelines that have tended to further fragment existing organizations. The guidelines are based on processes such as “agentification” (Christensen and Lægreid 2007), which calls into question traditional hierarchies but in the end does not dismantle them. The situation is becoming even more complex as the public sector has begun to turn increasingly to different types of partnerships with private and social actors.

This new configuration has created several problems for the state, mainly due to the difficulties of organizing and guiding public policies in systemic terms. To resolve this situation, the response has been to further consolidate areas of coordination and/or linkage, sometimes cross-sectoral, and sometimes with non-state organizations. In addition, a set of less formalized arrangements have been used, along with reinforcement of communication channels between entities (exchange networks).

One of the main objectives of these coordination initiatives is to reduce the compartmentalization of public services (Repetto 2005), thus avoiding the overlapping of activities (Peters 1998) and consequently improving implementation processes. Coordination is a critical state capacity for PDPs. It implies that the state as a whole has the political and administrative capacity—based on a strategic objective and associated specific actions—to align different actors that accept the ground rules because they have strong incentives to do so (Repetto 2005, 2). Based on this definition, it can be said that coordination should not be confused with collaboration (less formal than coordination) or with the mere exchange of resources between different organizations, which are much more limited in scope (Bernier and Burlone 2007).

In summary, coordination necessarily involves some level of loss of autonomy by the participating actors. This is not a natural process, but rather requires investment of resources (technical, financial, and human, but above all political) so that the actors involved perceive the importance of participating.

The activity of coordinating is inherently conflictive, since it tries to change well-established institutions. This is why political and administrative capacity is required to integrate multiple actors (both public and private) and interests in order to reach agreements on practices that prioritize collaboration over competition or isolation.

3.2. Methodology

According to the general hypothesis that different types of policies require different types of state capacity, the objective of this chapter is to analyze the process of building state capacity for Uruguayan PDPs over the last 10 years.

To achieve this general objective, the chapter uses a qualitative methodology based on three case studies using process analysis (Pettigrew 1997). The analysis was steered by three specific objectives: (1) identify and distinguish generic and specific types of capacity in line with each policy; (2) identify the minimum development of state capacity required as a necessary condition for implementation of PDPs; and (3) explain the mechanisms that operate in capacity-building in each case study.

The cases were selected according to two criteria: (1) presence of differences in the dependent variable (state capacity), which in turn would permit (2) an adequate degree of comparability between cases. In the selected cases the determinants of each organization's trajectory and what explains the relative strength of different types of capacity were identified. For each case a hypothesis was developed to guide the process analysis, which is presented at the beginning of the corresponding section.

The sources used to describe the context are previous research and other secondary sources (press releases, laws and decrees, management reports of the organizations analyzed, among others).¹ This background was also fundamental for analyzing and understanding the capacity-building processes in each organization. However, the analysis was based on semi-structured interviews with qualified persons (Table 3.2).

3.3. Uruguay: State Capacity for Productive Development Policies, 2005-2015

The period of analysis for this chapter has several characteristics that differentiate it from the recent as well as the long-term history of Uruguay. There

¹ The secondary sources used are detailed in Information on Fieldwork (Annex 3.1) following the References.

Table 3.2 Interviews Conducted to Analyze Capacity-building Processes

National Directorate of Renewable Natural Resources (RENARE)		Sectoral Councils		National Research and Innovation Agency (ANII)	
Description	Quantity	Description	Quantity	Description	Quantity
Directors, RENARE	3	Advisors from the Ministerial Cabinet for Production (GPM)	2	Member of the Innovation Programs Evaluation Committee of the ANII	3
Agronomy researchers	2	Members of the Automotive Sectoral Council (CSB), public sector	2	Executive secretary, manager, and former managers of the ANII	5
Directors and technical staff (other agricultural programs)	2	Members of the CSB, private sector	2	Directors and former directors of the ANII	3
		Members of the Automotive Sectoral Council (CSA), public sector	1	Inter-American Development Bank expert in innovation	1

Source: Prepared by the authors.

are at least four aspects of context fundamental to understanding the process of building state capacity for PDPs in Uruguay between 2005 and 2015.

First, this was a boom period for the country when Uruguay enjoyed sustained economic growth characterized by unusually high growth rates that tripled the national average recorded since the second half of the 20th century (Bonino, Román, and Willebald 2012).

Second, during the last decade, Uruguay had to face, more or less explicitly, the challenge of making economic growth sustainable. Since this growth was based on exploitation of natural capital (Román and Willebald 2015; Paolino, Pittaluga, and Mondelli 2014; Bértola, Isabella, and Saavedra 2014), making it sustainable has been one of the core objectives of the last five years. The beginning of the period saw a return of the state to PDPs. Through a combination of traditional instruments—including tax exemptions and import systems as well as some novel instruments such as support programs for clusters and sectoral development strategies (Rius and Isabella 2014; Pittaluga 2015)—the state at the national level once again played an active role in productive policy. It is worth noting that there is no evidence

to show that the growth process was the result of the new policies or of external demand factors.

In this context of economic growth and return of the state, promotion of structural changes in production and in the export basket took on greater importance on the PDP agenda. Over the long term the Uruguayan economy has had chronic problems of volatility and high exposure to external shocks. Therefore, a third aspect that characterizes the current context is that PDPs are promoting changes in the productive structure toward specialization that is less vulnerable to the variability of external prices, especially those based on natural resources. These changes consist of creating new sectors of activity and transforming traditional sectors.

Finally, the return of the state to productive policies came about through sectoral policies combined with policies that address issues that cut across the productive agenda in Uruguay, especially innovation and environmental issues. Several institutional designs have been attempted to implement policies on cross-cutting issues, some of which are presented in the cases analyzed here that involve different challenges in terms of capacity.

These four factors summarize the context in which the state capacity-building process developed in the three selected organizations. The cases selected can be used to compare the process in three entities differentiated not only by their organizational and institutional characteristics, but also by their political characteristics (Table 3.3). The three organizations operate in the same national environment and under the same general policy guidelines. In this context, it is possible to differentiate the capacity-building process as explained by variables in each case and propose general hypotheses for the national case. It is also possible to analyze whether capacity depends on the type of policy and its target population.

Table 3.3 Selected Cases: Basic Characteristics of the Organizations and Policy

	Type of Organization	Objective of Policy	Scope of Action
National Directorate of Renewable Natural Resources (RENARE)	Directorate of a sectoral ministry	Sustainable production	Compulsory on defined population
Sectoral councils	Public-private participation space	Industrial policy	Promoted for a well-defined population
National Research and Innovation Agency (ANII)	Non-state public agency	Research and innovation	Promoted for a non-defined population

Source: Prepared by the authors.

3.3.1. National Directorate of Renewable Natural Resources (RENARE)

Soil erosion is one of the most important global and national environmental and production problems. For this reason, there is worldwide interest in soil conservation, which requires state intervention to ensure that the long-term social interest prevails over possible short-term individual interests. In Uruguay, the social interest in soil conservation is particularly important because of natural-resource-based productive specialization in which natural capital is—and will probably continue to be—the pillar on which the country's productive development is based (Sandonato 2012).

The National Directorate of Renewable Natural Resources (RENARE) of the Ministry of Livestock, Agriculture and Fisheries (MGAP) is responsible for soil and water management for productive purposes in Uruguay. RENARE was established in the 1960s and, after a long and erratic track record, began a process of institutional transformation in 2005 that changed its mandate and capacity (Table 3.4). The new MGAP authorities have prioritized policies aimed at the responsible use of soil and water. Since then, a national policy for the

Table 3.4 Stages of Institutional Building of the National Directorate of Renewable Natural Resources (RENARE)

Institutional Origin	Stagnation			Institutional Redefinition	
	1960s	1970-2005	2006-2009	Since 2010	→
The start of building capacity for public intervention in soil use and management.	The issue is no longer in the public policy arena. RENARE continues as conservation agency.	Priority to the policy for responsible soil use and management. Awareness campaigns, training, and enforcement. Legal changes: <ul style="list-style-type: none">Decree No. 405/2008 requires soil use and management plans.Law No. 18.564/2009 establishes joint and multiple liability of owners of leased land and imposes sanctions for non-compliance.	RENARE begins to operate as a productive development agency Allocation of resources and recruitment of technical staff. Strategic partnerships with Faculty of Agronomy (FAGRO), the National Institute of Agricultural Research (INIA), and the Association of Agricultural Engineers (AIA). Pilot plan to start soil use plans. Since 2013, the obligation to submit soil use plans.		

Source: Prepared by the authors.

productive management of soil and water has been defined that has changed the legal framework that regulates land use and has provided RENARE with the technical and regulatory resources for enforcement.

Soil conservation policies vary (Kramer 1986). Some countries have a universal policy linked to economic incentives, commonly referred to as self-enforcement. This policy requires the use of conservation practices as a prerequisite for obtaining benefits in the form of subsidies or tax exemptions. The policy applied in Uruguay is universally applicable, defined in Law No. 18,564, but without the self-enforcement mechanism, since there are no monetary incentives or other types of mechanisms. Soil management plans began to be mandatory in 2013.

The hypothesis that guides this case study is that implementation of a policy based on application of a universal standard requires specific mechanisms for enforcement. They can be substituted for the development of a particular combination of types of capacity that grants legitimacy to the public organization responsible for the policy.

The current soil conservation and use policy began a new phase in 2010 when a new government came into office that continued and deepened the changes that had been implemented since 2005. This government focused on institutional strengthening of RENARE, and on the creation of partnerships with public and private actors to manage the policy. First, RENARE was reorganized, with allocation of new budgetary resources and hiring of technical staff. Second, a governance network to implement a series of policy tools was established in cooperation with the Faculty of Agronomy (*Facultad de Agronomía - FAGRO*) of the Universidad de la República, the National Institute of Agricultural Research (*Instituto Nacional de Investigación Agropecuaria - INIA*), and the Association of Agricultural Engineers (*Asociación de Ingenieros Agrónomos del Uruguay - AIA*).

During this last period, priority was given to the requirement that agricultural producers working more than 100 hectares submit their soil use and management plans. The plans became compulsory in 2013. Previously, the law was enforced through awareness campaigns and training, along with property inspection to check the practices used in soil management. Producers were sanctioned if their practices were inadequate. This method of implementing the policy is based on the concept of “forensic agronomy” (García Préchac, Hill, and Clérici 2011), which focuses on enforcement and penalties based on the damage caused.

In contrast, RENARE’s new approach since 2010 has been based on the concept of damage prevention, or “preventive agronomy” (García Préchac, Hill, and Clérici 2011). The mandatory requirement to submit soil use and management plans is intended first to train agronomists, owners and tenants in best practices, and second to plan the best productive use of soil based on an erosion estimation protocol with established technical tolerance thresholds.

As a result, it is considered that RENARE became a productive development agency in 2010, since its actions affect what, how, and how much is produced by Uruguayan agriculture.²

The MGAP is organized into eight general directorates, including RENARE. Since 2010, this directorate has focused on more clearly updating and organizing its objectives, while creating the infrastructure and staffing needed to carry out its new tasks. The new institutional design was aimed at concentrating on soil and water resources management for productive purposes. To this end, a series of activities took place between 2010 and 2013 (Table A3.2.1), including strengthening RENARE regional offices throughout the country, rationalizing management functions, identifying new strategic lines, and incorporating new technological programs.

Since 2005 the government has given political priority to putting in place precautionary measures to halt productive soil erosion. The legitimacy of this political action is based on the fact that soil conservation for productive purposes concerns not only private producers, but also all of society. To defend this position, it is necessary to introduce three interrelated arguments and demonstrate how they are involved in this case: (1) soil erosion has strong externalities; (2) farmers are not aware of the impact of the erosion that results from how they manage the soil; and (3) the phenomenon of moral hazard exists between tenant and landowner.

The biggest pollution problem in the country is phosphorus in drinking water, 80 percent of which is associated with soil erosion. Thus, if erosion is controlled, the country's water pollution is also largely controlled.³ The contamination of drinking water makes soil erosion a concern for all of society, so state intervention is justified to prevent contamination from happening.

If the damage to society is evident, then why is there erosion? In other words, why do farmers let this happen? There are at least two possible answers: first, they could be ignorant of the facts; second, they may know the facts but wish to avoid the costs of prevention because they will not be among

² In terms of *what*, summer crops (such as soybeans, sorghum, maize, etc.) and winter crops (such as wheat, oats, barley, etc.) have to be planned on the basis of the estimated erosion they generate. In terms of *how*, the plans specify which soil management practices are to be used and which rotations of commercial crops and cover are planned. And in terms of *how much*, the requirement to plan production based on soil erosion will affect each crop's production volume in the medium term.

³ Although there is no official measure of the pollution of waterways by phosphorus contamination from agriculture at the national level, in general or specifically, basin-level measurements are available. A measurement in one of the country's most important river basins, which supplies potable water to the capital, showed 80 percent of nutrients from diffuse sources (such as industrial landfills) and from agriculture and livestock, such as dairy farming (UDELAR 2013).

those harmed. This is known as a moral hazard phenomenon (Xepapadeas 1991; Rowell and Connelly 2012).

If landowners operate as rational agents, they will have an interest in their soil being productive and will therefore take care of it. If this is the case, landowners do not need incentives or penalties to incorporate caring for the land because it is their capital. Given that an estimated 70 percent of land in agriculture is currently leased, and leases have been increasing in number every year, this argument assumes that landlord and tenant have made the necessary arrangements to ensure soil conservation.

This problem can be avoided if there are soil conservation laws and the state has the capacity to enforce them. Then it might be assumed that the rationality of landowners would lead them to believe in the idea that the state controls compliance with the technical regulations and that tenants would conserve the soil to avoid paying a fine. In other words, the dilemma is resolved by compliance with the law. The state, in its role as forensic agronomist inspects the properties looking for evidence of erosion. In this case, the state must have the capacity for dissuasive control to discourage moral hazard conduct. At present, however, the most effective ways to ensure soil conservation have more to do with a state that promotes damage prevention, or preventive agronomy. This is because a significant (but not the only) reason for predatory management by tenants and the complacency of landowners could be due to ignorance (or lack of concern) about the impact on the soil of the techniques used in agricultural production.

This view of preventive agronomy is based on plans for responsible soil use and management. The plans required include a sequence of crops and pastures with planned rotation for each use and management unit, along with the requirement that estimated average annual erosion be less than or equal to that tolerated for each soil.

In the evolution of RENARE, the soil management plan requirement was a critical event in the organization's history. Three factors made this transformation possible: (1) existence of specific technical knowledge on the characteristics of the soil in Uruguay, which gave the plans content; (2) development of a voluntary pilot phase in the preparation of plans, which convinced strategically key farmers of the possibility and need for such plans; and (3) implementation of a network model in public-private management of the policy, making it possible to supplement RENARE's existing capacity with that of related entities.

The new phase of requiring soil-use plans is based on the use of tools designed with the scientific knowledge developed in the country since the 1970s. At the same time, implementation of the regulations, in particular the mandatory requirement for preparation of soil use plans, took place between

2010 and 2012 in a pilot plan involving 29,000 hectares (2 percent of the country's agriculture) in which 30 companies participated, generally the largest or pioneers. The companies participating in this pilot phase played a critical role, according to some interviewees, in sharing their results with other farmers based on scientific knowledge and propagating a view of the need and advantages of everyone caring for the soil. The pilot phase, for which the period was extended, was fundamental for testing and detecting problems with real values and on a sufficient scale for applying the Revised Universal Soil Loss Equation (RUSLE) to obtain the erosion levels that each soil type could support. It was also very important in convincing opinion-maker farmers that preparation of the plans was not a whim of academia or state officials, far away from the reality of the private sector, but rather a concrete and useful instrument for responsible soil use and management.

The process of submission and control of soil use and management plans involved three different problems: (1) submission; (2) proper preparation; and (3) and subsequent implementation. These three problems were solved in different ways by the management model used by RENARE to implement its policy.

First, farmers were invited to submit plans. Omissions were then identified using satellite images. To evaluate the quality of the plans submitted, a management system supported by current legislation and public-private collaboration was implemented with the professional community of agricultural engineers. Since April 2014, it has been compulsory for plans to be prepared by an agricultural engineer accredited by the state. RENARE was authorized by law to accredit professionals for this work, together with the AIA and FAGRO.⁴ Compliance with the plan submitted was guaranteed by the farmer's signature and, in accordance with current regulations, landowners were subject to joint and multiple liability for what was done or not done on their land.

Enforcement of compliance with plans is a much more complex matter. However, as a RENARE official points out, enforcement of compliance with plans does not cover the entire declared area at the country level (1.5 million hectares), but rather only fields that plan year-to-year rotations in each season, which is currently approximately 400,000 hectares. As a result of the strong reinforcement of RENARE's presence at the decentralized level throughout the country, the directorate considers that there is now sufficient monitoring to make it possible to exercise a threat of enforcement.

Satellite images show several cases where it is not known what crop has been planted on a particular property, so a technician from the ministry has to visit the property for a field inspection. This official checks whether

⁴ At present 943 engineers are accredited in the system and there are 420 submitted plans.

Table 3.5 State Capacity of the National Directorate of Renewable Natural Resources (RENARE)

Actions		
Political capacity		Strong political leadership from the Ministry of Livestock, Agriculture and Fisheries starting in 2005 to enforce the Soil Use and Management Law.
Administrative capacity	Technical capacity	Since 2010, hiring of technical staff by RENARE. Improvement of technological programs for satellite recognition of soil characteristics. Since 2014, training and accreditation of agricultural engineers to standardize the quality of the content of plans. Creation of technical committees with representatives from RENARE, INIA, FAGRO, and SUCS.
Organizational capacity		Setting up accreditation system of agricultural engineers involved in the AIA and the FAGRO. Field inspection to control compliance with plans.

Source: Prepared by the authors.

Note: AIA: Association of Agricultural Engineers; FAGRO: Faculty of Agronomy; INIA: National Institute of Agricultural Research; SUCS: Uruguayan Society Soil Science.

the management plans submitted are being followed. If not, a small fine is imposed.⁵

3.3.1.1. What State Capacity Is Needed to Control Soil Erosion in Uruguay?

Table 3.5 outlines the state capacity built by RENARE to control soil erosion. Its political capacity was established in 2005 and its administrative capacity, either technical or organizational, was established in 2010. All three types of capacity were crucial for RENARE to achieve its main goal to control the environmental impact on soil. However, some of RENARE's policy challenges have not yet been met, as the paragraphs that follow will show.

There are three types of soil conservation policies: research and training, economic incentives, and regulation (Kramer 1986). The first is subsidized by the state to develop less erosive production methods and encourage their adoption through demonstrations and technical assistance. This type of policy is premised on the reality that farmers are ignorant of the impact of the soil-management practices mentioned above. The second type of policy

⁵ The maximum fine is 10,000 indexed units (IU). The IU is a unit of value adjusted by inflation, equivalent to 2.8935 Uruguayan pesos as of September 8, 2014 (approximately US\$0.12 at the exchange rate as of that date).

recognizes that farmers do not recover—not in the short term—the investment costs needed for soil conservation, so the state has to provide economic incentives. These incentives, which aim to mitigate moral hazard, can take the form of subsidies, cost-sharing, low interest loans, or tax reductions. Finally, the third type of policy is regulation, consisting of direct prohibition of erosive practices or cultivation of heavily eroded land.

One commonly used form of regulation is to combine these policies with economic incentives, known as self-enforcement systems. The policy applied in Uruguay is this type of regulation, but without the self-enforcement mechanism.

The state of Iowa in the United States has a soil-conservation policy much like the policy in Uruguay: it is compulsory and includes agriculture. All owners and users are obliged to adopt conservation practices of soil and erosion control in accordance with the ordinances. It is also based on the agreement between owners and the local soil and water conservation district. Iowa's policy differs from Uruguay's in key respects. After Iowa landowners receive the guidelines for the use plan, they have five years to reach agreement with the district on the design of a conservation plan and another year to agree on its application. If owners do not subscribe to the agreement, or if they do but then do not comply, they lose the right to state funding. This is the self-enforcement mechanism, which does not require a high level of state enforcement capacity to ensure compliance.

The soil use regulations in Uruguay lack this self-enforcement mechanism. RENARE does not have the management capacity to convince farmers to comply with the plans. Even though, as previously mentioned, only an estimated 400,000 hectares have to be controlled by 2018, changing cereal prices could create incentives to flout the policy. The challenge for the agency is to create mechanisms external to the law that compel compliance.

3.3.2. Sectoral Councils: The Cases of the Automotive and Biotechnology Sectors

Productive policies returned to Uruguay in 2005, when the country created ministerial cabinets cutting across several sectoral ministries (Table 3.6). This measure was intended to break the fragmentation of state action and address strategic issues with an integrated approach. As a result, the Ministerial Cabinet for Innovation (*Gabinete Ministerial de Innovación* – GMI) and the Ministerial Cabinet for Production (*Gabinete Productivo Ministerial* – GPM) were set up. The latter is the political point of reference for the sectoral councils created since 2010 at the initiative of the Ministry of Industry, Energy, and Mining (MIEM) and, especially, the National Directorate of Industry (*Dirección Nacional de Industrias* – DNI).

Table 3.6 Stages of Institution-building of the CSB and CSA

Return of Productive Policies (GPM)	Creation of Sectoral Councils	Operation of Sectoral Councils
2005-2008	2010	Since 2010
Sectoral and prospective studies led by the OPP	The GPM agenda refers almost exclusively to sectoral councils	Differences in achieving objectives between sectoral councils
First actions of inter-ministerial and public-private linkage	Leadership of the process in the hands of the MIE	Each sectoral council requires specific capacities: construct instruments (CSB), dismantle or modify instruments (CSA)

Source: Prepared by the authors.

Note: CSA: Automotive Sectorial Council CSB: Biotechnology Sectoral Council; GPM: Ministerial Cabinet for Production; MIE: Ministry of Industry, Energy and Mining; OPP: Office of Planning and Budget.

The councils can be seen as opportunities for the “involvement by all actors [...] in a value chain, where they work together to identify the main bottlenecks to improving the sector from a micro or macro perspective.... [T]he aim is for all actors to reach a minimum consensus on what tools are required to improve the productive ecosystem” (interviewee 3).

The objective of sectoral councils is to create a sectoral policy agenda that the various public and private stakeholders in each sector can agree on. This is reflected in the principal objective common to all sectoral councils, which is to develop a strategic plan for the sector, together with activities for its enforcement and monitoring through targets and progress indicators.

Basing his implementation on the experiences of Brazil, South Korea, and Ireland, the DNI director created the 13 sectoral councils. It was not easy, mainly due to the lack of clear objectives: “[A]t the start it was very difficult [for employers and workers] to understand what this policy was aiming at [...], what its purpose was and who was behind the councils. I think there was a lack of credibility, especially in the private sector, about the effect this was going to have” (interviewee 2).

But the 13 sectoral councils continued to operate, though at differing levels of activity and compliance with targets. The creation of participatory entities to define policy agendas is not necessarily new in Uruguay (Pittaluga et al. 2014), but the councils represent the first time that the policy to maintain such entities has lasted more than five years.

All sectoral councils include government representatives, workers, and entrepreneurs; some, such as the Biotechnology Sectoral Council (CSB), also include academics. One of the first challenges was training the participating

technical staff and preparing guidelines for the agents in each sectoral council. Because the councils are deliberative entities, the formal definition of the agents' role is adapted to the voluntary consultative participation of relevant actors in each sector. But the agents' informal role became, in some cases, active participation in policy formulation or in negotiation with a multi-purpose public window. As will be seen later, the role of the agents depends to a large extent on the characteristics and tradition of the sector and the trajectory of each sectoral council.

To set up the CSB, an invitation was sent to representatives of companies, the trade union federation (not workers in the sector), the academic community, and government agencies. In this council, the governmental representation included, in addition to the MIEM, representatives of MGAP (whose participation was sporadic) and the Ministry of Public Health (MSP) (whose participation was also sporadic but became more intense toward the end of the period under study).

For its part, the Automotive Sectoral Council (CSA) has a classic tripartite composition, with the sector's business chambers and unionized workers plus government representatives. (In this case MIEM participated steadily and the Ministry of Economy and Finance sporadically.)

Both sectoral councils have a similar make-up and were allocated similar resources, despite working in different sectors. Uruguay's biotechnology industry is difficult to delimit but, according to available data, has characteristics similar to those of other countries, especially in the region. Small and medium-sized enterprises predominate, and in recent years they have undergone a process of growth based on heavy investment in innovation and infrastructure, and expansion of their professional staff (Bianchi 2014). The industry is also an area of activity with scant tradition of corporate negotiation with the state.

In contrast, the automotive sector is focused on vehicle assembly, with little investment in innovation. It is also heavily dependent on foreign investment and regional trade regulations (Bittencourt, Domingo, and Reig Lorenzi 2007). Unlike the case of biotechnology, the entrepreneurs and workers in this sector have a tradition of corporate action.

With the selection of the automotive and biotechnology cases, it is possible to analyze the types of capacity required for policies to transform a traditional sector (automotive) and those required to create a new area of activity (biotechnology). The hypothesis guiding this case study is that the types of capacity required in each case are different, particularly because the transformation of a traditional sector requires a capacity for creative destruction, dismantling some instruments while implementing others. On the other hand, in the case of new activities, it is a question of creating new

instruments or agreements to integrate these activities with existing ones. This requires similar administrative capacity, with differences in thematic specificity, always based on technical knowledge and capacity for linkage. But the cases do require different political capacities: in one case (biotechnology) to encourage the creation of new instruments, and in the other (automotive) to dismantle old instruments.

The trajectory of each sectoral council has great influence on its definition, since there are no provisions for institutionalizing the councils and regulating their operation. A draft decree states this objective, but it has yet to be promulgated; in practice, sectoral councils operate and act on the fly.

Under the process in place, each sectoral council has received a similar allocation of resources from the MIEM. The councils lack their own financial resources; the human resources and necessary infrastructure for their operation are provided by the MIEM. The technical team is made up of professionals linked to the MIEM through various contractual arrangements: some are staff members who receive a significant raise in salary with the redefinition of profiles for this task, while others are professionals with public service contracts (fixed-term and renewable every two years).

The same procedures were applied for all sectoral councils on the same technical-administrative basis. Once the council began to function, targets and times were set for development of the sector plan. Although this type of policy applies the same procedure for all sectors, each has particularities that require a different positioning by the government, as well as different modalities of regulation and negotiation. In this respect, the most important differences are consequences of the political capacity developed by a sector, which depends on the participating actors.

Until the change of government in 2015, sectoral councils enjoyed a fair amount of political, ministerial, and nonpartisan support relative to other productive policies. It is not yet possible to determine whether this support will continue at the same level under the new administration, but some of the councils are likely to remain relevant policy areas in government strategy. In this case, already defined plans will continue, and any initial uncertainty in the new administration about the validity of such entities will be overcome. Sectoral councils nevertheless face political problems that call into question the scope of government backing, that is, the extent to which the new government's expressed support translates into practical support.

To the extent that dialogue presents difficulties at the time when agreements are being negotiated, the legitimacy of the councils for deliberation and exchange will be affected. This critical aspect affects all councils, since they require the commitment of the actors in the sector to implement the agreements reached. In the case of the CSB, serious problems with public-public

coordination made it difficult to achieve some of the main objectives of the sectoral plan (Pittaluga et al. 2014). This council partially achieved its first and most important goal: development of a law to promote biotechnology and enactment of a complementary presidential decree (Executive Power 2013). However, it had serious difficulties in moving toward the second objective proposed in the sectoral plan: registration of biotechnological products in Uruguay, which depends directly on units of the MGAP and the MSP, which were not integrated into the CSB's work. In fact these organizations created obstacles for the proposed agenda. This experience constitutes clear evidence of political in-capacity to align public officials with a sectoral development agenda.

The CSA also faced problems of public-public coordination, not because an uninterested ministry was able to block the council's agenda (in fact, the MIEM practically has a monopoly on state representation), but rather because of opposing positions on the need to eliminate some subsidies to the industry. This meant that much of the agenda and dynamics of the CSA were devoted to discussing the relevance of a 1992 decree granting tariff benefits to the sector (Executive Power 1992). In light of data on the effects of the decree and the limited results of the CSA, it is plausible to conclude that this council has not had the capacity for creative destruction needed to dismantle old benefits and propose new strategies.

In addition, the councils' own integration and operational logic is at risk of restricting their efforts to solve short-term problems that affect specific companies and that do not necessarily reflect problems of the sector as a whole. "The big problem with that option is that it put too much emphasis on the short term. When you start arguing with that logic, you identify precisely the easier demands, with lower costs, but which are not going to impact your overall development. You don't think about the companies that may come, but only those that are already there" (interviewee 3).

This implies that, if the necessary capacity is not available, the agenda can be co-opted by special or immediate interests, which may leave the state administrative apparatus reduced to facilitating individual or sector competitive conditions, without incorporating strategic elements. In short, it seems the state needs to create capacity for strategic foresight. Foresight can guide actions and lead the process with a systemic view, thus avoiding capture by special interests.

Building the councils is an ongoing process in which unforeseen problems continually emerge. Although the councils are intended to be advisory bodies, in practice it seems strange that an entity that includes the key actors in a sector and representatives of sectoral ministries should not take on a more active role in things like policy design. But this structure of functions, coupled with the fact that the councils do not manage their own resources,

means that their success or failure in implementing actions they negotiated and agreed to now depends to a large extent on sectoral actors (ministries or other public bodies) that in principle are not legally accountable for these matters.

Table 3.7 outlines the state capacity built by the sectoral councils to develop their strategic plans. Their political capacity was restricted to only one ministry. Their administrative capacity, either technical or organizational, was also limited. However, as discussed below, the capacity of the sectoral councils to achieve stated policy goals depends on the type of sector with which each council is dealing.

In the period under review, the councils in many cases obtained technical and organizational capacity by contracting external consultancies. This was the case despite almost total dependence on the resources that the participating actors were able to contribute. At this point, it is necessary to emphasize the dangers posed by losses of institutional memory when councils rely too heavily on consultants. For example, in many cases, work was contracted to establish the baseline of sectoral council action; in some, the MIEM staff did not have the resources to control the process or give clear guidance.

The revised information also shows the need for clear and powerful political leadership so that entities of this type can convert their decisions into

Table 3.7 State Capacity of the Sectoral Councils

State Capacity	Sectoral Councils
Administrative capacity	Technical capacity
	Capacity to prepare is very dependent on the profile of the coordinator and the technical resources of the private actors (companies, unions, academia). Part-time staff, mostly with good technical skills.
Organizational capacity	Limited capacity to align executors of decisions taken in the area (in general the ministries). Good capacity for public-private linkages; limited capacity for public-public linkage Non-binding decisions. No formal veto mechanisms.
Political capacity	Strong political leadership from the MIEM, but scant support from other ministries (MGAP and MSP). Greater influence of pressure groups because of the design of the entities.
	Hierarchical level of participants: both in public and private areas this depends on the importance granted to the entity, since representation is unregulated.

Source: Prepared by the authors.

Note: MGAP: Ministry of Livestock, Agriculture and Fisheries; MIEM: Ministry of Industry, Energy and Mining; MSP: Ministry of Public Health.

concrete public policy, while guaranteeing the participation and commitment of all relevant actors, especially public sector peers.

Returning to the concept of capacity for creative destruction of public policies, it is clear that each sector has different tools to deal with this change of dynamics. According to Cimoli and Katz (2003), the sectors dependent on investment in knowledge and oriented to the internal market—such as the automotive sector—were the most disadvantaged during the trade-opening process in the 1990s. In this type of sector, the reaction was clearly defensive rather than innovative and led to lobbying for special benefits, such as the export subsidy that is now on the agenda of the CSA (the aforementioned 1992 regulation).

In the original proposal on technological innovation, the targets of the creative destruction process are companies. However, much of the incentive to promote innovative practices comes from the public sector. In the case of the automotive sector, the CSA was created to institutionalize a channel for public-private dialogue to negotiate the steps of the process. However, to do this, the state requires new and greater political capacity to build coalitions and gain legitimacy among business agents accustomed to a rent-extraction logic.

In addition, to go through this process, the state needs the types of capacity that form the basis of support for politically assuming the costs associated with a necessary process of defining inter- and intra-sectoral priorities. So far, this has not been made explicit in the councils. This exercise could also bring with it discussion of whether the councils as a tool are equally suitable for all cases.

The CSB is a different case that shows how built capacity enabled the achievement of important goals for the development of innovative activity in the national economy. This was achieved by designing new legal instruments—for example, the Biotechnology Promotion Decree Law currently under study in Parliament—and strengthening the dynamic of the CSB. This leads to the conclusion that sectoral councils can be a tool for promoting productive development. However, it is important to bear in mind that this tool will not necessarily be the most suitable for all types of productive sectors. The cases analyzed show that results depend critically on the definition of the role of agents. This is why it is more feasible to promote this type of entity for public-private participation in relatively new sectors, with proactive actors that favor strengthening sectoral functioning, as is the case in biotechnology. On the other hand, in contexts marked by relations based on protection and rent extraction, the possibilities of the state imposing a strategic change are very limited, as illustrated by the case of the automotive industry.

3.3.3. National Agency for Innovation and Research (ANII)

In 2005, Uruguay set in motion a sweeping reform of public policy on science, technology, and innovation (STI). This sector is now organized on three levels: (1) strategic, under the Ministerial Cabinet for Innovation (GMI); (2) deliberative, under the National Council of Innovation, Science and Technology (*Consejo Nacional de Innovación, Ciencia y Tecnología* - CONICYT); and (3) executive, under the ANII. National expenditure on STI activities grew from US\$37 million in 2005 to over US\$380 million in 2011 (Agresta 2012; ANII 2014b). Research and development (R&D) spending almost doubled between 2008 and 2011 (ANII 2014b).

As part of this reform, the ANII was created in 2006 with the mandate to implement and administer programs to promote scientific research, innovation, and technological development; foster coordination between the agents of the innovation system; and contribute to evaluation and monitoring of instruments and programs in this area (Legislative Power 2006). Specifically, since its inception the ANII has had two major areas of work: research promotion programs and innovation promotion programs.

The hypothesis guiding this case study is that the state capacity required to promote research is different from that required for innovation. This hypothesis is based on the fact that the two types of policy have different target populations. While research policy targets organized actors, innovation support programs target a set of dispersed, imprecisely identified economic agents with chronic weaknesses in knowledge demand (Arocena and Sutz 2010; Snoeck, Hernández, and Waiter 2012). Thus, to promote research the ANII can organize meetings and events assuming that the target group will participate, since that group knows the programs and has an interest in them.

The situation of innovation promotion programs is different: the targets of these programs are not clearly identified, and many of them are not aware of the policies and programs and so have no clear interest in them. For this reason, specific capacity is required to promote demand for innovation support from agents that, *a priori*, are not innovators.

These differences in target populations require different types of policies and instruments, obliging policymakers and managers to have different types of administrative and political capacity for the design, implementation, and evaluation of different types of instruments (Table 3.8).

For implementation of research support programs, the ANII can apply canonical programs offering competitive funding, which is evaluated based on the principle of the excellence and novelty of the research. However, the design and implementation of innovation policies in the Uruguayan economy requires the capacity to create demand from agents that are not *a priori* innovators.

Table 3.8 Science, Technology, and Innovation Policy Areas: Capacity of Receivers and Requirements for Policymakers

Policy Area	Target Population (Receivers)	Requirements for Policymakers	
Research	Academia (researchers or institutions)	Clearly identified and organized; experience in competitive funding and other procedures	Demand exists Canonical bidding procedures (possibly strategic, thematic, or sectoral definitions)
Innovation	Entrepreneurs and companies	Dispersed, not clearly identified, and poorly organized as users of science, technology, and innovation policy, with little experience in competitive funding, etc.	Demand is very weak and must be created Promotion of demand; creation of capacity in receivers; canonical supply procedures
	Academia-company linkage		

Source: Prepared by the authors.

The process of developing and selecting instruments to promote research is different from promoting innovation, and it requires different knowledge, information, and capacity. This difference emerges from the international literature (Borrás and Edquist 2013) and from the interviews conducted for this chapter. Development of an innovation instrument involves paying attention to the national context, in particular to aspects such as the usefulness and applicability of the results. In this respect it differs from a canonical research instrument. For example, a research product must have a degree of novelty measured by its discipline at the international level. The novelty of an innovation product is less evident because the target population is more heterogeneous and dispersed, and in the case of companies the novelty criterion will vary by sector, size, type of market, and regulatory regime, among others (Johannessen, Olsen, and Lumpkin 2001).

In this context, the hypothesis is relatively obvious, and all respondents agree that promoting research and innovation instruments requires different types of capacity. However, as one interviewee observed, “this response does not seem to be so obvious in that organization; at least perhaps it is in the discourse, but in practice there is no very clear, systematic or very explicit distinction of profiles for managing” (interviewee 4).

Several respondents agreed that different types of capacity are required, but that criteria associated with research promotion are often applied because that area has accepted criteria for evaluating and selecting proposals.

It is difficult to measure the degree of novelty of an innovation that is not radical. Since radical innovations are infrequent by definition, and in Uruguay almost non-existent, the design and implementation of innovation support

programs require some specifics: a definition of innovative, for one, and, two, the degree of novelty sought. The evaluators all noted the difficulty of arriving at this definition and agreed that many projects are rejected because they have no innovative merit.

This difficulty is central to the current debate over the management of innovation policy in Uruguay. The basic reference remains the criterion of innovative merit associated with novelty for the market. But it is being revised by a process of technical and administrative capacity-building specifically associated with learning in practice: “The first explicit instruments to promote innovation developed in Uruguay were asked to include a strong R&D component, and this resulted in a great deal of work, rejected projects, and many frustrations on both sides to accept that innovation is not R&D [...]” (interviewee 4).

The institutional design of the ANII responds to the agency model part of the new forms of public administration.⁶ In theory, if this design works at the three policy levels mentioned above, it permits efficient management, while maintaining the policy areas (GMI and CONICYT) separate from direct management of instruments and resources (ANII). Legally the ANII is defined as a non-state public law organization, which means that it works within the private legal framework in terms of administration of funds, recruitment, and procurement, but maintains a binding relationship with the government, specifically with the GMI.⁷ In theory the GMI acts as the principal of the ANII by defining strategic guidelines. But that body has met only a few times. After the initial impetus that culminated in the 2010 approval of the National Strategic Plan for Science, Technology and Innovation (*Plan Estratégico Nacional en Ciencia, Tecnología e Innovación* – PENCTI), it delegated the programmatic and strategic function to the ANII board.

Several respondents raised concerns in this respect, seeing the risk of a programmatic vacuum for the design and implementation of policy instruments: “One of the problems with the institutional design is that the ANII is supposedly an executing agency, and there is a GMI that designs the policies [...]. [But] the GMI was not playing its role [and] there is a vacuum in generation of policy [...]. I believe the board’s function needs much more time than initially thought and they have to get a lot more involved [...]” (interviewee 5).

⁶ With respect to the concept of agency in the new public administration theories and its origin and diffusion, as well as its benefits and risks, see Pollitt et al. (2004), Pollitt and Talbot (2004), and Laking (2005). For a specific review of cases of innovation agencies, see FCCyT (2012).

⁷ The ANII board has seven members. Five represent the government and are appointed by each of the five minister members of the GMI. The other two are appointed by CONICYT to represent the academic and business sectors. The agency’s president and vice-president, who to date have played a very active role, are appointed by the board.

This is a basic design problem from the principal/agent perspective, particularly because of information asymmetries in the ANII between full-time paid managers and part-time directors. In this situation, the directors may not have the information they need about what is being done—and especially what is *not* being done—to contribute to the strategic objectives.

However, this does not mean that information is being concealed or inadequately managed. Rather, institutional design problems are creating greater autonomy at the managerial level. The ANII management team executes what the board decides. But the GMI's lack of activity transfers to the board programmatic and policy activities, decisions about taking risks, choices of priorities, etc. Moreover, at the implementation level, management has more information than its principal (the board), and in practice policy development and design are expressed in the types of instruments developed and implemented.

It should be mentioned that the credit institutions' technical teams have become a third player in discussions about the strategic objectives of innovation policy. In particular, the Inter-American Development Bank (IDB) has played a very important role in recent years. This is a potentially beneficial scenario, on the one hand, but it also could have undesirable implications for building capacity, especially technical and political capacity. The IDB's first-level technical staff participated in the discussion of the next IDB loan for STI programs in Uruguay, along with the ANII management team and a board member. This loan determines to a large extent the horizon of what is possible in terms of innovation (but not research) instruments over the next five years. The expertise of the IDB technical staff offers great learning potential for building local capacity for negotiation. In addition, technical teams and funding agents are crucial for controlling problems of dynamic inconsistency in policy design, implementation, and evaluation. However, the way in which this process is currently being presented (and this was not the case previously) shows signs of the programmatic vacuum mentioned above—that is, the almost complete absence of local figures with technical, and especially political, capacity in programmatic design activities.

The ANII budget was funded until 2014 from four sources with similar shares: 75 percent from international financiers (IDB, World Bank, and the European Union) and 25 percent from the national budget. Annual execution has grown and now accounts for approximately 7.5 percent of national spending on science and technology and 13 percent of public spending on these activities.

Since the start of its activities the ANII has invested heavily in infrastructure and administrative capacity (Table 3.9). The honorary board comprises seven people outstanding in this area of activity but who do the work part-time, along with their other jobs. The highest-level paid position is that of the executive secretary, who reports to the board. Two areas and six units

operate under his responsibility. Since 2009, the number of ANII staff has fluctuated around 60, with a high proportion of professionals. A high remuneration policy was established from the outset as a necessary condition for the type of organization intended.

This situation produced the expected result of creating strong administrative capacity, but since 2010 the agency has lacked political capacity. As mentioned above, the absence of the GMI and a part-time board have created a risk of programmatic vacuum for the design of policy instruments.

In 2012, the ANII's internal organization was altered to concentrate functions in a management body. This change reinforced the tendency toward administrative autonomy with the creation of a team responsible for implementation and also, partly, for development of instruments and programs (ANII 2013a). This concentration of activities and responsibilities has two obvious risks. First, it may increase information asymmetries between the agent and the principal. Second, it introduces a risk of institutional inertia due to the absence of counterweights or opposition from interests inside the organization (Sydow, Schreyögg, and Koch 2009).

The reform process was accompanied by the gradual and tacit weakening of the agency's political capacity, particularly in terms of its capacity to reach credible agreements with other actors involved in defining new innovation programs.

Unlike the sustained effort to build administrative capacity, the effort to build political capacity has been sporadic. Since 2008, the ANII has consistently invested in its administrative capacity, as measured in terms of

Table 3.9 Investment by the National Research and Innovation Agency, 2008-2013

Operating Costs			
Total Investment	U.S. dollars (at current prices)	Percentage	
2008	5,480,141	4,252,900	77.61
2009	18,653,782	1,736,641	9.31
2010	27,220,900	2,722,090	10.00
2011	28,763,361	3,569,237	12.41
2012	26,727,906	3,793,085	14.00
2013	30,673,592*	3,748,085*	11.36
Total	138,376,657	19,558,582	14.13

Sources: ANII (2009a, 14; 2010a, 8; 2011a, 11; 2012a, 3; 2012b, 6; and 2014a, 4).

Note: Only ANII programs are considered, not the execution of third-party programs.

*No execution data were published for 2012; the values are taken from the Annual Operating Plan (ANII 2012b).

financial resources. However, investment in building political capacity, measured in terms of the assignment and rank of government representatives, has fluctuated. Bolstering administrative capacity before political capacity can create healthy protections for organizational autonomy (an explicit aim of the agency model), but it requires efforts to avoid problems of principal-agent asymmetry.

In the period considered, the ANII has had fairly consistent budget levels to implement its various programs to promote innovation and research. In 2013, 16 programs were implemented in the area of *promotion of innovation in the productive sector* (US\$5.5 million), representing 18 percent of the agency's 2013 budget (ANII 2014a). Also in 2013, in addition to the National Researchers System (*Sistema Nacional de Investigadores* – SNI),⁸ the ANII implemented nine research instruments totaling US\$6.5 million, which represented 20 percent of its total annual spending on execution (ANII 2014a).

However, despite the variety of instruments for promoting innovation, the number of projects financed has not progressively increased (ANII 2014a, 2013a). This is a problem for the agency in particular and in general for Uruguay's innovation policy, which is expected to expand the critical mass of innovative companies. In view of this situation, the agency has set up some new programs to encourage learning processes in non-innovative companies (ANII 2015). These programs aim to stimulate demand for innovation and could reverse the risk of the agency concentrating on comfort areas.

Table 3.10 reproduces the two phases identified in the organizational trajectory of the ANII. Phase 1 covers the first stages of experimentation and capacity-building. During Phase 2, the ANII has suffered a loss of political capacity and faces a risk of being confined to working in comfort areas of innovation.

Innovation policies aim to create incentives so that agents can assume the risks of innovating. A critical aspect of this is for the context to be beneficial. In this respect, the ANII has limited scope for action. However, it can act on another critical aspect: promotion of new innovative projects. The results show that the agency has followed a very important capacity-building process for STI policies in Uruguay, confirming that different types of capacity are needed for promoting research and innovation. This is why the agency will have to resist mechanisms that reinforce the path to areas of comfort or less

⁸ The SNI is a stimulus system for researchers administered by the ANII. The SNI budget is part of the ANII budget, but the SNI has its own governance system over which the ANII board has almost no influence. Among SNI programs, the amount allocated to research instruments accounted for 42 percent of total execution (ANII 2014a).

Table 3.10 Organizational Trajectory of the National Research and Innovation Agency

Phase 1	Phase 2	
Experimentation 2008-2009	Building 2010-2012	Consolidation since 2012
→		
Execution of existing instruments	Increased level of execution	Consolidation of administrative capacity
First instruments	Consolidation of human resources	Loss of political leadership (programmatic vacuum)
Organization building	Maintains political leadership: approval of the National Strategic Plan for Science, Technology and Innovation (PENCTI)	Risk of confinement in comfort areas
Strong political leadership	Strong demand for research programs versus little demand for innovation	

Source: Prepared by the authors based on Sydow, Schreyögg, and Koch (2009).

uncertainty. The result will depend in particular on political capacity applied to the programmatic review undertaken by the organization's management.

3.4. Conclusions: State Capacity for Productive Development Policies in Uruguay, 2005-2014

“...the state is a schizophrenic being: there is an agency [the ANII] that gives you money, there is a Ministry of Industry that promotes you, and the rest of the state is against you. It’s true they push you, but they do it against a wall.”

— Interviewee 6

The observation quoted above, about the state as a “schizophrenic being,” was made by a respondent from the business sector who emphasizes the importance of coordinated actions among the different public organizations that implement PDPs. This requires political and administrative capacity for defining objectives, building support, and providing technical content and capacity for policy implementation. Based on a comparative analysis of the selected cases, this section presents the main challenges for PDP coordination at the national level.

The analysis presented in the previous section confirms both the guiding hypothesis of the chapter and the specifics of each case. All are based on the idea that solving different problems requires different types of capacity, and that the capacity-building process is not innocuous. Thus, the accumulation of capacity for a type of policy, or a type of capacity in an organization, creates conditions for its future trajectory.

However, the previous section also reveals the importance of certain generic types of capacity that are sufficient for the policy to be set in motion, achieve its objectives, and be maintained over time. Painter and Pierre (2005) define these generic types of capacity as the ability to align resources according to a public policy objective. To achieve this alignment—a necessary requirement for the policies—a combination of political and administrative capacity specific to each case is required. At a minimum, that capacity must integrate the political capacity to give the initiative the necessary credibility, that is, the backing of some kind of coalition that is not subject to special interests. The cases analyzed, except for the CSA, display this minimum political capacity. In the case of the CSA, the absence of agreements has prevented the formation of a coalition that supersedes corporate interests. Related to the need for political capacity, there is a generic minimum administrative capacity required to align resources with a policy objective. This can be defined as the technical-organizational capacity to autonomously establish the policy criteria and coordinate its implementation with private agents. In this dimension, all of the analyzed cases demonstrate a minimum of administrative capacity for defining and leading an agenda. However, once again, in the case of the CSA, this capacity is limited, so it has not been possible to define a new agenda for the creation and destruction of norms.

Comparative analysis can also be used to examine the types of capacity according to the type of policy and the type of organization implementing it. Organizational aspects appear to be determinants of capacity-building. As shown in the first column of Table 3.11, the three cases relate to different organizational forms. In fact, only two of the institutions are formal organizations (ANII and RENARE), while sectoral councils are consultative participation spaces, formalized by decree but without any organizational infrastructure. It is obvious that having a formal organizational structure facilitates the building of administrative capacity. Whether through the use of their own funds or through credit, both the ANII and RENARE have mechanisms for recruiting, training, and promoting human resources. In contrast, in the case of the sectoral councils these activities depend on the MIEM.

In terms of administration, because of its level of investment and manageability, the ANII has had greater success in building its administrative capacity through continuous investment in infrastructure and human resources. To

Table 3.11 Stages of Capacity-building and the Policy Cycle

	Organization Stage	Policy Cycle	Main Challenges
RENARE	Consolidation	Implementation	Implement control mechanisms (enforcement)
Sectoral councils	Building (unequal)	Formulation/Implementation	Public-public and public-private coalitions
ANII	Transformation	Implementation/Evaluation	Results Lock-in versus expansion of scope

Source: Prepared by the authors.

Note: ANII: National Research and Innovation Agency; RENARE: National Directorate of Renewable Natural Resources.

some extent this is explained by the legal structure of the ANII (a non-state public entity), which allows for methods of recruitment and promotion different from those of the public sphere, a higher level of remuneration, and not having to resort to international financing for payment of salaries, as is the case with RENARE.

The status of non-state public personnel has been used in Uruguay at various times to create organizations that operate in different areas (Bértola et al. 2005). This could be a replicable organizational solution, but both the analysis of the case and the comparison show that the relevance of this legal structure depends on the type of policy and on the principal/agent relationship having the necessary safeguards. The second aspect emerges from the cases analyzed in the previous section and can be summarized by emphasizing that the strength provided by this type of organization for building administrative capacity, if not accompanied by an adequate institutional design that fosters political capacity, can lead to excessive autonomy that is not beneficial for strategic reasons and may also result in inefficient solutions for the organization itself.

If these aspects are controlled, the public legal structure operating in private law seems to be an appropriate solution, particularly for STI promotion policies, where flexibility and adaptability are critical. However, for other types of policies, such as those based on the mandatory application of a law, a public organization inserted in the state and backed by its coercive capacity seems more appropriate. This is clearly the case of RENARE, whose main challenge is the application of a universal norm without self-enforcement mechanisms. However, this directorate has the advantage, in relative terms, of having clearly defined recipients of the policy, which is mandatory and promoted from the state space (MGAP), where sectoral policy has traditionally

come from. It is likely that there is less capacity to enforce compliance in a new organization, operating in the non-state public area. It is also important to note that the RENARE case shows that the traditional public organization enhanced credibility and support, as well as technical autonomy in relation to special interests, when it created a system of policy governance in which private and other public agents participate.

The capacity-building process is also explained by the temporal variable that refers to the stage of development of every organization and policy. As Table 3.11 shows, the cases studied allow for comparing the challenges faced by each of the organizations analyzed according to their stage of organizational consolidation in relation to the policy cycle. The case of sectoral councils shows the importance of political capacity at the formulation stage—albeit late—of public policies. The CSA and CSB are at different stages of construction and the policy cycle. In the case of the CSB, the main challenge seems to be building public coalitions to produce results, while in the CSA it is about obtaining some kind of result that enhances the credibility of the sectoral council's board. As explained above, these challenges in capacity-building are associated, in the first case, with the difficulty of linking all the spaces required to construct a policy that covers a cross-cutting area such as biotechnology, and in the second, with the political capacity for dismantling instruments that protect traditional sectors and building new ones over them.

The other cases show the administrative capacity challenges that appear at the time of implementation. RENARE is in full implementation and the main challenge ahead is to show that it has the capacity to impose its mandate. The ANII faces a transformation process or lock-in associated with mechanisms combining programmatic weakness and administrative strength.

This result is reinforced by analysis of the capacity-building sequence. Different types of administrative and political capacity do not behave independently, but rather are intimately interconnected. For this reason, the weak construction of some can influence the further development of others. This is the result in the ANII case, where, after a first stage of similar development of administrative and political capacity, the GMI-ANII circuit lost its political capacity, overloading the agency with a role that it ought not to have assumed. This situation generated the trend toward being locked into comfort zones. It should be mentioned that with the recent change of government, the ANII could be facing a new critical juncture that might result in strengthened political capacity.

The sectoral councils were set up with strong political backing from the MIEM but with limited administrative capacity. Nevertheless, this backing has not produced political capacity strong enough for coalition-building within the public sector and with private entities, and that avoids capture of the latter.

According to the results of this chapter, the formation of these coalitions will be different in each sectoral council, particularly if it is necessary to dismantle policies that involve benefits for a set of actors.

Lastly, RENARE has had a more structured timing process. The restructuring process and subsequent political and administrative strengthening of this organization was based on a clear and predefined project.

The capacity-building process will also have different results depending on the type of policy and linkage of the mandate (that is, what the policy establishes that the productive development agency needs to do), the jurisdiction (the actors that are the target of the policy), and the partners required to move it forward.

Specifically, policies for promotion, but not legal regulation, such as those that mainly concern the sectoral councils and almost exclusively the ANII, require a specific type of capacity in order to reach agreements with different actors. The outcome depends above all on coalitions of public and public-private support. This is not necessarily the case with research promotion policies in the ANII, but it is the case for innovation policies. Innovation policies, such as those promoted by sectoral councils, first have to identify the actors involved in the policies and then the recipients. The next step requires convincing or at least interesting the agents to work in that direction. This includes the recipients—an example would be convincing biotechnology firms to become interested in registering their products. It also involves other related actors—for example, getting the ministries that regulate biotechnology production to develop registration protocols. Working with uncertain demand from an ill-defined population requires political capacity to guide the strategic objectives, and administrative capacity sufficiently flexible to stimulate this demand based on legitimized technical capacity. These are fundamental aspects for promotion policies guided by an agenda that cuts across sectoral agendas. In these cases, the formal jurisdiction of the organizations (ANII or sectoral councils) does not correspond to the scope of their institutional mandate. In both cases, the mandate covers resolution of problems that go beyond their formal jurisdiction, which is not the case of RENARE; consequently adapting capacity to policy objectives, and not the other way around, requires flexibility, political leadership, and technical excellence.

The comparative analysis of the three selected cases shows that the return of public policies to stimulating productive activities was accompanied by an effort to create state capacity in different areas and with different institutional designs. The results are only partially observable at the moment and the evidence shows that this is an incomplete construction. It is nevertheless possible to identify the main challenges that create capacity for a national PDP.

These challenges, as discussed in the previous section, form the specific problems of each policy and the organizations charged with developing and/or implementing them, but they also lead, in particular, to coordination of the various PDPs. Of the three cases analyzed, RENARE appears as the most virtuous example owing to at least two factors. The first is having the backing of a legal norm. As has been said, applying a law in a sectoral hierarchical framework is simpler, because it does not involve convincing others to comply but rather simply enforcing compliance. Second, the process of restructuring and subsequent political and administrative strengthening of RENARE was implemented according to a clearly predefined project. This was possible in part because this specific policy required intense public-public cooperation at the technical level, but almost no public-public coordination in the political-strategic definition. The other policies did require such coordination, which demands the development of political capacity at a higher level than the organizations analyzed in the three case studies. The studies only partially consider that level (for example, in relation to ministerial cabinets), but they do show that partial capacity development in an organization, without capacity for political linkage, leads to situations such as the one described in the epigraph for this section, where the incentives from one source encounter serious obstacles at the national level.

Annex 3.1. Information on Fieldwork

Table A3.1.1 Interviews

RENARE Case		Sectoral Council Case		ANII Case	
Name	Position/ function	Name	Position/ function	Name	Position/ function
Mariana Hill	Director, RENARE	Mariela Ibarra	Advisor MGAP, member of the CSB	Jorge Naya	Member of the Committee of Evaluation of Innovation Programs, ANII
Carlos Clérici	Board member, RENARE	Gustavo Bittencourt	Ex-advisor, GPM of OPP	Sara Goldberg	Operations Manager, ANII
Héctor González	Researcher, FAGRO/UDELAR; ex-Director of RENARE	Nicolás Reig	Ex-advisor GPM of OPP	Belén Baptista	Ex-manager of Evaluation and Monitoring, ANII
Fernando García Préchac	Dean, FAGRO-UDELAR, expert soil researcher	Juan A. Abín	Director, Celsius Laboratory, member of the CSB	Omar Barreneche	Executive Secretary, ANII
Carlos Paolino	Ex-Director of OPYPA	Daniel Kefeli	Coordinator of the CSA, MIEM	Edgardo Rubianes	Ex-President, ANII
Marcos Martínez	Agriculture Plan	Carolina Da Silva	Coordinator of the CSB	Joaquín Secco	Member of the Committee of Evaluation of Innovation Programs, ANII
		Cecilia Pérez	Member of the CSB, formerly AUDEBIO, now Uruguay XXI	Gustavo Crespi	Expert in innovation, IDB
				Norberto Cibils	Director ANII, representative of the productive sector
				Miguel Helou	Coordinator, Program Development Area, ANII
				Laura Di Giovanni	Assistant Program Development Area, ANII

(continued on the next page)

Table A3.1.1 Interviews (continued)

RENARE Case		Sectoral Council Case		ANII Case	
Name	Position/ function	Name	Position/ function	Name	Position/ function
				Santiago Dogliotti	Director, ANII, representative of the MGAP
				Omar Paganini	Member of the Committee of Evaluation of Innovation Programs, ANII

Note: ANII: National Research and Innovation Agency; AUDEBIO: Uruguayan Association of Biotechnology; CSA: Automotive Sectoral Council; CSB: Biotechnology Sectoral Council; FAGRO/ UDELAR: Faculty of Agronomy/Portal of the Universidad de la Repùblica; GPM: Ministerial Cabinet for Production; IDB: Inter-American Development Bank; MGAP: Ministry of Livestock, Agriculture and Fisheries; MIEM: Ministry of Industry, Energy and Mining; OPP: Office of Planning and Budget; OPYPA: Office of Agricultural Programming and Planning; RENARE: National Directorate of Renewable Natural Resources.

Annex 3.2. Information on the Cases

Table A3.2.1 Actions for the Redesign of RENARE, 2010–2013

Rationalization of functions	Relocation of tasks into other MGAP executing units (fertilizers and soil microbiology). Transfer of Protected Areas and Fauna Division to Environment Ministry (MVTOMA) (in process). Redefinition of functioning and work of soil and water laboratory (includes hiring of staff, equipment upgrading, and staff training).
Decentralization	Setting up and strengthening of RENARE regional offices. Six new offices were set up and the three existing ones strengthened; 17 technicians were transferred to the interior.
Technical training of human resources	Specific agreement with FAGRO. Training of 40 RENARE technicians and 100 external consultants. Subjects: soil, irrigation and drainage, natural grasslands. Specialization courses (21 technicians).
Identification of new strategic lines	Start of process of identification and development of medium- and long-term water policy. The objective is to support agricultural growth through the incorporation of irrigation, emphasizing support for management of water use for irrigation for users and for water management in multi-property irrigation works.
Incorporation of technological programs	Start of process to set up a natural grasslands department in RENARE. The objective is improvement and sustainable exploitation of natural ecosystems, emphasizing natural native pastures, in the framework of productive activities and in the areas managed by RENARE. Upgrading and expansion of the Geographical Information System (SIG). The SIG contains the cartographic basis of the country's rural registration, with cadastral information, CONEAT soil groups, pathways, and the water network. Management of the Century Program (carbon balance), environmental pollution and effluent management, digital soil mapping, territorial planning, metadata preparation, geo-statistics, laboratory, and image processing.

Source: Prepared by the authors based on the 2010, 2011, 2012, and 2013 annual reports of the MGAP (see <http://www.presidencia.gub.uy/transparencia/memoria-anual>).

Note: CONEAT: Digital Cartography and Soils of Uruguay; FAGRO: Faculty of Agronomy; MGAP: Ministry of Livestock, Agriculture and Fisheries; RENARE: National Directorate of Renewable Natural Resources.

Table A3.2.2 Objectives of the Automotive Sectoral Council (CSA) and the Biotechnology Sectoral Council (CSB)

Automotive Sectoral Council		
Line of Action	Objectives	Tools
Productive development	Develop capacity to compete with regional and international automotive products and services	<ol style="list-style-type: none"> 1. Decree 316/992 amended 2. Strengthening of productive investments 3. Working subgroup on competitiveness 4. Automotive cluster
	Manage technical regulations, certification, and accreditation	<ol style="list-style-type: none"> 5. Working group to negotiate technical regulations 6. Laboratory facilities for conformity assessment 7. Subsidy for certification of companies, products, and services 8. Laboratory facilities for control of production of companies
	Intensify knowledge incorporation	<ol style="list-style-type: none"> 9. Increase in knowledge-intensive productive investments 10. Technological Development Center for R&D+i and testing
	Strengthen competitive capacity of automotive SMEs	<ol style="list-style-type: none"> 11. Access to financing for SMEs in the sector 12. Incorporation of integrated management systems
Involvement internationally	Deepen productive integration with the regional automotive chain	<ol style="list-style-type: none"> 13. Negotiation in the framework of the national MERCOSUR policy 14. Uruguayan proposal for a MERCOSUR automotive policy 15. Intensification and automotive complementation in MERCOSUR
	Diversify markets	<ol style="list-style-type: none"> 16. Promotion and commercial intelligence and determination of market penetration 17. Agreements in operation, bilateral or concluded by MERCOSUR
Human and institutional development	Improve labor relations	<ol style="list-style-type: none"> 18. Framework to set up a joint sphere for implementing quality systems and improving organization of production
	Increase quality employment	<ol style="list-style-type: none"> 19. Training and formation of human resources 20. Gender equality program
	Strengthen management capacity of sectoral actors	<ol style="list-style-type: none"> 21. Support programs for institutional strengthening

(continued on the next page)

Table A3.2.2 Objectives of the Automotive Sectoral Council (CSA) and the Biotechnology Sectoral Council (CSB)

Biotechnology Sectoral Council		
Line of Action	Objectives	Tools
State policy for biotechnology development	Improve processes for registration of biotechnological products	1. Define regulatory framework and processes for registration of biotechnological products involving human, animal and plant health, and the environment
	Put in place a legal framework for biotechnology promotion and development	2. Law to promote biotechnology development, production, and use in Uruguay
Human development	Train human resources	3. Creation of a national system of technologists 4. Design of a continuous technical training program
	Stimulate awareness in society of the importance of innovation in biotechnology	5. Awareness and social communication plan
Productive development	Improve linkages between academia and the productive sector	6. Define and implement mechanisms to improve academia/business linkage
	Use public procurement for biotechnology development	7. Promotion of use of public procurement in biotechnology
	Stimulate generation of bio-business	8. Promotion of territorial biotechnological hub in Montevideo 9. Observatory of technological surveillance and awareness of intellectual protection instruments for bio-business 10. Decree to promote biotechnological industry 11. Creation of a risk capital fund

Source: GPM (2012).

Note: R&D+i: Research and Development + innovation; SMEs: small and medium-sized enterprises.

Table A3.2.3 ANII Programs to Promote Innovation, by Objective, 2008-2014

Program	Objective (Create, support, or promote via different financing methods)
Broad coverage, high-impact innovation projects	Innovation activities in companies
Support for innovative young people	Innovative ventures
Credits for companies/Fondo Orestes Fiandra	Innovation and internationalization of companies
Program to stimulate technological demand	Technological demand in companies
Sectoral funds, innovation modality	R&D+i in strategic areas
Program to support future entrepreneurs (PAFE)	Entrepreneurship
Qualified human resources in companies	Improvement of innovation capacity (human resources)
Program to strengthen advanced human capital	Improvement of innovation capacity (human resources)
Partnership	Linking and technological transfer
Public-private innovation consortiums	Linking and technological transfer
Generation and strengthening of scientific-technological services	Linkage of SNI
Support for incubators and interfaces	Linkages of SNI
Technological centers	Linkages and strengthening of SNI
Sectoral technological networks	Linkages and strengthening of SNI

Source: ANII (2008, 2009b, 2010b, 2011b, 2012b, 2013b, 2014b).

Note: ANII: National Research and Innovation Agency; R&D+i: Research and Development + innovation; SNI: National Researchers System.

Table A3.2.4 ANII Programs to Promote Research, by Objective, 2008-2014

Program	Objective (Create, support, or promote via different financing methods)
Fundamental Research Projects (FCE) "Profesor Clemente Estable"	Scientific research of excellence in all knowledge areas
Project of Excellence in Priority Areas "Profesora María Viñas"	R&D+i that helps to resolve important limitations in priority sectors
Social impact projects of high public interest/ Social inclusion projects	Research on problems whose solutions have a high level of impact
Projects in strategic areas with little development	Strengthening of strategic knowledge areas for productive development and modernization of the country that are not currently consolidated from the academic point of view
Cutting-edge scientific teams	Acquisition of research teams
Sectoral funds, research modality	R&D in strategic areas

Source: ANII (2008, 2009b, 2010b, 2011b, 2012b, 2013b, 2014b).

Note: ANII: National Research and Innovation Agency; R&D+i: Research and Development + innovation.

Brazil: Building Capabilities for Technology and Innovation

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This chapter presents three case studies of productive development agencies (PDAs) in Brazil. The first, the Brazilian Agricultural Research Company (*Empresa Brasileira de Pesquisa Agropecuária* – Embrapa), is a state-owned enterprise founded in 1973 and linked to the Ministry of Agriculture, Livestock and Food Supply. It is a technological innovation firm that develops and disseminates new technologies and supports the development of public policies for the technological development of Brazilian agriculture. Embrapa is one of the few successful cases in developing countries of a public research institute for agriculture that carries out research and development (R&D) of public interest both in segments in which the private sector has no interest in investing (i.e., markets with low profitability) and those in which private sector participation is not significant.

The second case study is of the Brazilian Innovation Agency (*Financiadora de Estudos e Projetos* – Finep), a publicly owned agency linked to the Ministry of Science, Technology, Innovation and Communication and based in Rio de Janeiro. Finep aims to promote technological innovation in industrial sectors by providing financial support to specific projects undertaken by firms, universities, and research institutes.

The third case study is of the ABC Foundation, a nonprofit entity created to provide technical assistance to farmers. The ABC Foundation was established in 1954, originally under the name of Cooperativa Central de

Laticínios do Paraná Ltda., in a low-fertility area in southern Brazil's Paraná state. It is maintained by contributions from farmers and partnerships with private companies. The foundation provides soil testing services, food science knowledge, and geographic information systems.

4.1. Conceptual and Methodological Issues

The main hypothesis that guides the analysis in this chapter is that technological innovation requires complementary capabilities that are usually not found within the same organization. Moreover, capabilities in general cannot be purchased; they must be built within the organization. For that reason, in order to deliver a successful technological public policy, a PDA must have the capability (a meta-capability) to coordinate different organizations in order to combine complementary capabilities.

In all the cases examined, this chapter explores the time variance within each case in a before-and-after comparison. The idea is to compare capabilities before and after the episode and how they might affect the success of the delivered policy. The before-and-after studies can be interpreted as pseudo-counterfactuals, but it can be argued that they are still informative in identifying the main questions about agencies' capabilities and their effect on public policy. In some of the cases, it was possible to establish a brief comparison with an alternative PDA that has not gone through a similar episode or that differs from the reference case in terms of a key variable.

The main instrument for collecting information for the case studies was semi-structured interviews with PDA representatives and beneficiaries. Formal documents from the PDAs and quantitative assessment of their implementation experience, as well as papers and articles on the related subject, were also used.

Agencies can be more or less effective depending on their available technical, organizational, and political capabilities (Cornick 2013), and on their ability to acquire and build new capabilities. Within the same organization, it may be necessary to combine different capabilities to implement public policies. Technical capabilities are required for sound decisions, but policy implementation may also require legislative innovation or concerted actions of government bodies, which involves political capabilities. Moreover, coordinating complementary capabilities may require the collaboration of different agencies, since it is unlikely that a single agency will have all of the capabilities required for implementing productive policies.

In the case of public policies oriented toward promoting changes in production structures, organizations may be part of the state, as direct

executive branches or state-owned enterprises, or an arrangement built within the production arena to organize collective interests and to promote collective policies. Often these two alternative forms of organizations for implementing public policies (state-owned or collective arrangements) interact in a complementary way to accomplish their aim of promoting development.

This chapter explores variations in those organizational arrangements in order to investigate the pros and cons of each one and to examine the claim that productive development policies benefit from coordination among different agencies, or between agencies and other organizations, such as private companies, particularly if the capabilities necessary to deliver the public policy are nontradable and complementary. The analysis finds that some PDAs' permanent or less flexible organizational features (e.g., public autarchy versus state company) affect the development of specific types of capabilities.

This initial discussion gives support to some hypotheses that guide the case studies in this chapter. First, when complementary capabilities relevant for delivering public policy are located in different organizations, governance structures that induce cooperation among those organizations may be more effective than efforts to replicate those capabilities within the same PDA. Since it is costly and time-consuming to build capabilities, partnerships may result in more effective public policy (Araujo, Dubois, and Gadde 2003). This need for cooperation is particularly important for technological policies, since technological capabilities are typically nontradable and may be located in different organizations. The capability to combine existing capabilities in different organizations—i.e., a meta-capability—is also known as indirect capability (Loasby 1998). Together with the costs of building capabilities internally, those capabilities determine the optimal scope of organizations and the set of capabilities they encompass.

Second, in the case of technological policies, the distribution of capabilities among organizations—in particular between PDAs and firms—varies according to the technological features of production. For instance, there are capabilities for innovation in industrial sectors that are located within firms and cannot be easily replicated by PDAs. In those sectors, the knowledge required for innovation is predominantly tacit and requires experience to accumulate (Dosi 1988). As a consequence, if one wants to trigger innovation in such an industry it is necessary to access those capabilities embedded in firms. Hence, PDAs that aim to promote technological innovation must be effective in stimulating the use of capabilities that are firm-specific. Often these capabilities can be combined with the scientific knowledge and laboratory infrastructure that is present in universities and research institutes. In those

cases, technological policy needs to coordinate the capabilities within firms with those of research institutes.

In contrast, by and large, technological capabilities in agriculture are not specific to farms. Instead they can be found and accumulated in PDAs or in research institutes. This difference between industry and agriculture has implications for the organization of technological PDAs, which can vertically integrate technological capabilities in agriculture, but need to develop the capability to articulate firms' technological resources in order to trigger innovation.

Third, capabilities accumulate with deliberate effort and experience. Organizational choices in each PDA are relevant to determine which types of capabilities tend to accumulate more. For instance, the set of incentives and control mechanisms that generate internal labor markets are conducive to the accumulation of human capital specific to the organization, but they provide fewer incentives for the accumulation of generic human capital. As pointed out by Williamson (1996), organizational choices imply intrinsic trade-offs that cannot be avoided by means of selective intervention. As a consequence, organizational choices, such as the choice between autarchies versus nongovernmental agencies, are important determinants of current and future PDA capabilities.

4.2. Measuring Capabilities

Capabilities are not directly measurable and cannot be expressed in numbers. Nevertheless, it is useful to evaluate different PDAs in terms of their capabilities, which allows for comparison between them and the mapping between capabilities and the efficacy of public policy. This chapter attempts to measure capabilities by means of qualitative assessment by a group of researchers, following methods such as rapid appraisal (Beebe 1995) that translate evaluation by experts into a multidimensional scale.

The capabilities evaluated were divided into the following dimensions:

1. Technical:
 - Scientific/technocratic expertise
 - Bureaucratic efficiency
2. Organizational
 - Public-public coordination
 - Public-private coordination
 - Experimentation and learning
3. Political
 - Credibility
 - Creation of support groups
 - Protection against capture (public and private)

These capabilities were rated on the following scale: (1) very strong, (2) strong, (3) medium, (4) weak, and (5) very weak. To transform those qualitative evaluations into quantitative terms and radar/spider graphs, those evaluations were then converted into numerical rates from 0 (very weak) to 4 (very strong).

4.3. Embrapa

Embrapa is a state-owned enterprise founded on April 26, 1973 and linked to the Ministry of Agriculture, Livestock and Food Supply (*Ministério da Agricultura, Pecuária e Abastecimento* – MAPA). Embrapa is a technological innovation firm that develops and disseminates new technologies and supports the development of public policies for the technological progress of Brazilian agriculture. It performs R&D investment of public interest, both in the segments in which the private sector has no interest in investing (i.e., markets with low profitability) and those where private sector participation is not significant. The company aims to be “[...] a world reference in the generation and supply of information, knowledge, and technologies, and thus contribute to innovation and sustainability in agriculture and to food security” (Embrapa 2018).

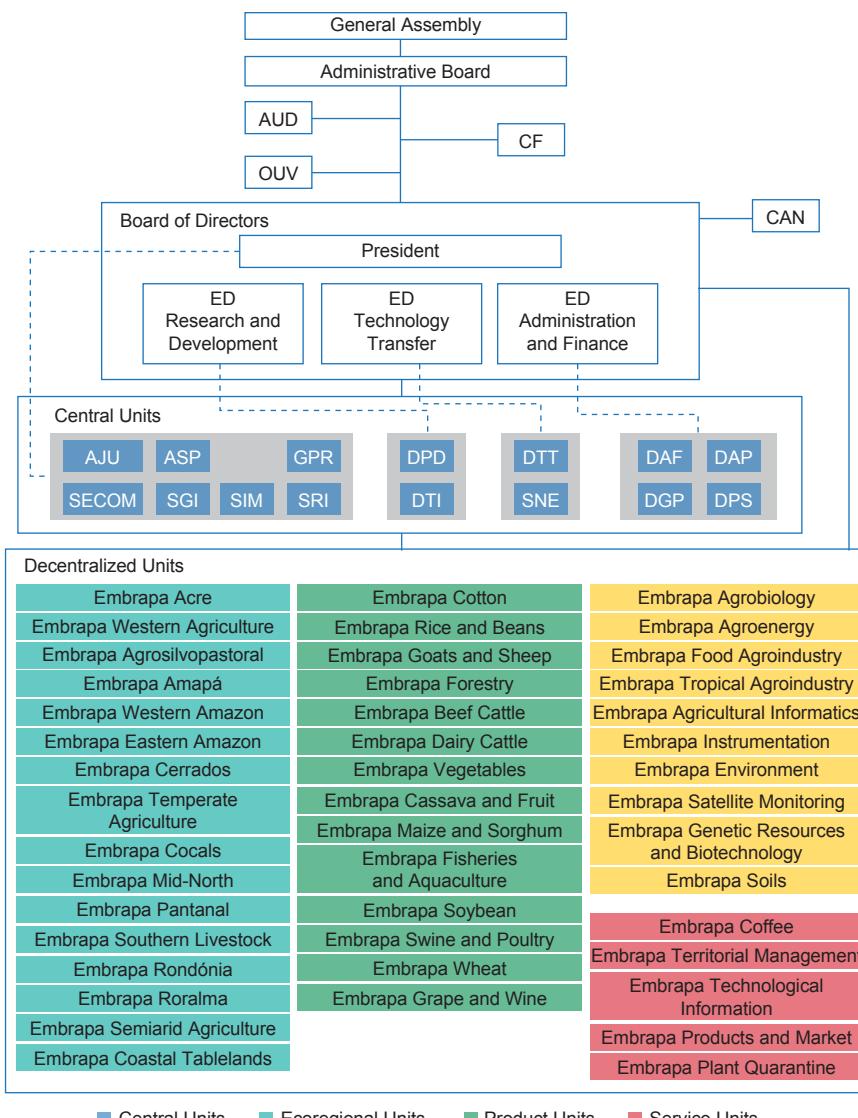
Embrapa is one of the few successful cases in developing countries of a public research institute for agriculture (Correa and Schmidt 2014). In the 1980s, Embrapa consolidated its position as an innovation source for Brazilian agriculture and developed cultivars adapted to the climate and soil conditions of the Brazilian savanna (*cerrado*).

In order to accomplish its objectives, Embrapa has been segmented into two main fields—R&D and Technological Transfer—along with other financial, administrative and supporting units. To this end, the company has been divided into 15 central units located in Brasilia, 47 decentralized units located in the various regions of Brazil, four virtual laboratories abroad, and three international offices (Figure 4.1).

Embrapa employs 9,790 people, including 2,444 researchers, 2,503 analysts, 1,780 technicians, and 3,063 assistants. One of Embrapa's most notable features is its technical capability: 18 percent of its researchers have a master's degree, 74 percent have a doctoral degree, and 7 percent have a post-doctoral degree.

The company's budget relies on funds made available by the federal government as well as its own program of research funding called the Macroprogram, which supports investments in basic and applied research. In 2014, Embrapa's yearly budget was over R\$2.6 billion (Embrapa 2018).

As a state-owned enterprise, Embrapa has legal status under private law, but its equity capital belongs 100 percent to the Brazilian government.

Figure 4.1 Organization of Embrapa

AUD – Internal Audit Advisory Services | AJU – Legal Advisory Services | ASP – Parliamentary Advisory Services | CAN – National Advisory Board | CF – Supervisory Board | DAF – Financial Administration Department | DAP – Parque Estação Biológica Management Department | DGP – Personnel Management Department | DPS – Property and Supplies Department | DPD – Research & Development Department | DTI – Information Technology Department | DTT – Technology Transfer Department | GPR – President's Office | OUV – Ombudsman's Office | SECOM – Secretariat of Communications | SGI – Secretariat of Management and Institutional Development | SIM – Secretariat of Intelligence and Macrostrategy | SNE – Secretariat for Business | SRI – Secretariat of International Affairs.

Source: Embrapa (2018).

Consequently, Embrapa must operate under certain rules similar to those of any governmental entity, including those for hiring personnel and contracting with third parties (private or public). In a nutshell, Embrapa's operational structure is a little less rigid and bureaucratic than a public body, but much more rigid and bureaucratic than a private company.

For instance, Embrapa's employees have rights equivalent to those of civil servants, meaning that they are hired through public tenders and have more job stability than employees working in the private sector. This inflexibility might have been considered appealing for employees in the 1980s and 1990s (especially researchers willing to focus on their academic and scientific careers), but it is a disadvantage in Embrapa's relations with private companies and in achieving the flexibility to adjust contracts that is necessary for the innovation process. Moreover, the company is subject to Law No. 8.666, which sets out the general rules for procurement procedures and government contracts. Hence, Embrapa is subject to rigid, bureaucratic, and time-consuming contracting rules.

The selected episode is the signing of licensing contracts between Embrapa and the multinational firm Monsanto in 1997 to implement a partnership to develop and produce transgenic soybeans resistant to the herbicide Roundup. The episode is an illustration of Embrapa's engagement in strategic alliances with private firms (previously considered solely as competitors) in the seed industry in order for Embrapa to meet its innovation objectives more efficiently and effectively.

4.3.1. *Historical Context and Description of the Episode*

Embrapa was created to address the Brazilian government's growing concern with the country's lack of technical capabilities in agriculture. In a context of rapid population and income growth, it became clear that, without investments in agricultural research, Brazil could not reduce the gap between the demand for and supply of food and fiber.

The development of agricultural research in Brazil was late and atypical, with centralization of the activity only in the 1970s. Some Latin American countries had already adopted an institutional framework—known as National Systems for Agricultural Research—that were designed to coordinate and manage limited resources (Ruttan 1983). These included INTA (Argentina, 1957), INIAP (Ecuador, 1959), CONIA-FONIAP (Venezuela, 1959–1961), INIA (Mexico, 1960), SIPA (Peru, 1963), ICA (Colombia, 1963), and INIA (Chile, 1964).

Brazil's National Agricultural Research System (*Sistema Nacional de Pesquisa Agropecuária – SNPA*) was created in 1992. It is made up of Embrapa and its Research Units and Services, State Organizations for Agricultural Research (*Organizações Estaduais de Pesquisa Agropecuária*), and federal

and state-level universities and research institutes, as well as other public and private organizations directly or indirectly related to agricultural research. The main goal of the SNPA is to achieve coherence between guidelines and strategies for agricultural research and wider development policies.

As a state-owned enterprise Embrapa is required to select its employees by means of public tenders, i.e., by hiring the best-performing candidates in a public examination, subject to Law No. 8.666 (Embrapa 2018). This works as follows: first, all qualifying candidates undertake the exam; next, a selected number of best-performing candidates are considered approved; and finally, within the next two years, those approved applicants may or may not be effectively offered a job, based on the needs of the organization.

This hiring process is time- and resource-consuming and therefore requires the company to plan ahead and select a given number of employees in each tender, even if it is not obliged to effectively hire all the best-performing applicants. Moreover, legal constraints generally do not allow public companies to fire employees as easily as private firms do. As a result, public employees benefit much more from so-called job stability than their private peers. This job stability creates incentives for a long-term career within Embrapa, and hence to investment in assets whose return depends on job tenure.

These long-term incentives, along with a stable and predictable yearly budget, allow Embrapa to select the best professionals available on the job market and to make major investments in their training. For example, Embrapa provides for employees' doctoral studies both in Brazil and abroad whenever they are needed and feasible. As a result, as mentioned earlier, 81 percent of Embrapa's 2,444 researchers have at least a doctoral degree, demonstrating Embrapa's strong technical capabilities.

This hiring process also influences and shapes employees' approach to their work as well as their technical capabilities. For instance, because of long-term career incentives and encouragement to enhance qualifications, researchers are both allowed and encouraged to experiment and develop new technologies and processes. Embrapa's employees thus have an incentive to produce technological and scientific knowledge for Brazilian agricultural producers (Mendes and Buainain 2013).

Because Embrapa is constrained by Law No. 8.666, it is not as fast and flexible in contracting with outside partners as private organizations are. While this regulatory structure enhances the company's control and provides consistency in most contracts, it also slows down relationships with the other parties and might even prevent Embrapa from establishing desirable partnerships.

To provide individual incentives for researchers, R&D scientists are evaluated in terms of their number of publications in scientific journals, similar to incentive systems found in universities. While on the one hand these could

be regarded as desirable organizational capabilities, on the other hand, such a performance indicator slows down the dissemination of newly developed technologies, both because scientific publication is time-consuming and because it requires the contents to be original, i.e., not disseminated elsewhere first. This constitutes a major difference relative to private firms, which are pushed toward faster response rates by competitive pressures, even if this means less freedom to experiment and learn.

Last but not least, Embrapa's political capabilities should be noted. The company has an excellent reputation and is able to make credible commitments because its partners believe it to be technically capable of delivering what has been agreed upon. At the same time, Embrapa is relatively independent from the government, which seems not to influence or shape new public policies developed within the company, even though assisting policymakers is one of its statutory objectives. This relatively secure situation holds important implications for Embrapa's technical capabilities, as the company enjoys the necessary independence to focus on urgent matters rather than current officeholders' agendas.

Until the 1980s, there was very little interaction between the institutions that created new agricultural technologies and the users of those technologies. In the 1980s, a debate arose between technology institutions and the market, such that public research institutions and universities were criticized for being distant from market demands and producers' needs, even though they had a considerable amount of knowledge available (Mendes and Buainain 2013). Embrapa subsequently increased its interaction with private companies, using multiple mechanisms for management, transfer, and marketing of the science and technology generated in partnerships with them.

Although Embrapa had already entered into partnerships with the private sector in the late 1980s and early 1990s (especially with foundations and producers' associations such as Fundação MT and Unimilho), an exogenous event also played an important role in pushing Embrapa into this type of partnership: the enactment of the Cultivar Protection Law (*Lei de Proteção aos Cultivares - LPC*) on April 25, 1997. The publication and promulgation of the LPC resulted from Brazil's accession in 1994 to the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which required a general review of Brazilian laws on intellectual property rights. In 1996, Embrapa approved its intellectual property management policy through Resolution No. 22/96 (Embrapa 2018), which was crucial in transferring the technology generated by Embrapa to the market (i.e., companies and producers).¹

¹ Another important regulation that directly affected the local cultivar and seed market was the Brazilian Biosecurity Law of March 24, 2005 (Law No. 11.105), which allowed for the cultivation of genetically modified seeds.

The LPC attracted private companies to invest in Brazil, since it allowed them to direct their investments in technology innovation toward the seed industry (especially international companies that developed technologies abroad and had avoided bringing them to Brazil due to the lack of legal protection). It is also important to note that Brazil is the world's second-largest producer of soybeans, with a 1997 harvest of 26,391,448 tons.² A sector of this size almost inevitably held significant potential for transgenic soybeans, which are soybeans in which the genes have been modified by genetic engineering. There are many types of transgenic soybeans, but the most well-known consists of a plant that is tolerant to the use of glyphosate, a very popular type of herbicide.

While multinational companies had knowledge of transgenic germplasm, they did not have access to the germplasm adapted to Brazilian soil and climate conditions (or they would have to spend a considerable amount of time and money to study and develop adequate varieties, while this research had already been undertaken locally). Embrapa, on the other hand, had great knowledge of locally adapted varieties.

Hence, the LPC made it possible for public institutions such as Embrapa to develop (in some cases) and consolidate (in others) partnerships with private companies. The major benefits for public institutions were proximity to the market, facilitating proper implementation of the technologies by producers, and the use of private funds to finance at least part of their research. The seed industry benefited from those partnerships by obtaining cultivars adapted to the different areas of Brazil.

The logic behind the partnerships between Embrapa and the private sector is straightforward. The latter supports a breeding program: the cultivars developed are protected according to the LPC and registered in the developer's name, and seed production generates revenue to the parties involved through licensing and royalty payments (Brito da Cunha 2011).

As a result of the LPC, a great number of new cultivars were developed. According to De' Carli (2005), from January 1998 to February 2005, 627 cultivars of 27 species were registered as protected through the MAPA, in the name of 81 different institutions (private and public). It is under this scenario that the partnership between Monsanto and Embrapa emerged—a hybrid form of partnership that enabled the rapid adaptation of Monsanto's seeds to the Brazilian market, contributing to the technological development of Brazilian agriculture.

Replicating transgenic soybean seeds can be relatively easy. Therefore, in the absence of legal protection of the intellectual property involved, only little of

² According to the Statistics Department of the Food and Agricultural Organization (FAOSTAT). Available at: <http://faostat.fao.org> (accessed on June 24, 2014).

the significant investment required to develop this technology is recovered by the company, since agents can purchase the product only once and then copy the technology. As a consequence, private investments in transgenic soybeans are only made in countries with protection systems for the technology itself, such as patents. This is the case for the United States and Europe, which have had laws protecting plant genetic technology since the 1950s, and are also home to the world's leading companies in this area, such as Monsanto (Moura and Marin 2013).

Roundup is the most used herbicide in the world, and Monsanto, besides being the developer of the herbicide, is also the sole holder of the transgenic soybean germoplasm resistant to Roundup. In 1997, the genetically modified soybeans whose technology was held by Monsanto represented 66 percent of the soybean seeds in the world (Moura and Marin 2013).

For its part, Embrapa was the leader in soybean cultivars adapted to Brazilian soil and climate conditions: in 1997, 70 percent of the soybeans cultivated in Brazil were derived from Embrapa's cultivars (Moura and Marin 2013). However, Embrapa did not have access to the transgenic soybeans held by Monsanto.

The first agreement signed between Monsanto and Embrapa, on April 22, 1997, had the purpose of developing Roundup-resistant transgenic soybeans adapted to Brazilian climate and soil conditions. The new cultivars, developed based on Embrapa's germoplasm bank allied with Monsanto's technology of resistance to glyphosate, were registered with the Brazilian National Cultivar Registry (*Registro Nacional de Cultivares* - RNC) in Embrapa's name under LPC protection. However, since the Roundup Ready technology is patented by Monsanto (under intellectual property law protection), licensees have to sign one agreement with each institution and pay royalties to both of them. When combined, the capabilities of the two companies allowed for the rapid and cheaper development of transgenic soybeans specifically designed for Brazil (Moura and Marin 2013). In other words, these products complied with Embrapa's objective of technologically developing Brazilian agriculture in an efficient and effective way.

In this partnership, technical capabilities are obviously crucial to developing novel solutions. Next, strong organizational capabilities are required in order to rapidly respond to farmers' needs and to support all the operations involved with technological development. Finally, political capabilities are to some extent needed to support the credibility of Embrapa's commitments and the development of its technical skills. The different capabilities are closely interrelated, not only in that no successful policy can be developed without considering all three of them, but also because they seem to mutually influence each other (i.e., they are not totally independent/orthogonal). For example, some of the same factors that enhance Embrapa's technical capabilities also make its organizational capabilities relatively weaker.

To gather in house all the necessary capabilities required for efficient and effective innovation, Embrapa had to eschew some features enhancing one type of capability rather than others. Undertaking a partnership with Monsanto meant that Monsanto could provide complementary technical capabilities in a field different than Embrapa's area of expertise, as well as organizational capabilities that allowed for the rapid responses and decision-making required given the high speed at which innovation took place.

4.3.2. *Episode Outcomes*

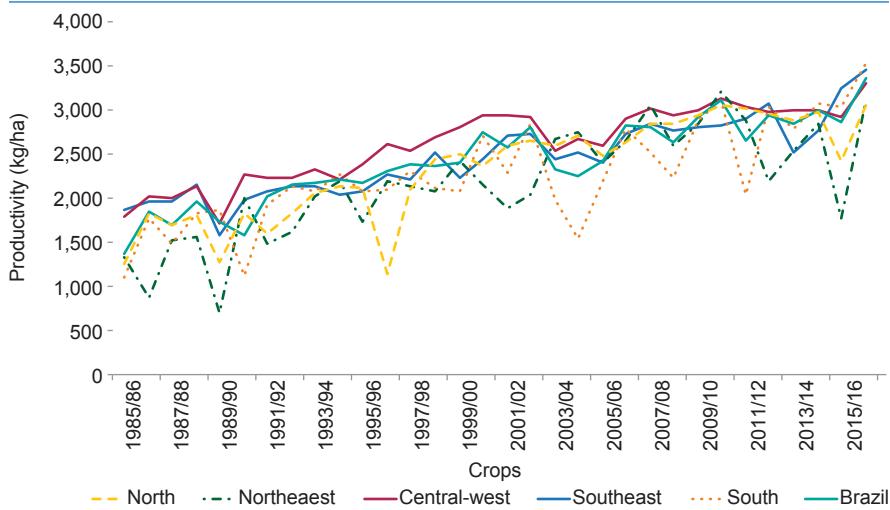
The episode selected illustrates the growth in the number of partnerships between Embrapa and private firms that have been established since publication of the LPC. Embrapa's partnerships with the private sector made it possible to improve the capacity of developing new cultivars throughout Brazil, expediting the process of spreading and applying the technology and providing the necessary financial support.

The main type of development in Embrapa's cultivars was the incorporation of resistance to certain soybean diseases in both new and old cultivars, reducing the producer's need for pesticides (Embrapa 2004), which complemented the partnership between Monsanto and Embrapa. From 2001 to 2004, the number of seed licensing agreements rose from 651 to 1,500, and the production of licensed seeds went from 225,000 to 463,000 tons (Embrapa 2004).

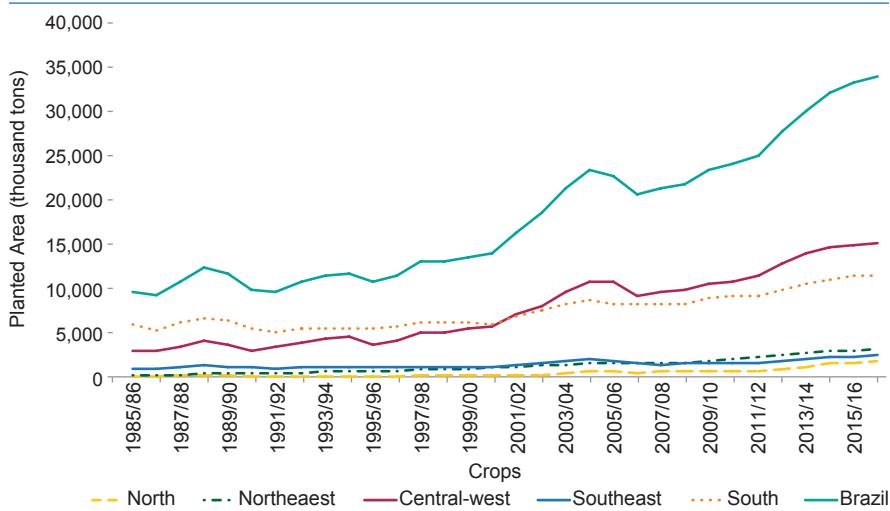
Soybean productivity has been increasing since then at a regular pace (Figure 4.2), although one cannot attribute this result to Embrapa's partnerships with the private sector. Planted area has also been increasing (Figure 4.3), as has total soybean production, especially in the Central-West Region of Brazil (Figure 4.4). These results are probably driven by foreign demand, but they also reveal the ability of Brazilian production to respond to this demand shock, which is consistent with the hypothesis that Embrapa's new policy was successful. Moreover, the vast majority of soybean varieties cultivated in Brazil directly or indirectly originate from Embrapa's partnership with Monsanto.

There was also an increase in the number of cultivars: while from 1990 to 1997 only 66 soybean cultivars were launched (De Almeida, Wetzel, and Ávila 1999), in 2001 alone 59 new soybean cultivars were added to the RNC. From 1998 to 2012, 526 soybean cultivars were registered with the RNC (Lima, Silva Filho, and Oliveira 2013) (Table 4.1).³

³ The 1998 figure includes the registration of cultivars existing prior to the promulgation of the LPC and previously registered on the RNC.

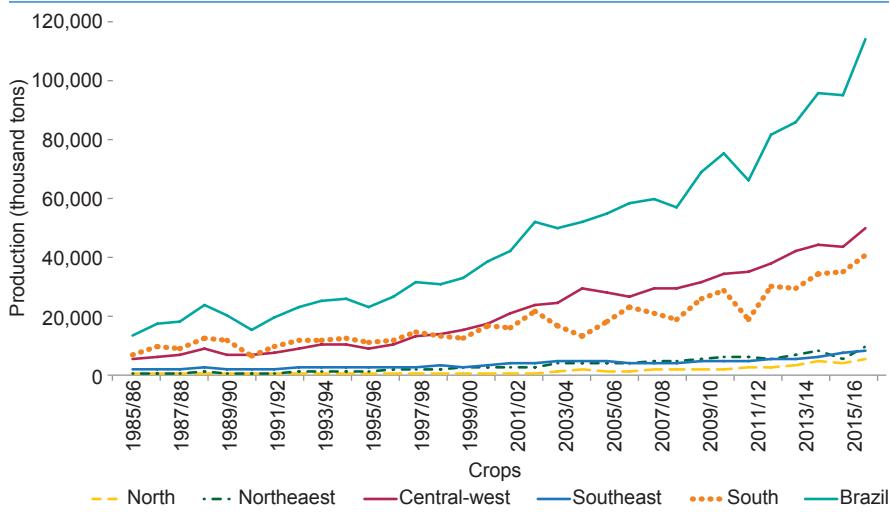
Figure 4.2 Soybean Productivity

Source: CONAB (2018).

Figure 4.3 Soybean Planted Area

Source: CONAB (2018).

By 2012, Embrapa already had partnerships with more than 100 research institutions, of which 58 percent were universities, 17 percent were state organizations for agricultural and livestock research, 16 percent were private companies, and 9 percent were national or international research institutions (Lopes et al. 2012).

Figure 4.4 Soybean Production

Source: CONAB (2018).

Embrapa's embrace of partnerships resulted in a steep decline in its market share of the seed industry, as shown by the decrease in the area planted with Embrapa cultivars. Formerly the market leader with a 70 percent share, Embrapa now has a share of less than 10 percent.

Nevertheless, these figures do not necessarily reflect a threat to Embrapa. On the contrary, they are consistent with Embrapa's strategy and represent a deliberate move on its part. As a public R&D company, Embrapa aims to invest in fields other than those invested in by private companies, either because others are unable to invest in them or because those investments are unprofitable. As stated by one Embrapa official, public investments should not be made when they are replaceable by private capital, but only in areas where they are irreplaceable.

Bearing this in mind, it is reasonable to assume that the Cultivar Protection Law has favored the entry of several private firms into the Brazilian soybean seed market since the late 1990s, pushing Embrapa toward a smaller and smaller market share. This means that huge public investments in the seed market have been replaced by those made by private firms, hence freeing up a larger share of Embrapa's budget for alternative R&D projects different from those in the private sphere. This capital replacement has been beneficial, since it has allowed Embrapa to further develop different areas not targeted by private competitors. The company nonetheless maintains its expertise in the development of new varieties of soybeans as a safeguard against any eventual monopolization of the soybean seed industry.

Table 4.1 Number of Cultivars Registered with the Brazilian National Cultivar Registry

Year	Number of Soybean Cultivars ^a
1998	186 ^b
1999	25
2000	25
2001	59
2002	16
2003	38
2004	28
2005	25
2006	10
2007	29
2008	13
2009	25
2010	12
2011	25
2012	10
Total	526

Source: Lima, Silva Filho, and Oliveira (2013).

^a Registered with the Brazilian National Cultivar Registry (RNC) between December 1998 and December 2012.

^b This number considers the registration of cultivars that were created before the promulgation of the Cultivar Protection Law (LPC) and were registered on the RNC as soon as the legal protection began.

4.3.3. Measuring Capabilities

Embrapa's capabilities have been measured and analyzed based on supporting stylized evidence, both with data collected from the company and discussed throughout this chapter, and on secondary public information. These capabilities are illustrated in Table 4.2.

Embrapa's most notable strengths are its scientific expertise and its credibility. This is not surprising, given that, as outlined earlier, some 85 percent of its researchers have advanced degrees. These figures are particularly impressive considering that the company has almost 2,500 researchers. Also, as previously mentioned, Embrapa's low employee turnover and large number of innovations reinforce its technical capabilities, particularly its scientific expertise. It is thus hardly surprising that the company enjoys a high level of credibility in Brazil. Brazilian agricultural missions to Africa, for example,

Table 4.2 Capabilities of Embrapa

Type of Capability	Desirable Outcomes	Assessment of Capability
Technical	Scientific expertise	Number of PhDs, amount of innovation (a consequence of nonobserved capability), low turnover (learning-by-doing process)
	Bureaucratic efficiency	Bureaucratic structure provides incentives for technical qualification: (1) employees can temporarily leave their positions in order to pursue formal education; and (2) low turnover creates incentives for investments in specialized human capital (related to basic agricultural research)
Organizational	Public-public coordination	National Council for Scientific and Technological Development portal e-notifications/tenders; courses for the Ministry of Fishing and Aquaculture; partnerships with public universities; regional units coordinate with local public authorities; coordination with the Ministry of Agriculture, Livestock and Food Supply; projects with the Ministry of Agrarian Development.
	Public-private coordination	Evidence of difficulties faced by private entities when attempting to make agreements with Embrapa. This is Embrapa's weakness, as inflexibility hinders engagement with the private sector.
	Experimentation and learning	Stability allows for the accumulation of knowledge, but inflexibility shapes the incentive system (career path of researchers)
Political	Credibility	Evidence: Whenever Brazil takes researchers to Africa, it takes Embrapa, despite the difficulties in contracting with the organization.
	Creation of support groups	Embrapa regional: Creation of related associations that provide support. Despite the difficulty in contracting with Embrapa, private firms do support the organization.
	Protection against capture (public and private)	Inflexible structure. Embrapa relies on internal labor markets, which makes it more insulated from political pressure than other branches of the Ministry of Agriculture, Livestock and Food Supply. For instance, Embrapa's CEO is frequently a researcher who moved up the ranks of the company.

Source: Based on data collected in interviews and from publicly available sources.

usually include Embrapa representatives and researchers. If Embrapa were not so credible, other teams would be selected.

Embrapa is also strong in bureaucratic efficiency, and two reasons can be cited for this. First, the company encourages employees to improve their technical qualifications, particularly by allowing them to take leaves of absence for additional training. Second, the company's low turnover generates incentives for investments in specific human resources related to basic agricultural

research. These incentives benefit both the employee and the company itself. Because staff members know that their position will be guaranteed after having acquired additional qualifications, they will not be afraid to look for these opportunities or to overspecialize in a given field. On the other hand, because the company knows the employee will remain for a long time (and therefore allow Embrapa to reap the rewards of its investment in that person), it can afford to retain highly specialized personnel and provide incentives for further qualifications. Embrapa's overall technical capabilities are consequently quite strong.

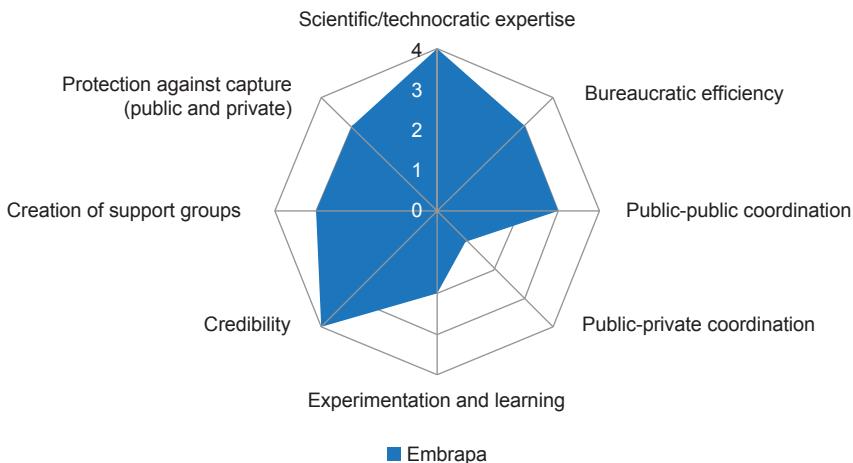
While Embrapa's political capability does not match its credibility, neither the company's autonomy in relation to public and private entities nor its ability to create support groups should be overlooked. Embrapa benefits in this regard from its reputation as a highly independent entity with little interaction with other parties beyond what is needed to undertake its programs and research. The creation of related associations by Embrapa's regional units, for example, demonstrates the company's ability to create support groups. Moreover, the company is based on internal labor markets, i.e. the higher positions in Embrapa's bureaucracy tend to be occupied by its own researchers, which underscores the company's autonomy.

Embrapa's most conspicuous weakness is its difficulty in relating to the private sector. Despite an increase in partnerships with private companies, Embrapa struggles with the bureaucratic procedures that it has to follow as a state-owned enterprise subject to Law No. 8.666. While this regulatory rigidity provides the stability that enables Embrapa to accumulate knowledge in the long term, its inflexibility and difficulties in adapting agreements and relations to the peculiarities of each case constrain its ability to contract with private companies. In fact, bureaucratic constraints must be weighed against all of Embrapa's capabilities, as they prevent rapid adjustment and create difficulties in developing public policy, undertaking partnerships, and publishing research findings, among other considerations.

Embrapa has experienced far less difficulty in establishing partnerships with other public entities. It has undertaken a large number of agreements with public organizations ranging from universities to governmental ministries and agencies.

Embrapa displays somewhat more limited capabilities in experimentation and learning. The inflexible nature of the career path in the organization favors the accumulation of knowledge, even though this might not happen as the organization desires. Researchers themselves are nonetheless rewarded for experimentation and learning as they desire, in terms of both quantity and quality.

In short, Embrapa's weaknesses in contracting with private firms and in experimentation and learning cause its organizational capabilities to be rated

Figure 4.5 Measurement of Embrapa's Capabilities

Source: Prepared by the authors.

Note: Capabilities were rated on a scale from 0 (very weak) to 4 (very strong).

lower than the other two types of capabilities. This analysis of the organization's capabilities is depicted in Figure 4.5.

It is interesting to point out that Figure 4.5 has not been uniformly filled in, which would reflect similar levels for all capabilities. Instead, the shading and lack thereof reflect differences in strength across capabilities. For instance, while the top left side of the figure has been filled in to reflect either high or intermediate degrees for technical and political capabilities, the lower right half of the figure is almost blank, reflecting weaknesses in organizational capabilities. Moreover, a figure of this sort makes it easier to visualize that there have been variations in levels of individual capabilities even within the same general group (i.e., technical, political, or organizational capabilities).

4.3.4. Final Analysis and Comments

In this case involving Embrapa, it was necessary not only to develop capabilities that were not available inside the organization, but also to find those capabilities in the private sphere (in this instance, Monsanto). This experience provides insights into the role of private companies in the effectiveness of public development policies.

As argued earlier, the main reasons leading to those partnerships seem to be, first, resource constraints (i.e., focusing public investments in fields different from those covered by private firms) and complementary capabilities (i.e., finding synergies that lead to the desired innovation).

Second, the three groups of capabilities—technical, organizational, and political—are not totally independent of each other. Rather, they have interactive effects, so that the development of one capability depends on the others. Even beyond this interdependence, the analysis has identified, surprisingly, a phenomenon resembling a tradeoff between technical and organizational capabilities at Embrapa. While both are related and needed for effective innovation, it seems that the technical capabilities are enhanced by the inflexibility of the company relative to its organizational processes. Were that inflexibility relaxed, technical skills would be sacrificed.

On the other hand, according to representatives of other enterprises interviewed for this analysis, because Embrapa is bureaucratic and subject to control mechanisms, it is sometimes hard or even impossible to contract with. As a result, some desirable partnerships never occur, despite complementary capabilities. This means that the tradeoff discussed in the previous paragraph both fosters and prevents hybrid modes of organizations as a means of obtaining the necessary capabilities for effective and efficient innovation. The extent to which this becomes possible depends on having the right balance among conflicting capabilities.

In practical terms, the findings have indirectly revealed the role played by private companies in technological policy. First, because Embrapa seeks to invest in fields different than those emphasized by private firms, it is able as a public company to focus its budget on other projects, either because they are unprofitable to private firms or because private firms are not capable of undertaking those projects themselves.

But most importantly, because of their different strategic orientations, private firms like Monsanto have developed distinct strategic capabilities relative to public companies such as Embrapa. In this respect, one can especially highlight the organizational capabilities required in order to rapidly respond to and survive competitive pressure. These capabilities seem to complement those in public firms, thus illustrating the important role of these companies in the delivery of public development policies.

4.4. Finep

Finep, the Brazilian Innovation Agency,⁴ is a state-owned company under the direction of the Ministry of Science, Technology, and Innovation (MCTI). It was founded in 1967 with the aim of institutionalizing the Fund for Financing

⁴ In 2014, Finep's name was changed from *Financier of Studies and Projects* to *Brazilian Innovation Agency*. In practice, its responsibilities remained the same.

Studies of Projects and Programs, created in 1965 as a substitute for the Fund for Technical-Scientific Development (Funtec), which had been created a year earlier and managed by the Brazilian Development Bank (BNDES).

During the 1970s, Finep promoted intense mobilization in the scientific community and the creation of new research groups, the expansion of science and technology infrastructure, the creation of thematic programs, and the consolidation of graduate studies in the country. The 1980s, however, saw a decrease in its resources as a result of successive cuts in government expenditure, limiting Finep's ability to maintain its investments. The 1990s were marked by an even harsher crisis caused by severe fiscal restraints.

In 1999, sectoral funds were created as a new strategy to ensure financial resources and to guide Brazil's Innovation Policy. Finep was made responsible for managing the funds and for acting as the Executive Secretariat of the National Fund for Scientific and Technological Development (FNDCT).

The strategy that guided the creation of sectoral funds consisted of changing from a focus on the production of knowledge within universities, research institutes, and state-owned bank networks to the granting of loans to companies through partnerships with Institutes of Science and Technology (STIs) or via credit subsidies. The main players were the MCTI, Finep, and the National Council for Scientific and Technological Development (CNPq), which were responsible for contracting projects in accordance with the Managerial Committees' guidelines for each fund.

However, results fell far short of expectations, particularly with regard to the gap between the estimated and executed disbursements. As pointed out by Melo (2009), average yearly disbursements were larger in the period from 1967 to 1997 than from 1998 to 2006 despite the increase in resources made available by sectoral funds.

The reasons for underperformance in the direct funding for relevant innovation in firms were twofold. First, nonrefundable grants could not be allocated directly to firms due to state control mechanisms. Funds could be allocated to universities and research institutes in projects undertaken in cooperation with private companies, but incentives to trigger this type of partnership were not in place. As a consequence, two-thirds of the funds ended up in research institutions, with little or no impact on innovation in firms. Second, Finep's staff did not have the required expertise to screen the best projects and to effectively monitor funding contracts in order to maximize firms' innovation efforts. The range of technological knowledge tends to be quite specific to industrial sectors, and relevant innovations tend to draw on firms' idiosyncratic and tacit knowledge. Finep's personnel were therefore not positioned to acquire the technical capability needed to evaluate and monitor projects.

4.4.1. *Historical Context and Description of the Episode*

As a response to the failure of policies implemented in the 1990s and early 2000s, particularly regarding the use of sectoral funds, Finep, together with the MCTI, started the process of reforming the Brazilian Innovation System with the creation of the Brazilian Agency for Industrial Research and Innovation (*Empresa Brasileira de Pesquisa e Inovação Industrial – Embrapii*).⁵ The main pillars of the Embrapii system are meeting current demands, fostering technological innovation, and promoting the continuous accumulation of technological capabilities. Set up as a nonprofit civil association and designated as a Social Organization,⁶ Embrapii seeks to explore the synergies between technological research institutions and private companies in Brazil. It focuses on meeting the needs of business by cooperating with both public and private institutions through risk-sharing in the pre-competitive stage of innovation. Furthermore, the company has more flexible funding and its own project hiring rules.

Embrapii works with a tripartite model that provides stronger incentives for cooperation between research institutes and firms and at the same time makes innovation funding faster and more flexible. It mobilizes one-third of the resources needed for a project, with the rest divided between the convened research institute (STI) and the firm that is interested in innovation.⁷ In addition, units accredited by Embrapii and partner Innovation Centers⁸ are in charge of the management of each project and its financial execution, giving them more responsibility for the results specified in the agreed-upon Plans of Action. This is certainly the main difference vis-à-vis Finep, which has no monitoring system for budget execution.

Two cases have inspired Embrapii's operating model. The first is Germany's Fraunhofer-Gesellschaft, which is in charge of 60 research institutes for industry-oriented technological innovation, developing new designs for existing products and updating production methods. To engage Fraunhofer for a project, one-third of the resources must come from the interested company with the rest divided between Fraunhofer and the German government, which is exactly the model adopted by Embrapii.

⁵ Embrapii's name was inspired by Embrapa as an acknowledgement of Embrapa's achievements fostering agricultural productivity.

⁶ For the text of the law establishing Social Organizations, see http://www.planalto.gov.br/ccivil_03/leis/l9637.htm.

⁷ More precisely, responsibilities are shared as follows: Embrapii contributes at most one-third and companies at least one-third. The rest is provided by research institutions.

⁸ The creation of 40 Innovation Centers is part of the Federal Business Innovation Program in partnership with the MCTI and the Ministry of Education.

The second operating model that has inspired Embrapii is Embrapa, the case study presented in the previous section. The reference to Embrapa, though, is limited to the aim of building a PDA that transforms innovation in a particular economic sector. Embrapa's operational model and governance structure is quite distinct from that chosen for Embrapii, which more closely follows the Fraunhofer-Gesellschaft model.

At a September 7, 2011 hearing of the Chamber of Deputies, the Secretary for Technological Development of the MCTI, Ronaldo Mota, stated that Embrapii would "aim to speed up and facilitate the innovation process, which is interrupted between the production and the negotiating phase, thus starting to operate in such a range as Embrapa does."

The pilot project began that same year when the cooperation agreement between Finep, the MCTI, and the National Industry Confederation (CNI) was signed. It effectively started in 2012 with the establishment of cooperation terms between CNI and three research institutes: the Institute for Technological Research (IPT) in São Paulo; the Integrated Center for Manufacturing and Technology (Cimatec) of the National Service for Industrial Apprenticeship (Senai); and the National Institute of Technology (INT/MCTI) in Rio de Janeiro. The first term for implementation of this initiative was 18 months, but it was subsequently extended six months, during which time these institutions could seek out projects for the pilot experiment, with an equal period for the execution and conclusion of projects. This first stage, which preceded the creation and the official inauguration of Embrapii itself, involved monthly meetings for monitoring and documenting the experience under the coordination of CNI.

Looking briefly at the role of each institution can help to make their respective capabilities clearer. The IPT is linked to the Secretariat for Economic Development, Science, Technology and Innovation of the State of São Paulo in the Brazilian Southeast, an important and dynamic development region of the country. The IPT is one of the country's most important research institutes, providing technological solutions and meeting demands for services from both the private and public sectors. The institute is comprised of 11 technological centers and has modern laboratory facilities and a highly qualified research and technical staff. It acts in four main areas: innovation, R&D, technological services, metrological support and development, and information and education in technology. Moreover, the areas of nanotechnology, new materials, light steel framing, and bioenergy are being expanded. The pilot project in the IPT specifically involved the competences of bio-nanomanufacturing/materials.

Cimatec is an Integrated Campus of Manufacture and Technology located in the city of Salvador, Bahia in the Brazilian Northeast. Its main goal

is to meet industry demands via labor training, technical and technological services, and applied research. It stands out as an important center for skilled labor training in automated industrial processes and applied research, particularly in computer-integrated manufacture. The pilot project in this institution specifically involved the competencies of manufacturing automation.

Finally, the National Institute of Technology, located in Rio de Janeiro, also in the Brazilian Southeast, was founded in 1921 to promote research, development and innovation activities, industrial technology, and technological services. Currently, the technical competence of INT involves catalysis and chemical processes, corrosion and degradation, industrial design, energy, evaluation engineering, production management, technological information and prospection, materials processing and characterization, and analytical chemistry. Its infrastructure includes several laboratories that are national leaders in their respective areas, following rigid standards of metrology, standardization, and industrial quality.

The areas of competency of each STI in the pilot stage of Embrapii were not as rigidly classified into sectors as they were under the sectoral funds. This approach protects the interests of each STI and subsequently that of the companies with which agreements are signed. Under the pilot, the IPT adopted the area of bio-nanomanufacturing/materials, the INT adopted energy and health, and Cimatec adopted manufacturing automation. In February 2014 there were 11 projects approved with signed contracts, and another 88 in development. For the IPT, the total value of approved projects with signed contracts was more than R\$42.7 million, for INT it was R\$25.6 million, and for Cimatec it was R\$59.2 million.

In 2014, the first public call for the accreditation of Embrapii units was launched with the expectation of selecting at most 10 scientific and technological research institutions, either public or private nonprofits. The first step was to verify the eligibility of each institution according to the terms established in the public notice. In a second step, each STI submitted an action plan. The technical staff responsible for selecting and monitoring projects was made up of renowned external specialists in the competence areas for which the STIs applied.

4.4.2. Episode Outcomes

To identify the effect of the episode on capabilities, a comparison can be made of the respective capabilities of Finep and Embrapii before and after the creation of Embrapii, and of how those capabilities might have affected the success of the policy implemented based on results from the pilot project.

The MCTI delegated to Finep the creation of Embrapii and encouraged it to undertake Embrapii's pilot project in partnership with the CNI. The objective of Embrapii is to foster collaborative projects between firms and STIs to generate innovative products and processes, and during the execution of the pilot project with the three Brazilian STIs, the new institutional design worked well, particularly in triggering partnerships between research institutes and companies. The most important results from the creation of Embrapii were the following:

- The execution of the new action plan, negotiated with the CNI and the federal government, created a need for expanded capabilities for the STIs. Research institutes typically possess technical capabilities, but they have lacked capabilities in the past to seek out opportunities for innovation in partnership with firms, and to negotiate and carry out complex contracts related to intellectual property. During the pilot experience, the STIs had to create these capabilities by allocating and training personnel for these activities.
- Partnerships between STIs and companies allowed both parties to build new capabilities. STIs, for example, benefited from widening their understanding of the market involved in each project, an important advance given the disconnection between theory and practice in the Brazilian higher education system. This technical capability in the form of new expertise and stronger links among stakeholders facilitates the development of technical staff better capable of effectively applying their knowledge to solve relevant and real problems.
- The standardization of Embrapii's operating model provided operational benefits to STIs such as process controls, contracts, and execution of projects that did not exist previously. Therefore, among the capabilities that were encouraged, organizational capabilities made the largest gains.
- Embrapii imposed a strict deadline for the execution of each project, which created the need for more effective administrative control in the STIs in order to avoid suspension of funding. Interviewees claim that the experience improved process standardization as well as the allocation of human, administrative, and financial resources within STIs. Consequently, the new institutional design resulted in the acquisition of the capabilities of public-private collaboration and experimentation and learning.

The IPT's experience illustrates those changes. Of the 10 contracts signed in June 2013, amounting to R\$23.4 million, six projects involved nanotechnology, two involved biotechnology, one involved micro-manufacturing and one

involved new materials.⁹ Moreover, the institute's total revenue associated with innovation projects increased from 13 percent in 2010 to 21 percent in 2012. As IPT pilot program coordinator Flávia Motta stated: "The partnership with Embrapii made projects more dynamic. Now we can show a financial and technological solution to companies, with funding that is already approved."¹⁰

The creation of Embrapii also enabled Finep to acquire new capabilities, including (1) greater synergy and connection among various players in the National Innovation System, with the formation of Managerial Committees that include representatives from ministries, development agencies, the scientific community, and the business sector; (2) modernization of financial instruments through fund management with more stable funding sources; and (3) flexibility imposed by the division of funds among strategic sectors.

STIs, for their part, must have the following capabilities to be accredited as project executors:

- Facilities and infrastructure that permit the execution of the project's action plan in partnership with manufacturing companies
- Qualified technical staff for the proposed activities
- Highly qualified project managers with some experience with cooperative projects—the existence of metrics and managerial tools represents a differential, since STIs must meet not only business demands, but also address their own research demands
- Multidisciplinary technical staff for company and project prospection
- Capabilities in intellectual property rights negotiation, since companies and STIs are co-owners of the intellectual property resulting from the project.

The capabilities acquired in the creation of Embrapii changed the way research institutes and companies interact with the PDA and, ultimately, how they innovate. Before the episode, STIs (or much more rarely, companies) independently submitted project proposals, usually involving funding requests, to separate divisions of Finep. Since the creation of Embrapii, STIs and companies

⁹ The projects include the following: Natura works in the cosmetics, fragrance, and toiletry market; InterCement is a holding company for the cement business of the Camargo Corrêa group; Iharbras Chemical Industries has a line of agricultural products and also one for pest control (e.g., fungicides and herbicides); Elekeiroz develops chemical compounds for industrial use; TheraSkin is a pharmaceutical firm; and the Institute of Technology and Studies of Cosmetics, Toiletry and Fragrance is the technological axis of the Brazilian association for that sector, and it involves Natura, Grupo Boticário and Yamá in a cooperative project, with those firms also working in the beauty market. Angelus is the only small business currently in the pilot stage of the Embrapii project with the IPT, developing solutions for dentistry products.

¹⁰ See <http://www.usinagem-brasil.com.br/8583-EMBRAPII-investira-r-260-mi-em-projetos-de-inovacao/> (accessed on May 22, 2014).

have shared all the stages of the innovation process, generating new organizational skills that are more conducive to triggering innovation within firms.

The creation of Embrapii also allowed for a substantial change in the management model. While Finep selects projects via public calls and monitors the stages of research via regular reports,¹¹ under Embrapii's model STIs are active in all stages of the process, from application to final execution. Therefore, they are in charge of negotiating with business sectors on every aspect of the project to be undertaken, adapting its design when necessary and selecting which products and/or services will be developed.

Moreover, Finep is subject to control mechanisms that stifle the execution of a project, making it difficult to implement adjustments that would benefit ongoing R&D. Each modification must be approved by the financing entity and its technicians, which is time-consuming. In the case of Embrapii, the relationship is more flexible, as it is established by each STI-company pair, which allows for adapting the project when necessary. This feature is important for the execution of projects, since innovation activity is essentially marked by uncertainty and extreme dependence on previous stages.

The combination of a fixed budget and autonomy to pursue targets established by a management contract with the government provides the incentives for Embrapii to efficiently employ its resources. In addition, Embrapii's executive board includes members with private sector careers marked by efficient management and accomplishment of specific goals, making this new entity particular pragmatic in character.

4.4.3. Measuring Capabilities

Following the classification of capabilities presented by Cornick (2013), Table 4.3 summarizes the main facts that support each capability assessment and subsequent measurement. As this is a peculiar case, in which the selected episode was the establishment of a new PDA, the assessment takes into account the capabilities of both Finep and Embrapii.

The Finep and Embrapii case stands out for its political and organizational capabilities. The following features support this assessment: (1) public-private coordination is the very essence of Embrapii's model; (2) as a Social Organization, Embrapii is flexible, which enables it to manage its contracts more effectively; (3) support groups were created to improve monitoring, such as the follow-up committee composed of specialists, industry representatives,

¹¹ The technical and financial monitoring of the supported projects is carried out by Finep or a designated entity via monitoring visits, technical meetings, or other assessment mechanisms, at the discretion of Finep.

Table 4.3 Capabilities of Finep/Embrapii

Type of Capability	Desirable Outcomes	Assessment of Capability
Technical	Scientific expertise	Neither Finep nor Embrapii possesses extensive scientific expertise. A productive development agency (PDA) has to interact with industrial sectors possessing distinct types of technological knowledge, which makes it difficult to accumulate expertise and benefit from sufficient scale in each technological paradigm.
	Bureaucratic efficiency	Finep's bureaucratic structure does not provide incentives for technical qualification (as compared to Embrapa). To deal with this (intrinsic) limitation, Embrapii relies on technical specialists from other organizations in ad hoc committees.
Organizational	Public-public coordination	By means of public calls, Finep is able to foster innovation in universities and research institutes. For the creation of Embrapii, Finep also had to interact with the Ministry of Science, Technology and Innovation and the Ministry of Education. However, this type of interaction is rather sporadic.
	Public-private coordination	The most outstanding capacity of Finep/Embrapii stems from the tripartite model adopted by the latter. The pilot project showed that the PDA is now able to trigger innovation within firms in collaboration with research institutes.
	Experimentation and learning	The creation of Embrapii is an illustration of successful experimentation and learning. However, this achievement was the result of Finep's leadership at the time and not a feature embedded in the organization.
Political	Credibility	Although it has been successful to date, Embrapii has not yet had time to build notable credibility among its stakeholders. It is not yet a well-known organization.
	Creation of support groups	Embrapii's governance design brings together interest groups that have political power (e.g., trade associations, industry confederations), which legitimizes the PDA and the continuity of its activities.
	Protection against capture (public and private)	The political support from trade associations protects Embrapii against capture by public agents or discontinuity due to changes in the incumbent political group. But for this reason Embrapii is relatively weaker regarding private capture. To mitigate private capture all decisions are fully transparent.

Source: Based on data collected through interviews and on publicly available information.

and representatives from Finep or the CNPq; and (4) Embrapii's board is made up of industry representatives who possess not only expertise, but also strong political support from trade associations, which protects Embrapii against capture by public agents or discontinuity due to changes in the incumbent political group. On the other hand, while Embrapii is relatively weaker against

private capture, Finep is more vulnerable to public capture, since public calls are at the discretion of the MCTI. Moreover, Embrapii does not possess technological capabilities, which emanate from firms and research institutes. The lack of internal technical expertise is mitigated by the use of ad hoc specialists invited to participate in follow-up committees.

Regarding political capability, it is noteworthy that the CNI was made a stakeholder through its Entrepreneurial Mobilization for Innovation Board. This legitimizes Embrapii and brings the political support of industry and trade associations to the sustainability of Embrapii and its policies, which strengthens its capability to create support groups. Embrapii's credibility is further enhanced by its public calls, high-level communication skills, and organizational design. However, it has not yet had time to develop its reputation among stakeholders.¹²

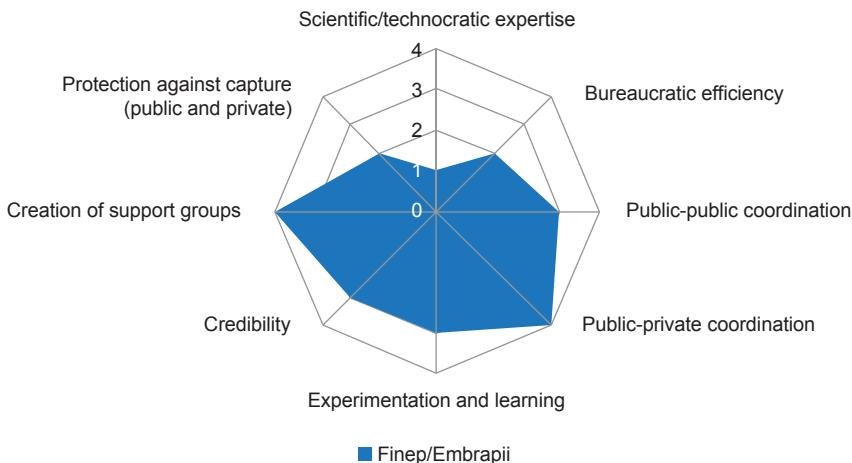
Finally, protection against public and private capture can be effective through a new governance structure. As for public capture, politicians do not have the discretion to directly influence Embrapii's actions because of its governance and the role of its executive board. As for private capture, it is still unclear if interest groups will be able to distort Embrapii's actions. To mitigate private capture all decisions are fully transparent and monitored by the executive board, which is comprised of representatives from government, research agencies, and industry.

Lastly, with regard to organizational capability, Embrapii's public-private coordination is highly regarded, and this capability is at the heart of its tripartite model. Since innovation projects—especially those that involve intellectual property rights negotiation—require mutual trust between the parties, *ex ante* contact between companies and STIs is valuable, enabling companies to choose the partner with which they would execute each project. Embrapii has been able to trigger such interactions with a model that preserves flexibility, but induces cooperation. As for public-public cooperation, Embrapii's creation improved the allocation of sectoral funds, a major problem during the 2000s. With respect to experimentation and learning, the creation of Embrapii and its first stage as a pilot project directed by Finep is itself evidence that Finep has learned from previous experiences in the 1990s and early 2000s. However, this achievement was the result of Finep's leadership at the time and not a feature embedded in the organization. The assessment of the capabilities of Finep/Embrapii is illustrated in Figure 4.6.

4.4.4. *Final Analysis and Comments*

Public policies on technological innovation in Brazil have always been based on the belief that funding innovation depended on overcoming financial

¹² Embrapii has been fully operational since October 2014.

Figure 4.6 Measurement of the Capabilities of Finep/Embrapii

Source: Prepared by the authors.

Note: Capabilities were rated on a scale from 0 (very weak) to 4 (very strong).

constraints. Until the early 1990s, however, science and innovation policy had been for the most part oriented to universities or research institutes (STIs) and did not involve the business sector. The creation of Finep-managed sectoral funds in the late 1990s brought new financing instruments that directed resources to companies as well as other entities. Still, for the reasons presented earlier in this section, while funding for innovation was available, it was still difficult to attract the most qualified projects.

This situation led to the creation of Embrapii, a joint effort of business representatives (CNI), the MCTI, and other public organizations, particularly Finep. The new model selects STIs that would be free to seek out companies based on business demands to execute innovation projects.

The greater organizational flexibility promoted by the new management model led to the creation of new competencies within the STIs involved in the pilot. Some of these new capabilities developed in response to Embrapii requirements, whereas others arose from interaction with the companies that initiated the projects. The new management model was validated by the rapid expansion of those new competencies, automatically strengthening the position of the STIs in the pilot project as Embrapii units. In this first stage, Embrapii approved 68 projects in the areas of manufacturing, automation, bio-nanotechnology, health, and energy amounting to R\$188 million, of which R\$62 million came from Embrapii.

The implications for public policy are clear: transparent governance practices can successfully be used to assemble complementary capabilities.

Embrapii possesses notable advantages in this regard, combining contributions from the private sector (in its executive board) and from the state (funding, risk-sharing, and technological expertise in research institutes). The incentive to engage in cooperative projects requiring a clear division of labor constitutes a second advantage of Embrapii's model. In promoting resource division according to the competencies of each STI and in delegating to them the task of seeking out companies interested in partnerships, the new arrangement allows for more effective, reliable, and long-lasting cooperation based on the business rhythm of execution rather than the public calls calendar.

4.5. ABC Foundation

The ABC Foundation for Technical Assistance and Dissemination in Agriculture is a nonprofit organization supported by contributions from producers and research partnerships with private companies, as well as from soil testing services, food science firms, and geographic information system firms. The foundation's aim is to provide technological support to farmers affiliated with the Agro-Pecuária Capal (Arapoti), Batavo, and Castrolanda cooperatives, which together form the ABC Group.

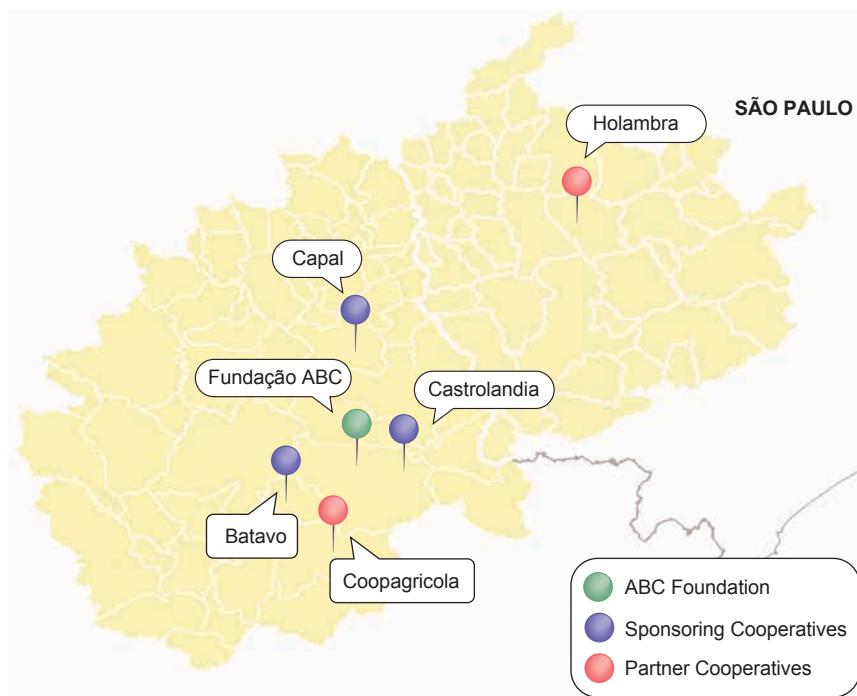
The foundation was created on October 23, 1984 by the Central Dairy Cooperative of Paraná (CCLPL), itself established in 1954 in the Campos Gerais region of Paraná state in southern Brazil. Located in an area characterized by poor soil and low fertility, the cooperative was created to provide technical assistance to farmers.

Figure 4.7 shows the location of the ABC Foundation, its sponsoring cooperatives, and its partners in Paraná State. The foundation presently operates in an area of 395,000 hectares. With farms in 67 municipalities, these cooperatives represent 2,671 farmers in Capal (1,242 farmers), Batavo (675 farmers), and Castrolanda (754 farmers).

The ABC Foundation is a collective organization dedicated to the provision of public goods that benefit farmers. It promotes regional development through links with public and private organizations conducting R&D in agricultural inputs, though without the enforcement power of the state. By assuming the role of organizing the complementary capabilities of these entities, the ABC Foundation fills a niche where previously there was a lack of public policy for generating and disseminating new knowledge among farmers.

At its inception, the ABC Foundation worked alone in the development and dissemination of new technologies for farmers. At that time, Brazilian agricultural credit policy was sufficient for association members to fund their research. In the late 1980s, however, the fiscal crisis that affected the

Figure 4.7 Locations of Sponsoring and Partner Cooperatives and the ABC Foundation



Source: ABC Foundation.

Brazilian economy caused the stagnation of subsidized credit and brought about the need to access external capabilities to develop new technologies, given the state of development that the region had reached. New strategies were thus required.

This case deals with how the foundation managed to continue its strategy of regional development through the establishment of partnerships with private firms (multinational agrochemical and seed firms) and public entities, including Embrapa and universities.

The case makes clear that among the three bundled complementary types of capacity necessary to implement public policies (Cornick 2013)—technical, organizational, and political—the ABC Foundation most efficiently developed its organizational capacity in order to seek the collaboration of public and private research organizations. The foundation is considered a benchmark in terms of the technology applied and developed in its labs and experimental fields with its partners. As a result of this strategy, the average productivity of the region, once considered unsuitable for grain cultivation, already exceeds

the average of the Corn Belt region in the United States, the largest reference area in grain production.

4.5.1. *Historical Context and Description of the Episode*

Since its establishment in 1958, the ABC Foundation has operated a pilot farm to test and adapt new technologies. As the population at the time was made up mostly of Dutch immigrants, their knowledge came from the Netherlands, and Dutch agronomists were invited to work in the region from time to time in order to transfer knowledge and techniques.

The foundation was one of the pioneers in the development of the no-tillage system in Brazil. Based on work in the United States, and with the help of Dutch technicians, the practice became widespread in the Campos Gerais region. This system is a conservation technique in which the soil is always kept covered with growing plants and plant residues. As this coverage is intended to protect soil from the impact of rainfall, water runoff, and wind erosion, the technique allows farmers to undertake their productive activities sustainably. Despite the success arising from the ease of adoption of this technology, until the 1970s agriculture in Brazil remained for the most part based on the traditional system of land under tillage with plowing, harrowing, burning straw, and other soil-exposing methods.

The work undertaken by the foundation became essential to some producers, who established the so-called *Earthworm Club*. No-tillage farming without fire, plowing, or harrowing became common for major crops, increasing productivity. Furthermore, the problem of erosion, crucial in tropical zones, was mitigated.

The critical moment for the ABC Foundation came at the beginning of 1995 with trade liberalization, which affected Brazilian wheat production and depressed international prices for corn and soybeans. Up to that time its research had been financed by the ABC Group, i.e., its members, and the foundation had also benefited from a national policy of subsidized credit under which cooperatives enjoyed privileged access. Another problem was that it had become increasingly difficult to make further productivity gains based solely on the no-tillage system. New advances required inputs that demanded capabilities and financial resources beyond those the foundation already possessed.

In 1995, the foundation board, headed by President Richard Borg and General Manager Marcos Ludovico Valentini, both agronomists, decided to search for partners such as multinational companies and public research centers developing cutting-edge technology programs. It was clear that the foundation did not possess the in-house capabilities required to develop new

and sophisticated solutions to increase farm productivity. It should be noted that partnerships with multinational companies represented an innovation in Brazilian agriculture at this time.

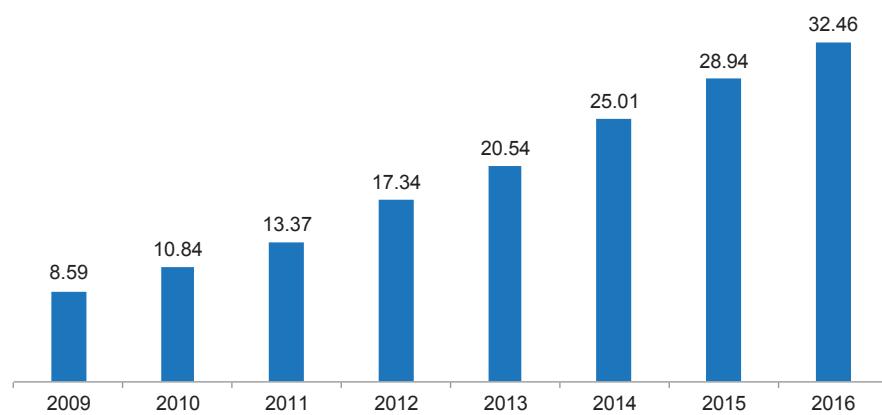
For the new model to be implemented, profound changes were made to the foundation. The changes were needed to incorporate additional organizational capabilities, mainly those relating to coordination between cooperatives and private and public partners. They were adopted to allow for the fast decision-making and flexibility needed to engage in partnerships. The main changes were as follows:

1. *New organizational chart.* A new organizational structure for the foundation gave more autonomy to area coordinators in applied research. Besides promoting the rationalization and centralization of decision-making, the measure served to create greater flexibility and more efficient administration.
2. *Centralization of field experiments.* Until 1995, each cooperative had operated its own experimental demonstration farm. To facilitate the building of partnerships with research centers, the foundation took control of the experimental farms.
3. *Greater involvement of agronomists in policy research.* The foundation adopted a model in which each producer group was assisted by an agronomist who reported on events and issues to the foundation. These reports were then used to target solutions and future research.
4. *Restructuring of the Department of Technical Assistance (DTA) and acquisition of the Soil and Plant Laboratory.* Two important measures adopted in this period were the redesign of the DTA, created in the 1970s, and the acquisition of the Soil and Plant Laboratory from the CCLPL.
5. *Creation of Technology Shows.* The foundation created technical events in order to demonstrate technological outcomes that would serve as a showcase for partnerships.

With this model, the foundation became less dependent on member resources. After four years of the model, the foundation budget, which had initially been 100 percent funded by producers, was equally funded by partnership contracts, by own-revenue from labs and agricultural production, and by annual fees paid by members of associated cooperatives. As shown in Figure 4.8, the ABC Foundation budget increased almost fourfold from 2009 to 2016, reaching R\$32 million.¹³ Table 4.4 details the revenue by different sources.

¹³ Exchange rate of US\$1 = R\$2.16.

Figure 4.8 Budget Evolution of the ABC Foundation, 2009–2016
(in millions of R\$)



Source: ABC Foundation.

Organization of Partnerships

Partnerships are initiated in two ways: first, by the ABC Foundation based on a need to solve problems with its regional producers; and second, by private or public organizations that need to develop new products and technologies.

The ABC Foundation's first partnership was initiated under the management of Richard Borg in the 1990s. The foundation prepared a business model and sold it to multinationals operating in the inputs sector. As holders of new technologies, those multinationals were interested in developing new products and entering new markets. The first companies to cooperate with the ABC Foundation were Bayer and BASF.

Table 4.4 Share of Revenue from Different Sources, 2012

Source	Percent
Sponsors	33.66
Partner companies	32.72
Provision of services	20.39
Production from experimental farms	6.75
Producer contributors	5.40
Other revenue	1.08

Source: ABC Foundation.

The model works as follows: Partner companies present a project, and foundation researchers evaluate the proposal, performing tests on the research farm and further analyzing the project's effect on producers. If the project is accepted, the partnership is initiated. Throughout this process there is interaction among foundation researchers, researchers from private/public companies, and producers in order to transfer knowledge and new technologies. This process, according to its founders and former managers, was critical to the survival of the foundation as an institution supporting agricultural research.

Among the public partners, Embrapa, the Agronomic Institute of Paraná (IAPAR), and universities stand out for their contributions. In the private sector, pesticide and/or seed firms such as Bayer, BASF, Dow, Syngenta, and FMC are of great importance.

Regarding incentives for adopting partnerships, the ABC Foundation searches the market for new solutions and tools for the region and its associated producers that are inexpensive and efficient and reduce environmental impact. This means that there is a demand for firms to develop new products and techniques and reach new markets. While private firms have an incentive to develop and open markets for their new products and technologies, they are especially drawn by the possibility of accessing the ABC Foundation's experimental farms. In the case of public partnerships with Embrapa and universities, the incentives lie mainly in the infrastructure for field trials.

One example of a successful private partnership has been the development of the AgroDetecta Project with BASF since 2011. BASF works with the ABC Foundation to develop knowledge, products, and technology, and BASF is responsible for passing the results on to ABC Foundation producers.

On the other hand, according to the foundation, one area where partnerships have not produced great results is the machinery industry. Although this type of input is crucial to agriculture, the machinery industry has not shown interest in innovation in areas and crops for which the ABC Foundation developed its capabilities.

From 1995 to 2000, the main aim of the partnership with Embrapa was to bring researchers to the Campos Gerais region and exchange ideas about innovations and new technologies. An important outcome of this partnership was the diffusion of new varieties of corn adapted to the region's winter climate. By 2014, this second (winter) crop of corn had reached almost the same level of production as corn grown during the regular season.

The partnership with Embrapa is supported by complementarities that ultimately generate synergies between the two entities. Particularly notable is the exchange of knowledge, as the foundation has access to Embrapa's highly qualified body of researchers and laboratories. For its part, the foundation

offers Embrapa researchers the infrastructure to carry out research, especially on its experimental farms.

One drawback to this kind of partnership is the slow process by which results are translated into practice. Embrapa is not as flexible and fast to contract with as private organizations. Moreover, for the ABC Foundation to translate data into practical innovation, Embrapa requires that the data and laboratory information first be published in scientific journals and conferences, a lengthy process that often derails the partnership due to the need for urgent results on the part of the cooperatives' producers.

The process is faster with universities. Researchers at those institutions are required to publish constantly, thereby speeding up the process, generating more data and mutual knowledge, and often creating even more possibilities for publication, enhancing the flow of data as well as the partnership.

While there is synergy in the partnership between the ABC Foundation and Embrapa, as well as a mutual desire to further their work, red tape and publishing rules cause the partnership to be underutilized. Embrapa researchers have provided intellectual knowledge, but the foundation's infrastructure offers them insufficient support. Using the combined resources optimally is an ongoing challenge.

4.5.2. *Episode Outcomes*

As pointed out, the ABC Foundation had to undertake a profound change in its internal structures in order to access the capabilities of external public and private organizations that undertake research in agricultural inputs. These changes led to the prioritization of investment in material and human resources, essential to fostering partnerships in research.

Building Internal Capacity to Access External Capacity

- **Material Resources**

With regard to material resources, the ABC Foundation has 11 laboratories in the areas of soil and plants, food science, environmental pathology, germination and seed vigor, nematology, molecular biology, and geographical and environmental information. The laboratories all bear the Inmetro seal, which certifies their processes and allows access to inspections and audits when needed. Two laboratories—one for soil physics and the other for the industrial quality of wheat—have been awarded ISO 17025 certification, and the waste analysis laboratory has the seal of Good Laboratory Practice. These certifications certify that the foundation employs accredited and high-quality

Table 4.5 ABC Foundation Staff, 2008 to 2012

	Research	Support	Services	Total
2008	62	17	12	91
2009	75	18	15	108
2010	88	21	14	123
2011	111	31	19	161
2012	136	36	22	194
Variation 2008–2012	119%	112%	83%	113%

Source: ABC Foundation.

standards to conduct analyses of research to develop products through producers' and cooperatives' laboratories. The foundation has five experimental farms located in Arapoti, Castro, Itaberá, Tibagy, and Ponta Grossa, all in Paraná state, totaling 344.29 hectares. These sites are where the foundation undertakes research and develops products with its partners.

- Human Resources

Table 4.5 shows the staff of the ABC Foundation divided by research, support, and services areas. From 2008 to 2012, there was a 113 percent increase in the total number of employees, with research and support for producers and cooperatives the fastest-growing areas at 119 percent and 112 percent, respectively. This increase stems from the strategy to seek new techniques and offer assistance to producers. The research sector accounts for over 70 percent of foundation staff, followed by support staff at 18.6 percent and services at 11.3 percent.

The foundation's employees are a diverse group that includes two PhDs, three PhD students, 15 teachers, one master's student, 13 post-graduate students, six post-graduates, 12 with higher education, seven undergraduate students, nine technologists, and 32 technicians. The foundation encourages the training of its employees and there is an incentive for post-graduate studies, although not as strong as at Embrapa. As a nongovernmental entity, the foundation offers little job stability and thus does not create incentives for a long career inside the organization. On the other hand, the search for fast solutions and development technologies means that employees face fewer rules and less bureaucracy than at Embrapa.

The specialized technical staff provides expertise for the preparation of projects and partnerships with both private and public organizations, which allows for a valuable exchange of experiences and generates further

knowledge for both parties. Projects and procedures are well-known and effectively pursued by both parties, with wide-ranging discussions regarding corrections, adjustments, and new paths.

As noted earlier, while the development of all three kinds of capabilities (technical, organizational, and political) is needed to promote technological innovation, the foundation was most able to develop its organizational capacity, particularly with regard to effective coordination to access scientific and technical expertise to respond to demands for innovation.

4.5.3. Analysis of the Results of the Policies

What would have happened if the ABC Foundation had not intervened in the region? This question is difficult to answer because in recent years Brazilian agriculture has generally shown huge gains in productivity and in the development of important technological advances.

The region encompassed by the ABC Foundation, however, presents relevant results when comparing the average productivity of major crops produced by its members in the years preceding the case with the average from recent years. Also noteworthy is the comparison of the results of the productivity of these same products with the national average and the average for the states of São Paulo and Paraná, which have similar production structures. For an international comparison, Table 4.6 shows that, after the episode, the productivity of ABC Foundation members approached that of the world's largest producers, the United States and its main producing regions, the states of Iowa and Illinois. Moreover, in 2013 the productivity of ABC Foundation members even surpassed that of U.S. regions.

Another factor that contributed to the development of the region was the policy to provide technical assistance to producers, with a focus on diversification of production. The proposal to provide this service was presented at the 10th International Meeting on Integration of Agriculture in March 1997. At this meeting the ABC Foundation led the way in encouraging the integration of grain production and livestock activities. Moreover, with the aid of Embrapa and its development of corn seeds adapted to winter conditions, producers could rely on other crops besides wheat for that period.

Table 4.7 shows the growth of productivity of corn production throughout Brazil and in the states of Paraná and São Paulo. It is interesting to observe the increased productivity of winter corn (second harvest) after 2000. However, one cannot attribute this achievement solely to the ABC Foundation, since there was similar growth in productivity in Brazil as a whole.

Milk provides another notable example. The municipality of Castro is the most productive in Brazil, with the production of 210 million liters of

Table 4.6 Productivity of ABC Foundation-Sponsored Producer Cooperatives: Corn, Soybeans, and Wheat (bushels per acre)

Productivity (bu/a)			
Corn	1980-1995	1995-2013	2013
ABC Foundation	89	133	171
Brazil	32	56	82
São Paulo	44	75	97
Paraná	42	88	141
United States	111	141	152
Iowa	114	155	172
Illinois	119	151	157
Productivity (bu/a)			
Soybeans	1980-1995	1995-2013	2013
ABC Foundation	34	46	58
Brazil	27	38	43
São Paulo	29	38	48
Paraná	31	41	49
United States	32	40	43
Iowa	39	47	51
Illinois	37	45	51
Productivity (bu/a)			
Wheat	1980-1995	1995-2013	2013
ABC Foundation	27	42	47
Brazil	19	29	40
São Paulo	20	30	39
Paraná	20	30	43
United States	36	41	46
Iowa	30	41	53
Illinois	43	55	63

Sources: U.S Department of Agriculture Foreign Agricultural Service; Companhia Nacional de Abastecimento (CONAB); and the ABC Foundation.

Note: bu/a: bushels per acre.

milk in 2011. While the average productivity of cows in Brazil is 2,400 liters/cow/year, producers in Castro reach an average of 10,900 liters/cow/year.¹⁴ Furthermore, the region's milk production is considered a benchmark for all of Brazil, and Normative Instruction 51, from the Ministry of Agriculture,

¹⁴ See http://www.agricultura.pr.gov.br/arquivos/File/deral/Prognosticos/leite_2012_13.pdf.

Table 4.7 Corn: Average Productivity in Brazil and in São Paulo and Paraná States, First and Second Harvest (bushels per acre)

Productivity (bu/a)	First Harvest			Second Harvest		
	1990- 1995	1996- 2000	2000- 2013	1990- 1995	1996- 2000	2000- 2013
Brazil	37	42	61	26	31	56
São Paulo	48	57	82	33	31	49
Paraná	48	59	99	29	32	57

Source: CONAB (2018).

Note: bu/a: bushels per acre.

Livestock, and Food Supply (subsequently modified by Normative Instruction 62), was created based on the quality-control practices adopted for the region by the Castrolanda Cooperative.

It is worth noting that in 2011 the region of Ponta Grossa had the second-highest gross value of rural production in Paraná. Within the region, the municipality of Castro stood out, second only to Toledo, a city that houses important agribusiness companies.¹⁵ With regard to the growth of agricultural income, the cities that are in the foundation's sphere of influence had higher growth rates than the average for Paraná state, as shown in Table 4.8.

Finally, Table 4.9 presents data from the Human Development Index (HDI). While one cannot, of course, directly attribute HDI results to the work of the ABC Foundation, the index does serve to highlight that positive results on

Table 4.8 Agricultural Income, 1997 and 2012 (Consumer Price Index adjusted, 1995 = 100)

Municipality	1997 (thousands of reais)	2012 (thousands of reais)	Growth Rate (percent)
Carambeí, Paraná	23,921.14	53,229.46	122.5
Castro, Paraná	61,790.80	207,362.68	235.6
Ponta Grossa, Paraná	47,383.17	107,768.26	127.4
Tibagi, Paraná	43,747.72	155,093.62	254.5
Arapoti, Paraná	16,914.02	47,213.78	179.1
Brazil	31,405,303.94	70,460,642.92	124.4
Paraná	41,52,511.87	8,692,398.95	109.3

Source: Instituto Brasileiro de Geografia e Estatística.

¹⁵ See http://www.agricultura.pr.gov.br/arquivos/File/deral/vbp_2011.pdf.

Table 4.9 Human Development Index

	1991	2000	2010	(2010/1991) Percent
Brazil	0.493	0.65	0.69	39.96
Paraná	0.507	0.65	0.75	47.73
Foundation Region				
Ponta Grossa	0.548	0.68	0.76	39.23
Carambeí	0.455	0.65	0.73	60.00
Castro	0.456	0.61	0.70	54.17
Tibagi	0.371	0.52	0.66	78.98
Arapoti	0.465	0.63	0.72	55.48

Source: United Nations Development Programme.

Note: The Human Development Index ranges from 0 to 1 and indicates the level of development of a given region or country.

the HDI are consistent with the importance of agricultural income in this area and the plausible effects of the ABC Foundation on agriculture productivity.

4.5.4. Measuring Capabilities

Table 4.10 summarizes the capabilities of the ABC Foundation, following the classification developed by Cornick (2013).

As has been shown, the ABC Foundation is strong on coordinating with the private sector and has concluded several agreements with private firms. Politically, the foundation enjoys strong credibility among cooperative members and in the region where it is located. There are commissions to follow up on the studies in which it is involved (support groups), and the foundation is focused on providing support to cooperatives. The fact that the ABC Foundation is made up of cooperatives and partners mostly with private firms makes it less susceptible to public (governmental) intervention. However, private intervention may occur, although the supervision of cooperative members makes it difficult for the interests of one particular agent to be favored over others.

On the other hand, given its limited scientific and technological expertise, the foundation needs the complementary capabilities that it finds in the market. In particular, partner organizations have more expertise in developing technology. The ABC Foundation's structure thus compensates for its limitations in some areas in terms of its bureaucratic efficiency, since it is flexible in its operations.

The ABC Foundation does not, however, enter into many partnerships with public entities other than its agreements with Embrapa and universities.

Table 4.10 Capabilities of the ABC Foundation

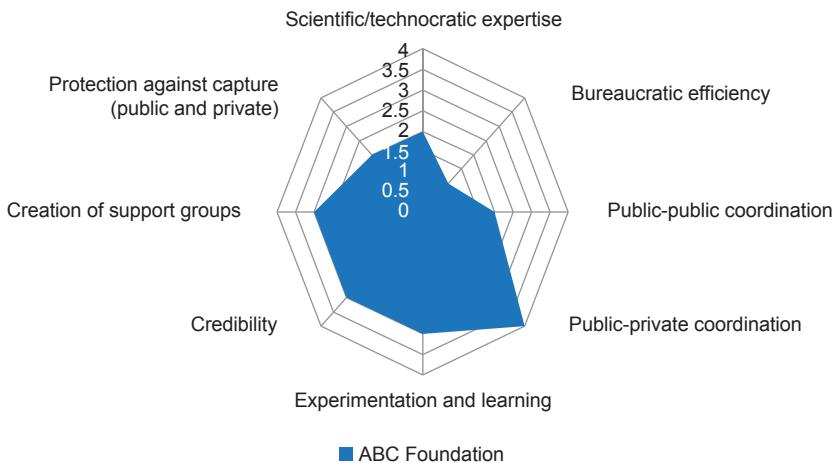
Type of Capability	Desirable Outcomes	Assessment of Capabilities
Technical	Scientific/technocratic expertise	The ABC Foundation has a limited number of in-house researchers. The search for partnerships aims to increase its capacity for innovation.
	Bureaucratic efficiency	With regard to the technical scope of bureaucratic efficiency, there is no evidence that the structure encourages a significant improvement in the technical area.
Organizational	Public-public coordination	Despite the difficulties experienced, the ABC Foundation has partnerships with universities and Embrapa.
	Public-private coordination	The ABC Foundation has many partnerships with the private sector. The foundation has no difficulty in forming partnerships and has a flexible structure for doing so.
	Experimentation and learning	The ABC Foundation proved capable of changing its organizational structure to foster partnerships.
Political	Credibility	Regionally, the ABC Foundation has very strong credibility.
	Creation of support groups	The ABC Foundation is very influential locally in the rural sector and is seen as a benchmark.
	Protection against capture (public and private)	Depends on the support of private partnerships, as the administrative structure could be captured by partners.

Source: Based on data collected in interviews and on publicly available information.

Although partnerships with the private sector are more effective and efficient, there is a risk of capture by these companies, since they clearly have an explicit interest in selling the results of their research to producers, which is not the case with public organizations.

Finally, the ABC Foundation takes advantage of the synergy developed in its partnerships to create a virtuous cycle of results and credibility. In fact, the foundation does not need to invest in creating political capability because it ensures positive overall results that lead to reputational gains. However, the dependence of technological development on the private sector, which has clear interests in developing short-term technology to sell to producers, can lead to negative effects. First, this relationship can create economic dependence, since producers become dependent on these inputs; second, this relationship can have negative effects on the environment, as intensive use of land can lead to the need for greater use of chemicals.

The measurement of the ABC Foundation's capabilities is illustrated in Figure 4.9, following the methodology presented in Section 4.1 of this chapter.

Figure 4.9 Measurement of the ABC Foundation's Capabilities

Source: Prepared by the authors.

Note: Capabilities were rated on a scale from 0 (very weak) to 4 (very strong).

4.5.5. Final Analysis and Comments

The case of the ABC Foundation illustrates the building of capabilities for productive development in a collective organization that operates under private control. The history of the ABC Foundation shows that the cultural ties of its members to Dutch immigration played an important role in enabling the creation of an organization with strong horizontal ties. In the absence of the government, the cooperation of the associates facilitated the establishment of partnerships for the adoption of development policies that generated externalities in the region.

The two main types of partnerships are:

1. *The ABC Foundation and the private sector.* The foundation's partnership with multinational agrochemical and seed companies is largely made possible by the latter's interest in marketing their innovations to farmers. The arrangement aligns the incentives of the partners, since the investing companies receive monetary compensation through the sale of their products, and the ABC Foundation increases its credibility through its association with positive results in terms of productivity of its members and the region as a whole (external action).
2. *The ABC Foundation and public companies.* In this case, the public sector orchestrates the partnership. For the ABC Foundation, public partnerships, although they function with much greater delays than

private partnerships, can increase the foundation's credibility, given the reputation of public institutions such as Embrapa and universities. By allowing public partners to use its experimental farms, the foundation fosters the development of scientific research and production, allying its image in the research area with that of Embrapa and universities. The success of Embrapa's dissemination of winter corn seed is a good example of this process.

The ABC Foundation's main capability is its organizational structure, which allows it to access complementary expertise in a hybrid arrangement. This type of governance creates routines and an organizational learning effect, fostering a space to explore the technical capabilities of its partners.

The case of the ABC Foundation offers two important lessons: (1) it is possible to build institutional capabilities for productive development policies through an organization of collective interest; and (2) it is not necessary to develop in-house all three groups of capabilities (technical, organizational, and political) needed to promote technological innovation. What is crucial is that the PDA creates capabilities (and a governance structure) that enable it to access complementary capabilities externally.

4.6. Comparative Analysis

The three case studies presented in the previous sections allow for a comparative analysis that sheds light on the propositions raised in Section 4.1. This section explores evidence provided by the three cases to discuss those propositions and address to some degree the broader question of how to build capabilities and how capabilities map to public policy.

All three cases provide evidence regarding the use of hybrid forms, such as partnerships, to assemble capabilities that are allocated to different organizations. Embrapa, with outstanding technological capability and control of agricultural varieties adapted to the tropics, established long-term contracts with private companies to disseminate innovation of new varieties, particularly those that incorporated genetic engineering, a technology in which the multinational company Monsanto had greater expertise. The ABC Foundation also used partnerships to attract financial resources and technological expertise. This case additionally provides a complementary view of Embrapa's partnerships, since the ABC Foundation also cooperated with the state research company. Likewise, Embrapii/Finep is a case that is heavily based on partnerships. Embrapii was designed to trigger tripartite collaboration among research institutes, companies, and Embrapii itself based on the diagnostic that complementary capabilities required for

innovation had been developed in different types of entities such as firms and research institutes.

The Embrapa case warrants further discussion. When Embrapa began its collaboration with Monsanto and other private groups, it had a market share of 70 percent of soybean varieties. By 2014 its market share had dropped to less than 10 percent. Several factors may have contributed to this huge drop in Embrapa's market share, including the increased role of genetically modified varieties whose technology was dominated by private companies such as Monsanto and Syngenta. Still, one can argue that Embrapa's partnerships accelerated the innovation rate by those private companies, which resulted in a lower market share for its own varieties after several years of partnership. Once this effect is acknowledged, it is fair to ask a normative question: was this a signal of a successful or failed policy?

To assess Embrapa's policies, it is necessary to re-state its mission: the technological development of Brazilian agriculture. As a consequence, market share in soybean varieties is not an appropriate proxy for Embrapa's achievements in the technological development of soybean production. On the contrary, Embrapa is not a direct competitor of private companies, since it does not aim to attract consumers as an instrument to maximize profit or market share. Rather, it aims to provide consumers (farmers) the most efficient techniques. It is irrelevant whether these efficient techniques are supplied by Embrapa or by other entities such as multinational companies. Embrapa's germoplasm of soybean varieties adapted to the tropics (in the cerrado and rain forest biomes) was crucial to the success of Brazilian agriculture, both because of the direct contribution of Embrapa's varieties and because of Embrapa's indirect contribution by means of private companies' innovations, accelerated by partnerships with Embrapa.

This current outcome was indeed a deliberate policy, consistent with Embrapa's role of performing R&D investment of public interest in segments with little or no private sector participation. Embrapa's strategic planning has concentrated innovative efforts in breakthrough sectors, such as nanotechnology for agriculture, and in areas less attractive for private companies, such as environmental sustainability and technology for small family farms.

The Embrapii/Finep case also illustrates the importance of hybrid forms of assembling complementary capabilities. The model of a PDA oriented to providing financial support to innovation projects derives from the diagnostic that essential technological capabilities are located within companies. As a consequence, the success of technological policy for the industry requires the ability to put those capabilities into action. Before the creation of Embrapii, Finep faced some institutional constraints in providing financial support directly to private companies. Moreover, it did not possess internally the

capability to select the most promising private projects so as to allocate its resources efficiently.

The creation of Embrapii, incubated within Finep, was accompanied by a tripartite model that induces partnership with research institutes that possess general scientific knowledge, and with firms that possess specific knowledge about production. The innovation project financed by Embrapii is a complex hybrid form that connects three essential parts. Embrapii itself provides funding and control; research institutes such as the IPT provide their scientific expertise, scientists, and laboratories; and firms provide production and market knowledge. The project was designed to provide the appropriate incentives for researchers and companies to identify suitable matches between potentially marketable innovations and the research institute resources to develop them, a pre-condition for receiving funding. It is also noteworthy that the project involves the CNI, which enforces the contract and provides the political capability essential to legitimize Embrapii and its technological policy.

The comparison between Finep/Embrapii and Embrapa also sheds light on the second hypothesis presented in Section 4.1. Whereas the former aims to foster innovation in industry, the latter targets agriculture. Although one could claim that there is substantial heterogeneity within each of these sectors, they are quite different with regard to the allocation of technological capabilities between PDAs and productive actors (firms or farms). In order to innovate in industrial sectors, it is necessary to rely on tacit knowledge that is built and accumulated within firms (Dosi 1988). In contrast, expertise for innovation in agriculture—in genetics, mechanization, defensives, and fertilizers—is rarely present within farms. Experimental farms are particularly important as a later stage of R&D in order to test technologies before launching them in the market, but experimental farms differ considerably from regular farms, which are not a common venue for innovation. As a consequence, it is feasible to accumulate technological knowledge in a PDA oriented to technological innovation in agriculture, as was the case of Embrapa, whose main capability is an outstanding group of highly qualified researchers.

A PDA oriented toward technological innovation in industrial sectors could not employ the same strategy. It would not be feasible to accumulate all required technological knowledge for innovation in industrial sectors within the same PDA due to the fact that industrial knowledge is by and large tacit and is accumulated by experience in production. This is what explains the fate of research institutes dedicated to industrial innovation, such as the IPT, which is comprised of a large and competent group of researchers but is not able to deliver many marketable innovations. This feature explains Finep/Embrapii's decision to act as a coordinator of contracts between firms and research institutes, as well as a provider of financial support. Different from

Embrapa, Embrapii does not look to acquire technological capabilities, but rather to acquire bureaucratic and public-private coordination capabilities. The need to create conditions for the acquisition of these capabilities helps to explain the creation of Embrapii as a new organization, formally separated from Finep. This issue leads us to the discussion of the third hypothesis raised in Section 4.1.

Some organizational choices are difficult to change and, at the same time, may have profound implications for incentives and control mechanisms within the organization. As a consequence, these choices are important determinants of the intensity and scope of capability acquisition. All three case studies provide evidence to corroborate this proposition.

Embrapa is a State company whose incentive structure is modeled as an internal labor market, similar to other State companies, such as Petrobras. It has its own stable career path, with impersonal hiring rules, negligible labor turnover, and incentives based on administrative control mechanisms similar to what is seen in universities. As a consequence, younger employees have strong incentives to acquire specific human capital, the returns from which can be used throughout their career in Embrapa. This was quite clear in the early years of Embrapa, when its researchers had not yet received formal technical training. An intense training program followed, and during this period most Embrapa researchers were sent to the United States to complete their PhDs in areas such as biology, agronomics, and other fields related to the agency's research. Virtually all these researchers returned to Embrapa and continued to work for the organization until retirement.

This policy has always been maintained, and it is the key variable that explains the outstanding technological capability that Embrapa has acquired. More recently, with the sharp increase in the supply of PhDs in Brazil, it is common to hire new researchers who have already received technical training and have PhDs and some academic experience. Curiously, interviews revealed that hiring researchers with better qualifications diverts focus from Embrapa's interests. As the youngest researchers begin their careers carrying the culture and values from their former experience at universities as PhD students and research assistants, they do not fit in with Embrapa's values and culture as smoothly as their predecessors. This feature of Embrapa's new researchers has some negative implications for the effectiveness of partnerships with private companies, as the ABC Foundation case reveals. Guided by incentives that are typical of universities, the reporting of research results follows the timeline of publication in specialized journals, which takes far longer than private companies would prefer.

The same organizational mechanisms that safeguard the long term-employment relationship create adverse effects for the acquisition of

other capabilities. The career of a public servant in Embrapa is quite secure, which reduces incentives related to contract severance. Moreover, as a State company Embrapa is subject to very strict control mechanisms under Law 8.666, which disciplines government procurement and expenditures in general. This governance structure, undoubtedly less flexible than what is found in private companies, makes Embrapa less sensitive to short-term market opportunities and also increases the fixed costs associated with public-private coordination. For these reasons, Embrapa is less equipped with capabilities for public-private coordination.

One could argue that large private companies such as Monsanto would face similar difficulties in establishing partnerships. Indeed, when Embrapa's administrative control mechanisms required some minor revisions in the contract with Monsanto, those changes had to be submitted to the headquarters of the multinational company, evidence that a large private company also has to rely on administrative control mechanisms. However, when a large private company proposes a standard contract to another private organization, such as the ABC Foundation, any required adaptation, if needed, is more easily implemented than in the case of public-private contracts. Indeed, the ABC Foundation did not report any difficulty in adapting itself to the terms of the standard contract with large private companies. In short, the case studies suggest that it is relatively more costly to establish partnerships between Embrapa and private companies than between these companies and other private organizations.

In contrast to Embrapa, the ABC Foundation has a very flexible governance structure and uses it to take advantage of short-term market opportunities. On the other hand, this PDA does not have a secure and stable budget, which makes it necessary for the foundation to present short-term achievements to its stakeholders in order to ensure the financial supports it needs. Indeed, several ABC Foundation partnerships serve as a source of financial resources from private companies that seek access to the large base of farmers that the foundation represents. Partnerships of this sort do not necessarily combine complementary technological resources, and, as a consequence, they are not primarily oriented to leveraging the foundation's ability to innovate. Instead, their role is to provide financial resources that allow for the continuity of foundation activities. A different type of partnership involves those established with universities and research institutes, and with some private companies eager to have access to the ABC Foundation's experimentation fields. Those partnerships typically combine the foundation's capability to perform field experiments with the capability to develop advanced technological inputs for agriculture, in the case of private companies and research institutes.

Inasmuch as the ABC Foundation cannot rely on a long-term budget, it does not provide employees and researchers the assurance of a long-term relationship. The consequences are twofold. On the one hand, employees and researchers do not have incentives to acquire highly specific knowledge, as observed at Embrapa, and hence the foundation has not developed noteworthy technological capabilities. On the other hand, employees have stronger incentives to seize market opportunities, notably those that yield short-term returns.

The acknowledgement that organizational choices constrain the development of different types of capabilities is the basis for the creation of Embrapii, which delivers policies that Finep could not. As mentioned above, to trigger technological innovation in industry, Finep has to combine complementary technological resources, such as expertise and specific knowledge that are located in firms and research institutes. Although the creation of sector funds has provided financial resources for Finep to allocate to promising projects, as a State company Finep has had to comply with several restrictions that have limited its ability to directly support innovation projects undertaken by private companies.

The tripartite model discussed in the beginning of this section provides an interesting mechanism for detecting and fostering suitable matches of firms and research institutes in joint research projects. However, the tripartite model alone is not enough to explain the creation of Embrapii, since it could have been implemented by Finep itself, as all of the pilot projects indeed were. For more effective public-private coordination, Finep understood that it was necessary to assign the responsibility of the tripartite model to an organization free from the public sector's administrative control mechanisms. The solution was the creation of a Social Organization governed by private law and quite flexible in coordinating research institutes and firms in joint projects. Embrapii has thus built in a short time the capability for public-private coordination required to trigger innovation in industrial firms.

4.7. Conclusions

This chapter investigated the building of capabilities within productive development agencies. By means of a comparative analysis of three case studies of Brazilian PDAs—Embrapa, Finep/Embrapii, and the ABC Foundation—the chapter aimed to address how PDAs' capabilities evolve and how they relate to the efficacy of their intended public policies. All three PDAs aim to have policies oriented to technological innovation and technological catch-up, which allows for a comparative analysis that focuses on the required capabilities for the success of this type of public policy. Moreover, the analyses relied

on pseudo-counterfactuals in order to try to identify the effect of observed facts on building capabilities and their effect on the quality of public policy. One can argue that case study analysis does not have external validity for a general corroboration of the findings presented herein. Still, the in-depth analysis of the three PDAs sheds some light on the complex questions of how capabilities evolve and affect policy quality. The comparative analysis of the three cases focused on the variability of the PDAs' organizational features and of the recipient of the public policy (agriculture versus industry). The main findings are the following:

- When different organizations possess complementary capabilities, hybrid forms such as partnerships can enhance the efficacy of the intended public policy.
- The appropriate design of the PDA (e.g., to build internal technological expertise or to establish partnerships with other organizations) depends on the features of the sector that is the target of the public policy.
- Organizational choices are subject to the impossibility of selective intervention, that is, they are conducive to the acquisition and development of specific types of capabilities, but at the cost of neglecting the development of others.

These findings, although in need of further scrutiny, have clear policy implications. Inasmuch as sticky organizational features may drive which capabilities a PDA tends to acquire, it may be advisable to assemble a portfolio of PDAs as an instrument to build the required capabilities for an effective public policy. It may also be necessary to develop the capability to coordinate PDAs that have the complementary resources required to deliver public policy. The Finep/Embrapii case is illustrative of this approach—the instrumental policy was the creation of a second PDA with organizational features that allowed the building of capabilities that were not feasible for the previous PDA to develop.

Building Institutional Capacity to Promote Productive Development: The Case of Design Promotion Policies in Argentina

Mariana Chudnovsky, Andrea González, Juan Carlos Hallak, Mercedes Sidders, and Mariano Tommasi¹

Public policy to promote productive development poses a challenge to the institutional capacity of countries in Latin America. Thus it is important to better understand which types of capacity are consistent with proper implementation of those policies. Within the spectrum of promoting productive development, this chapter focuses on design promotion policies.

Under these types of policies, design is treated as a tool of innovation, differentiation, and competitiveness. Indeed, design promotion can function as a strategic policy to promote productive development in Argentina and in other countries where salaries are relatively high compared to other developing nations. Given that such countries cannot compete internationally in the manufacture of standardized products, where lower wages determine competitiveness, product differentiation can open the way to competitiveness by justifying higher prices and higher wages. Policies to promote design

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offer one option to achieve this. These types of policies are of recent vintage, and the requisite capacity for their implementation is sufficiently complex to warrant study.

This chapter examines the major public agencies in Argentina tasked with promoting productive development for design at the national level and the municipal level (Autonomous City of Buenos Aires). The methodology used, which is consistent with that provided in Cornick (2013), is presented in Section 5.2.

The agencies and policies examined are:

1. The Under Secretariat of Industry in the National Ministry of Industry, which oversees the National Plan for Design. The specific area of interest under the National Plan is the Seal of Good Design Program.
2. Two centers under the National Industrial Technology Institute (INTI), a semi-autonomous dependent and decentralized entity under the National Ministry of Industry. The first center is INTI Textiles, which implements the Argentine Design Map. The second center is INTI Industrial Design (INTI DI), which carries out the Design Management as a Factor of Innovation Program.
3. The Metropolitan Center for Design (CMD), which is the entity responsible for design policies within the Ministry of Economic Development of the City of Buenos Aires. As the nation's capital, Buenos Aires is home to a considerable proportion of the designers and businesses that incorporate design. Two CMD programs were studied: IncuBA and Incorporation of Design.

Some of the main findings of this chapter suggest that reliance on infrastructure or a budget does not necessarily translate into the capacity to implement policy. By contrast, an element that did appear essential was having appropriate personnel with commitment and initiative. On the one hand, the extent to which agencies are dependent on the commitment and initiative of specific staff members demonstrates the fragility of the public sector apparatus. In the event of staff changes or departures, the existing capabilities will not remain. On the other hand, there are certain settings that facilitate realizing the potential, and the benefits, offered by these people. Organizational flexibility appears to be a key element, particularly in combination with job security for those staff endowed with the necessary know-how in the subject matter. These two factors take on greater significance when the workplace is cushioned from the external shocks linked to Argentina's environment of political instability and volatility. This is due to a counterintuitive finding: not being too close to political decision-making can be advantageous. Achieving

that depends on the internal capacity developed among the work teams in the various agencies to resist the political vicissitudes to which they would be exposed were they to find themselves too close to political power. Policies with high visibility may quickly achieve a large scale, but they are subject to general economic vagaries and susceptible to shifting definitions and changes in direction. By contrast, decentralized agencies such as INTI are better protected from the context of general uncertainty. Of course, what is achieved in stability is lost in political scale, impact, and support.

This chapter first looks at policies to promote design in the context of development policies and reviews their recent implementation in Argentina. It then highlights the program implementation capacity of the development agencies before turning to a description of these agencies and their main policies. The chapter then examines key types of capacity in practice, with a focus on those that gain traction in the implementation phase and those that fail to do so. The chapter then offers a comparative study of the program implementation capacity of the development agencies before putting forth a few final thoughts and topics for discussion.

5.1. Policies to Promote Design

A country such as Argentina, with relatively high salaries compared to those in other developing countries, cannot compete internationally in the production of standardized products for which a crucial determinant of competitiveness lies in low wages. Thus, achieving international competitiveness requires penetration by means of products with a sufficiently greater level of differentiation to justify higher prices and wages. Industrial design is a viable way to achieve greater differentiation and, with it, market penetration based on sustainable competitiveness.² This option is consistent with Argentina's existing capacity, given the availability of skilled human resources, the country's strong educational infrastructure in the area of design, and an internal market where the value of design weighs ever greater in purchasing decisions. For these reasons, the promotion of design via policies to encourage a culture of design in businesses should be a strategic policy to facilitate development in Argentina. This would allow the incorporation of design as a tool of differentiation and international competitiveness.

² See Walsh (1996) and Hertenstein and Platt (1997) on the positive impact of design in product and service differentiation. See Walsh, Roy, and Bruce (1988) and Bruce, Cooper, and Vázquez (1999) regarding the impact on global performance of businesses, and Potter et al. (1991) regarding the influence on growth in exports among businesses.

Even though design as a market activity has drawn the interest of researchers from many disciplines over the past 30 years, no consensus has been reached on a single definition of what design is. Generally, it is defined as an activity aimed at conceiving and developing a product or service by integrating the form, function, and product likeability, or what is known as its *feel-good* feature (Verganti 2003, 2008).³ Form is concerned with the esthetic aspects of the product. Function, on the other hand, encompasses those characteristics of the product that are intended to satisfy the consumer's material and operational needs. The feel-good feature is the significance of the product; that is, the system of emotional and symbolic values offered to consumers to satisfy their emotional and sociocultural needs. Designers use a set of signs, symbols, and icons to convey this significance. Whereas in some industrial sectors the major feature of the product is its esthetic content or form (e.g., lighting or furniture), in others its function is what is paramount (farm equipment, precision tools). Although the feel-good feature underlies all products, it has a greater priority in certain sectors, such as clothing. Thus, as an integrating activity for these aspects, design is a major tool that permits companies to distinguish their brand of products.

The incorporation by businesses of this concept of design requires design management, which is the set of organizational practices and abilities that allow a business to obtain good design (Gorb and Dumas 1987). Incorporation of design requires interaction with practices in different areas of the firm, which in some cases have to be modified in order to properly accommodate the design. In the past 20 years, design policies have shifted. Whereby they previously sought to foster public input to stress the relevance of good form and function in design (e.g., through awards for good design), today the incorporation of design in the many areas of a business is encouraged through design management (e.g., through subsidies for obtaining consultant design services).

The decision to intervene with a design policy that emphasizes product form or product function, or that encourages product relevance in a comprehensive manner, depends on the product sector, the type of company, and the market sector that is being sought out. As indicated earlier, in industrial sectors such as furniture, development policies that focus on form design are sufficient to help companies get off the ground. When firms have already developed a product, they need to incorporate relevance for their product range by, say, creating a brand and style. With cases such as farm machinery, design policies are needed that emphasize function above other features. In the clothing sector, emphasis on esthetic features and design relevance is crucial,

³ Product design, graphic design, interior design, and design of containers and packaging are the main specializations that make up this discipline.

regardless of the firm's position or stage of development. With respect to targeted markets, design policies may be aimed at raising the competitiveness of less-developed firms in the local market or at increasing their penetration and development in foreign markets. Development policies thus can address less-developed firms that operate exclusively in the local market without plans for export markets, or they can be geared toward firms that are better positioned in the domestic market and intend to penetrate export markets.

It is worth recalling that different design policies make different demands on the capacity of the development agencies that must implement them. Policies that stress the esthetic-expressive as well as those that stress the functional features of products (Lash and Urry 1994) require expertise in design. The esthetic-related policies require an understanding of demand in different market segments, particularly, with respect to consumer aspirations. Policies to promote design management, however, require multidisciplinary technical capabilities.⁴

In several countries, particularly in Western Europe, a series of design policies have been put in place since the 1970s to establish a culture of design within society, based on the belief that design is a factor of competitiveness. To this end, specialized national and regional centers have been created on the basis of the different concepts of design referenced earlier to propagate the benefits of design incorporation in firms and to educate consumers about design.⁵ The United Kingdom, Sweden, Denmark, Japan, Spain, and more recently South Korea and Singapore are countries where design policies have most advanced. Development agencies have been created specifically to implement design policies, and design is explicitly addressed in national policy. In the European Community, in recognition of the growing strategic importance of design, new venues have been created in the past decade to share expertise among different agencies that implement design policy.⁶

⁴ In some of the agencies examined here, the expression used is *design management*, whereas in others the term is *strategic design*.

⁵ In some cases, these centers respond to national strategies, while in others they form part of regional or local development policies. Some centers are publicly financed; others are funded through a public-private mix (e.g., the Barcelona Center of Design in 1973 and the Danish Design Centre in 1978). Centers created between 1980 and 2011 include the Swedish Industrial Design Foundation (originally the Swedish Design Center) in 1985, the Portuguese Design Center in 1985, the Italian Design Council in 2007, the Hong Kong Design Centre in 2001, the Singapore Design Council in 2003, and the Brazilian Design Program in 1995, as well as the Argentine development agencies examined in this chapter. In addition, there are several older design policy institutions, including the Design Council in the United Kingdom (1944), the German Design Council (1954), Internationales Design Zentrum Berlin (1969), and Japan Industrial Design Promotion (1969).

⁶ One of the main undertakings has been the creation of a network of agencies that formulate and implement design policies (SEE Project) through which experiences are exchanged and design policies are studied.

The centers created in these different countries have fostered education in specific areas of design (e.g., eco-design, sustainability) and business (marketing, strategy); organized training activities or contributed to debates concerning curriculum for teaching design disciplines; and incorporated business content into design courses and design content into business courses. They have also encouraged networking among designers in businesses by awarding grants to perform diagnostics or for specific projects for product development or elements of communication. Finally, the centers have held exhibitions and product design competitions, and engaged in research on the size and structure of the supply and demand for design services.

Argentina first saw policies to promote design in the 1990s.⁷ The agencies involved were pioneers at the national and municipal levels in the implementation of policies to promote design as a strategic activity to boost the competitiveness of small and medium-sized enterprises (SMEs).⁸ The first design policies put into practice by the design promotion agencies in Argentina prioritized the activities of different design fields and their benefits to businesses. Day-long events were held for design and networking among designers, and between them and businesses. The agencies also gave out awards and held design exhibitions.

The policies implemented were of different types, proportions, and purposes. With regard to the first two aspects, Stein (2014) indicates that horizontal and vertical policies involving public goods and private market products were implemented. Among the horizontal policies were programs to help incorporate design into businesses, such as programs for diagnostics of design in businesses for INTI DI product development and later for the National Design Plan (PND). Some vertical policies were implemented by sector-specific agencies (e.g., clothing and textiles), such as INTI Textiles and the CMD fashion office. Two examples of public sector policies for goods and services were the CMD building, where priority was given for its public use for design events, and INTI Textiles' Argentine Design Map, intended to provide information on a specific segment of the clothing market. Private market

⁷ Previously, the main endeavors in the design field took place at public and private universities where some courses of study in fields of design began to be offered. In 1985, for example, graphic design and industrial design majors were first offered in the School of Architecture and Urban Studies of the University of Buenos Aires (FADU/UBA), followed in 1988 by the inauguration of a fashion and textile design program. Prior to then, graphic and industrial design studies were offered in Argentina exclusively at the National University of La Plata and the National University of Cuyo.

⁸ At the provincial level, the Ministry of Production, Science and Technology for the Province of Buenos Aires (as opposed to the city) also carried out activities and created a design program.

policies have included grants for design consultancies and for publicizing individual designer fashions.

As has occurred in many other countries, both developing and industrialized, the design policies and design promotion agencies in Argentina have received scant attention in policy environments and throughout society. Design policies have been formulated and adapted to the local context based on international references, in particular, the State Society for the Development of Design and Innovation in Spain, the Danish Design Center, and the Domus Academy in Italy. Most policy-implementing agencies resulted from programs run by the Ministry of Industry or the Ministry of Production at the national, provincial, and municipal levels. One of the main challenges for these agencies has been to train their public employees, given the limited range of specialized personnel for public management of these kinds of policies. In fact, the public employees in charge of these agencies were trained through the professional networks that they were able to establish with managers at the international design centers.

5.2. Types of Capacity of Agencies for Productive Development

Cornick (2013) makes the point that the intersection between public sector capacity and the specifics of development policies warrant special attention. Otherwise, considerations of capacity in the abstract are not helpful. The author stresses the importance of examining the specific economic sector under consideration, since the types of capacity under consideration concern implementation of those kinds of policies. The study of capacity is the challenge of exploring potentialities; that is, the capacity to do something. Organizations can succeed at implementing certain policies and fail at implementing others. This is because implementation is not an abstract activity. Thus, the examination of public sector capacity poses an additional methodological challenge: how to evaluate an empirically unobservable concept.

In general terms there are two major approaches to observing capacity: (1) measuring the resources available to the public sector and inferring capacity from them; or (2) measuring the outcomes of state interventions and crediting the causality to organizational capacity. Both approaches present complications, beginning with the specific indicators and questions of validity (or its absence). The measure of organizational resources must successfully show that they do in fact represent capacity, and how and why they do. The challenge in measuring outcomes (Kocher 2010) is to avoid tautological pitfalls, because it is difficult to distinguish between capacity and outcomes. This is why both aspects are measured here.

Table 5.1 Government Capacity: Dimensions Considered

1. Organizational capacity	<ul style="list-style-type: none"> • Functional differentiation of the agency within the structure • Generation and use of information • Presence and types of coordination
2. Budgetary capacity	<ul style="list-style-type: none"> • Amount assigned to agency per annum • Budget stability • Origin of agency funding
3. Human resource capacity	<ul style="list-style-type: none"> • Profiles • Team stability • Type of contracting
4. Coverage capacity	<ul style="list-style-type: none"> • Capacity to effectively reach target population • Passive or active coverage strategy
5. Political capacity	<ul style="list-style-type: none"> • Build-up of political support for launching policies • Build-up of external alliances with the agency

Source: Prepared by the authors.

Public sector capacity is understood as a multidimensional concept that includes the following (Table 5.1):

1. **Organizational capacity** (Cornick 2013) involves several dimensions of public organizations. The first refers to the differentiation within the structure of public administration that provides a glimpse into the importance that capacity is accorded within the organization (i.e., if the initiative is led by a Secretary or Deputy Secretary, etc.). A second dimension refers to the capacity to generate and use the information necessary to achieve objectives. A third relates to a key component in policy implementation—coordination. The four types of coordination (neither exhaustive nor mutually exclusive) are defined as follows:
 - Territorial: Passive coordination based on dividing the public toward which each agency must address its policies based on the location of the territory it must cover.
 - Functional: Passive coordination based on organizational differentiation, that is, functions that are not duplicated with an organizational chart, and which are not explicitly coordinated.
 - Logistical: Active coordination to perform joint activities (usually sporadically), although not framed within joint policies.
 - Programmatic: Relates to areas concerning organizational processes, such as the existence of planning.
2. **Budgetary capacity** refers to the organization of the budget, whether funding is stable, and whether the development agency has spending autonomy.

3. **Human resource capacity** refers to the technical and qualitative aspects of these resources. Public employees are key actors in policy implementation. This is because they have more information available than politicians; they can block, delay, or frustrate implementation and they are protected by legislation in the collective bargaining process. Permanent public employees are known to have stable positions and are protected by employee unions. At the same time, they work in tandem with a parallel bureaucracy of freelance consultants whose contracts are subject to renewal every three to six months, resulting in turnover within the organizations. This turnover seriously affects organizational capacity in weaker institutional settings where permanent know-how is absent (Bambaci 2007; Iacoviello, Zuvanic, and Tommasi 2009). Thus, it is important to examine the type of contracting, the stability of work teams, and (equally important) the educational levels of personnel and whether they have special expertise and receive ongoing education.
4. **Policy capacity** (Cornick 2013) concerns achieving power within government structures and beyond them. In the end, the viability of public policies depends on two elements linked to the political context: (1) the build-up of political support in order to bring an intervention to fruition; and (2) the ability to forge external alliances with political power and/or key actors.

It is difficult to decide how to organize the agencies responsible for implementing design policies. In the first place, they are not immune to the political-institutional context of the countries in which they exist because there is preexisting bureaucratic capacity, there are the political objectives of each administration, and there are plans to carry out these objectives across the country, among other issues. On the one hand, the political-institutional context influences the bureaucracy (e.g., the law that more or less protects agencies, the size and form of the public administration, and the groundwork laid for political planning). On the other hand, the political context is shaped by the public employees (who are not neutral parties, since they organize, fight for better working conditions, design policies, etc.).

Second, drawing up and implementing different types of policies to promote design require different types of capacity in the agencies. Such is the case whether the policy is horizontal or vertical, public sector-oriented or private sector-oriented, or focused on a particular design aspect or on the form, function, or meaning of a good.

By considering the capacity of these agencies, together with their main policies and the broader political context, this chapter seeks to provide a better understanding of how the agencies are organized and what their major weakness are in carrying out proposed actions, programs, and policies.

Finally, the area of design presents a special advantage in the study of institutional capacity because it is of recent vintage and what exists has been done in current times. The birth of public actions stemming from design policies can be traced back to around 2000. Thus, the baseline is clear and the actions easily traceable.

5.3. The Development Agencies Analyzed and Their Principal Design Policies

The design agencies considered here are as follows:

- **The Under Secretariat of Industry** within the Secretariat of Industry of the Ministry of Industry, created in 2008 as the Ministry of Production. The Ministry of Industry is the national entity that coordinates and promotes development policies. The Secretariat of Industry defines industrial and design policies, funding levels, and the use of instruments to promote development in the productive sector. The Under Secretariat of Industry is responsible for analysis of industrial sector issues, promotion of technological and industrial coordination at the national level, and provision of assistance to the Secretariat of Industry in defining policies to promote investments and financing in the industrial sector, as well as coordinating development policies with provincial-level governments and that of the City of Buenos Aires. The National Design Plan (PND) is under the Under Secretariat of Industry and is the area where design-related public policies are applied at the national level. The PND fosters the incorporation of design by businesses by encouraging networking between designers and companies, supporting production projects with design strategies, and carrying out design promotion activities.
- **Two centers within the National Institute of Industrial Technology (INTI)**, the public institute for industrial technology research that is the premier institution in its area in Argentina. It was created in 1957 as a decentralized offshoot of what then was the Ministry of Commerce and Industry. Currently, INTI is a decentralized entity with organizational autonomy under the Ministry of Industry, responsible principally for the setting, maintenance, and definition of national standards and measures, and their national application. Other major functions include applied research in industrial technology and extension programs to strengthen industrial competitiveness. INTI is organized in a three-tiered structure. The first level consists of a board of directors whose president is appointed by the president of Argentina and an advisory commission. The second level consists of 10 managing offices and an office for

general management. The third level consists of centers for research and development that are relatively autonomous entities, distinct from the remainder of the institution.⁹ There are currently 49 such centers.¹⁰ The two INTI design centers are:

- **The INTI Textile Center**, which was created in 1967 to promote the textile industry while making itself a reference point for technology. It is structured around six areas, four of which are geared toward the center's traditional activities with the other two geared toward the clothing sector. Of the last two, the first holds training sessions in processes, techniques, and soft technologies; the other produces reports on styles and trends, researches clothing design authorship, disseminates the work of designers in the domestic market, and offers design training to producers, vendors, and designers. This final activity is carried out via the Trends Observatory created in 2001 within the framework of a long-term strategy for textile design promotion in Argentina (Bisang et al. 2014). The INTI Textile Center is overseen by an executive committee and associates that include textile and clothing businesses, producer associations, and other business associations in the industry. The executive committee consists of 12 associates and functions as one of the main channels for information exchange and for determining the needs of the private sector.
- **The INTI Industrial Design Center (INTI DI)** has operated since 2010, although it actually began operations as the Design Program (ProDiseño) in 2002. The program was launched to promote a culture of design in several areas of production by supporting firms with the incorporation of design into products as a tool of differentiation. The center has three areas: research, transfer, and the observatory. The first two are the most developed.¹¹ The center

⁹ Except for cross-cutting centers covering several sectors, most specialize in one sector alone or correspond to just one geographic location. They conduct applied research to resolve major problems faced by their corresponding sectors or jurisdictions. Some of the centers are composed of a public-private mix in which entrepreneurs, companies, chambers of commerce, or other entities from the sector become members and pay a monthly quota. Other centers have an executive committee or an advisory board to weigh in on planning decisions and provide follow-up for center activities (e.g., in construction and textile sectors).

¹⁰ Of these 49 research and development centers, 19 are regional, 27 are sectoral, and three are cross-cutting (multi-sectoral or multi-jurisdictional).

¹¹ The research area is dedicated to gathering information and reporting on design issues for companies and professional designers. The transfer area disseminates information, promotes design-related activities, and offers training and technical assistance. The observatory monitors the actions that take place in the center and provides information on them.

also has an advisory and an associates committee. Since 2014, the center has had 22 partners from the private sector and academia who guide its training needs for professional continuing education and help define lines of action. The center's leadership coordinates the annual work plans with these associates.

- **The Metropolitan Design Center (CMD)**, which was created by the City of Buenos Aires in 1999 to promote design as the key tool to spur economic development in the city (Becerra, Rondina, and Kogan 2013, 8). The center is under the Directorate General of Creative Industries of the City of Buenos Aires and operates under the umbrella of the recently created Under Secretariat of Creative Economy of the Buenos Aires Ministry of Economic Development. Only one part of the CMD operates in the formal structure (CMD Operations Management).¹² The entity has undergone a number of changes since its creation.¹³ The private sector participates in its decision-making through the CMD Association of Friends, comprised of a group of entrepreneurs and design professionals, which in practice functions as an advisory council.

The respective capacity of these agencies has been dedicated to the implementation of five programs:

1. The Seal of Good Design of the National Design Plan of the Under Secretariat of Industry of the Ministry of Industry seeks to incorporate design into firms through the recognition of design products and their acceptance nationally and internationally. To this end, products are evaluated every year by several Argentine firms, and final selections are then awarded this recognition. The evaluation is done by an interdisciplinary

¹² It is important to distinguish between the CMD as an organization and the building it occupies. The CMD building houses several branches of the Ministry of Economic Development and provides space for several activities unrelated to design, functioning also as an axis or magnet for training, cultural promotion, and other activities. It also serves as a catalyst for economic development in the neighborhood of Barracas where it is located, a historically marginalized area in the south of Buenos Aires. The focus of this chapter, however, is concerned with the CMD organization and not its building.

¹³ In 2003, it left what was then the Ministry of Culture and took on a higher institutional status. No longer a program, it became the General Directorate of Design within the Under Secretariat of Management and Cultural Industries. However, in 2006, both agencies went over to the Ministry of Production, and it became the General Directorate of Cultural Industries and Design, only to see the Ministry of Production undergo a name change in 2007 and become the Ministry of Economic Development. The General Directorate of Design temporarily became the General Directorate of Creative Industries, before later losing its title of General Directorate and becoming an area within the Ministry.

jury comprised of representatives from industry and academia that considers the products presented, the policies of the firms that produce them, and their research and development activities.

2. The Argentine Design Map of the INTI Textile Center is a research program to track signature design in the Argentine clothing industry and promote it in domestic and international markets. Covering the major cities in the country, it identifies, classifies, and profiles clothing designers by the originality of their products and processes.
3. The Program for Design Management as a Factor of Innovation of INTI DI provides assistance to SMEs in order to promote the culture of design in these businesses. Toward this end, the program joined with the Argentine Industrial Union (UIA) and the Metropolitan Design Center to create a consultant program in design management for SMEs. It has used an original methodology for design diagnostics to develop products and has trained professionals in its use.
4. The CMD IncuBA program, which provided physical space and technical assistance for design-related and artisanal industries from 2002 to 2012.¹⁴ The objective of the program was to foster the takeoff and growth of these types of design and artisanal projects in the City of Buenos Aires. Every year a competitive selection was made of entrepreneurial projects situated in Buenos Aires to be incubated in the CMD building.¹⁵ The program provided the projects with technical assistance in design and business management (including legal, accounting, and taxes) and physical space for business activities.
5. The CMD Incorporation of Design Program promotes design as a valuable tool to businesses in order to enhance their innovation and competitiveness through two initiatives. The first is a System Values Operations Program that links SMEs and design professionals in order to undertake joint product development. The second is a Design Incorporation Program that provides intensive consultant assistance in strategic design.

The selection of programs examined here was based more on relevance than on policies. Their relative stability was assessed in comparison with other programs in each of the agencies. They were classified as per the market

¹⁴ Since 2012, the CMD has only provided infrastructure. The authority for program application rests with the Under Secretariat for Economic Development.

¹⁵ A business incubator is an agency that is designed to accelerate growth and ensure the success of initiatives and projects by offering a range of entrepreneurial resources and services, from rent for physical spaces to financing, networking and coaching (i.e., access to a network of contacts) and other basic services, such as telecommunications, cleaning, and parking.

Table 5.2 Development Agencies and Selected Programs: Design Promotion Policy, Market Failure, Intervention Type, and Coverage

Agency	Design Promotion Policy	Market Failure	Intervention Type	Coverage
INTI Textiles	Argentine Design Map	Provision of a public good	Public good	Vertical
INTI DI	Design Management as a Factor of Innovation	Positive externality Provision of a public good	Public good Market intervention (subsidies)	Horizontal
National Design Plan (PND)	Seal of Good Design	Provision of a public good	Public good	Horizontal
Metropolitan Center for Design (CMD)	Incorporation of Design Program	Positive externality Coordination problem	Public good	Vertical (in first program mode)
		Provision of a public good		Horizontal (in second program mode)
Incuba		Provision of a public good Problem of information externality of the entrepreneurial activity	Public good Market intervention (subsidies)	Horizontal

Source: Prepared by the authors.

failing they were meant to address, the type of intervention they performed, and the scope of their coverage. Table 5.2 sums up the different agencies and their programs that were selected for analysis in this chapter.

5.4. Capacity of Agencies and Their Role in Policy Implementation

Table 5.3 sums up the types of capacity of each agency. The lighter the color of the cell, the lower the agency's score for the indicator considered. The higher the row for each type of capacity, the greater the weight given to that indicator. The details for constructing the indicators are provided in Annex 5.2. As can be seen below:

- INTI Textiles and the INTI DI (especially since becoming a center for research and development) stand out for their organizational capacity and human resources.

Table 5.3 Capacity of Agencies

Institutional Capacity	Indicator	National Design Plan (PND)	INTI Textiles	INTI DI	Metropolitan Center for Design (CMD)
Organizational	Functional differentiation within agency structure				
	Generation and use of information				
	Existence and types of coordination				
Budgetary	Annual allocation for each agency				
	Budgetary stability				
	Agency funding source				
Human resources	Profiles				
	Team stability				
	Type of contracting				
Coverage	Capacity to effectively reach target population				
	Passive or active coverage strategy				
Political	Construction of political support to launch policies				
	Forging external alliances with the agency				

Source: Prepared by the authors.

Note: The lighter the color of the cell, the lower the agency's score for the indicator considered. The higher the row for each type of capacity, the greater the weight given to that indicator.

- The Metropolitan Center for Design (CMD) stands out for its budgetary capacity.
- INTI Textiles is noted for its coverage.
- The CMD, INTI DI, and PND stand out for their political capacity, in particular the CMD, whereas for the PND this capacity has developed only recently.

5.4.1. *National Design Plan (PND)*

In the PND, there is an absence of even minimal organizational capacity coupled with unstable staffing and insufficient staffing of qualified personnel. These problems have impeded the plan's success. The plan is showing improvement now that it has the political support of the minister, but this support is subject to change and will not necessarily continue. Given that this support is the plan's greatest asset, fears for the future of the program are understandable. The following observations apply to the Under Secretariat and the PND:

- **Budgetary capacity:** Program financing is exceedingly precarious, depending on funds from an underfunded ministry. Not until 2014 did the plan have its own budget. To perform activities, the coordinators had to obtain resources directly from the Under Secretariat which prevented meaningful planning.
- **Organizational capacity:** The PND's place within the hierarchy shifted and the program failed to endure as a National Directorate despite its coordinators' best efforts. The program is prevented from generating the data needed to implement policies because it does not have a team to work on research, at least not exclusively. The PND has active logistical coordination with INTI Textiles and recently began active program coordination with INTI DI, but it has no ties to the CMD. The PND's coordination capacity is fair at best in light of the lack of communication with the CMD (which reflects the tensions between the national government and the Buenos Aires municipal government), while the relationship with the INTI centers was limited to logistics during most of the period of this study. Furthermore, the recent coordination experience with INTI DI came about because of the SME program that the PND launched, which was similar to the Design Management as a Factor of Innovation Program that INTI DI had started (and which is also examined in this chapter).
- **Human resource capacity:** The ministry operates under the national public employee payment scheme, known as SINEP (for its Spanish initials).¹⁶ A 12-person staff works under its contract arrangement, 80 percent of

¹⁶ Argentina offers a plethora of regulations. Public employee stability is safeguarded under Article 14 bis of the Constitution. However, three employment laws are in effect: the Framework Law for Public Employment (LM) 25.164 of 1999, the Work Contract Law 20.744 (corresponding to the private sector), and the Single Contributor (Monotributos) scheme Decree 1254/20 for contracting autonomous specialized services and for collective bargaining contracts. These are in addition to civil service schedules (58 grades but 90 percent of the employees are situated in just 11 of these employment grades).

them hired under Article 9 of the Public Employee Framework Law. This is similar to the proportion of permanent employees on the payroll, but contract staff do not have the employment stability guaranteed by the Constitution.¹⁷ With regard to profiles and team stability, the staff began with four employees, then increased to five in 2007 and to 13 in 2014. The proportions of professional and technically qualified employees have fluctuated from 100 percent in 2002 to 60 percent in 2007, and 66 percent in 2014. Having begun in 2002 without any designers on staff, the PND had two such staff in 2007, and now has seven. Staff hiring was constrained by two factors. First, internal recruitment did not produce favorable results due to the absence of employees in the ministry who fit the necessary profiles. Most specialized in tax system management, which was the major axis of national industrial policy. Second, external recruitment was hobbled by bureaucratic problems. Most staff were contracted when a hiring freeze on permanent public employees was lifted, so as vacancies were created in the Under Secretariat, the PND was able to get more staff assignments.¹⁸ The minister's political support enabled the PND to get its own budget line, and this made possible the hiring of more staff. Staff stability is low. After having had four different coordinators, not one of the original staff members remains in the program. The current coordinator and two other staff are the only employees who have been in the program for 10 years; the others have all been there five years or less.

- Political capacity: The program has faced hurdles in building political support due to the high turnover among the authorities. However, since the appointment of Minister Débora Giorgi, support has increased. As described below, the increased support made it possible for the PND to go forward with a series of actions, programs and policies. Despite the minister's direct support, however, the program has not been able to forge significant public-private alliances.

5.4.2. *INTI Textiles*

INTI human resources were critical in the formulation of policies at INTI Textiles. Its members, particularly its directors, demonstrate continuity,

¹⁷ This is consistent with what occurs at the ministry. In 2013, of 750 budgeted positions, 187 (25 percent) were permanent and transitory, whereas 563 were contractors. A full 75 percent of the positions in the ministry are occupied by contractors.

¹⁸ Since 2000, a hiring freeze has prevented the recruitment of permanent employees. In the past 10 years the freeze has been lifted in part, mainly allowing some contract workers to become permanent employees.

capable innovation, strategic vision, fitness, an enduring presence, and ongoing investment in training and education. In conjunction with this capacity there are some key organizational traits: organizational flexibility, autonomy, and the opportunity to self-finance and establish direct contacts with the target population. INTI has forged strategic alliances with the private sector, creating a virtuous cycle linking staff capacity with a propitious setting for innovative ideas and the ability to strike fundamental alliances with market actors. At the same time, this combination of capacity allowed it to reach its targeted public (the signature designer clothing sector), although it was not able to expand to the general textile sector. Each of these types of capacity is discussed further below.

- **Organizational capacity:** Within the INTI structure, INTI Textiles and INTI DI are at the highest hierarchical level, after the board of directors and the managing offices. With respect to the generation and use of information, INTI Textiles performs research tasks geared toward making decisions on the continuity and change of current policies, and planning new productive development promotion efforts. In contrast to INTI DI and the CMD, INTI Textiles does not have a specialized section or team exclusively focused on information. INTI Textiles and INTI DI, although they are national agencies, exhibit very different kinds of organizational capacity, clearly indicative of the impact of organizational structure. One need only look at the considerable strategic planning capacity they have developed. With respect to coordination with other development agencies, INTI Textiles' coordination is active with the PND and the CMD (logistical) and passive with INTI DI (functional). Thus, the coordination of INTI Textiles is fair to low, given that not all its coordination with the other agencies is active. Moreover, it has failed to carry out actions, programs, or policies together with any of the other agencies, not even with INTI DI, with which it is part of the same decentralized entity. However, this may be a result of the type of differentiated public targeted by its policies.
- **Human resource capacity:** The two INTI centers have a different set of regulations for their staff than do other public entities, including the Ministry of Industry. They have their own job promotion schedule and negotiate staff contracts differently than the rest of the public sector. They have more employees, a greater proportion of permanent staff on the payroll, and better conditions for salaries, performance evaluations, and promotions. The INTI Textiles staff consists of 72 employees. Staff distribution by contracting mode is 29 percent on permanent payroll, 63 percent under the Work Contract Law, 1 percent under a contract for a

specific job, and 7 percent grantees.¹⁹ As for team profiles, 89 percent are either technically skilled or professional employees (46 percent and 43 percent, respectively), and the remaining 11 percent are either grantees or auxiliary personnel. The observatory team has undergone steady growth since its inception. In 2001, there were three employees, and currently there are eight, seven of whom are professionals. Designers have been in the majority from the start. What has favored the specialization among the professionals at INTI Textiles in different design concentrations has been its networking with public and private Italian design entities ever since the inception of the observatory. In its first years of operations, ties were established with Italian officials and professionals to facilitate training and professional visits by some observatory staff to Italy. At present, 75 percent of the team are design professionals (in textiles, clothing, and graphic design). With regard to team stability, the professionals who joined the observatory at its inception remain on staff. INTI Textiles employees have shown entrepreneurial capacity, have incentives to continue in their jobs (the center's retention capacity), and display appropriate professional expertise. The same director of the center has occupied her post for 25 years, while the only people who have left the observatory were promoted to higher positions in INTI.²⁰

- Political capacity: INTI Textiles faced major hurdles in building political support because of the perception that the programs and policies it was carrying out were frivolous. Just the same, through dint of professionalism and seriousness, it was gradually able to overcome this misperception. It was also able to build a public-private alliance. INTI Textiles' main alliance was with the Pro-Tejer Foundation, which enabled it to implement and disseminate many design development policies and develop in several other ways. The center created several alliances with national universities, provincial and local governments, and national ministries (e.g., the Ministry of Social Development and the Ministry of Science, Technology and Productive Innovation). These public-private collaboration schemes supplemented the center's budget, which is provided by INTI for operations (salaries, water and electrical utilities, per diems, and laboratory materials) but not for the design promotion activities the center carries out.

¹⁹ Similar proportions are seen at the aggregate level: in 2013, of 2,603 INTI employees, 895 (34 percent) were permanent and transitional, while 1,708 (66 percent) were contract workers.

²⁰ The person who was the observatory director for 12 years became the INTI development manager in 2012; the INTI DI director of 10 years standing was among the first designers incorporated into the design area of INTI Textiles. The current coordinator of the observatory is the designer with the longest seniority on the staff.

- Coverage capacity: INTI Textiles is the agency that demonstrates the greatest scope of coverage for a targeted population in a specified area. Even though its activities are geared toward a circumscribed public (i.e., the sector for signature designer clothing) it seeks a spillover effect with other segments of the clothing and textile industries—specifically, how to incorporate design to achieve greater benefits for a firm. The center is actively pursuing strategies, in particular, with the signature designer clothing group and, more recently, with artisans.

5.4.3. *INTI DI*

INTI DI has a framework very similar to that of INTI Textiles in terms of human resources and organizational capacity. It has enjoyed greater success, however, in building political support from INTI to finance its place as a center. INTI Textiles earned its legitimacy by focusing outward rather than inward. In fact, within INTI it was always regarded as frivolous for devoting its efforts to fashion. A consideration of INTI DI shows that:

- Organizational capacity: The center occupies the highest tiers within the INTI hierarchy. INTI DI has a specialized area for the generation and use of information but not a team exclusively devoted to these activities. It maintains active programmatic coordination with the PND and passive functional coordination with INTI Textiles and the CMD (geographic). Consequently, INTI DI coordination can also be classified as fair to low, in light of its coordination with other agencies being passive in all but one case. It is remarkable that INTI DI and INTI Textiles have never taken part in a joint activity, although this can be explained by the separate target populations that their actions address.
- Human resource capacity: INTI DI shares similar human resource characteristics with INTI Textiles in terms of having its own job promotion schedule and conditions for performance evaluations, and in terms of staff promotion and remuneration. The center has a 24-person full time staff, of whom most are hired under Article 9 of the Framework Law (equivalent to permanent staff, except in allowing for dismissal); only one staff member has a work contract (an independent contractor who makes his/her own tax contributions). The staff at the center has grown considerably. In 2003, the center opened with two employees and gradually expanded to seven employees by 2008 and reached 24 employees by 2014. As for profiles, the share of staff who were professionals grew from 67 percent in 2005 to 80 percent in recent years (with a one-time dip in 2011 due to the hiring of two grantees). The share of

designers on staff has always been high and has maintained almost the same proportion (60 percent). Staff stability has been exceptional, with only three employees having resigned their posts since 2009. The capacity to plan employee professional development and staff retention is high. The director and the employees responsible for different areas are recognized for their initiative and professional fitness within INTI and beyond in the public and private sectors. The director's management of design promotion policies has been enhanced by her professional ties with peers in charge of international design centers such as the State Society for Design and Innovation Development in Spain.

- Political capacity: INTI DI has shown a high level of political capacity. Since the inception of the center, owing to its professional performance and strategic vision, it has earned maximum support from INTI and was able to build the public-private alliance. Its main alliance was with the UIA, but it also formed a design network with national universities, as well as alliances with provincial and local governments (La Pampa and Morón, respectively) and with the Ministry of Science, Technology, and Productive Innovation. Similar to INTI Textiles, it was able to work out public-private collaborations and thereby carry out programs and policies its modest budget and limited financial resources would not otherwise have permitted.

5.4.4. *Metropolitan Center for Design*

Finally, the Metropolitan Center for Design (CMD) possesses an intermediate human resource capacity that enables it to at least attract qualified professionals, if not retain them. The CMD's organizational capacity is not impressive, but the center enjoys considerable political support in the ranks of the Buenos Aires city government, resulting in a large budget.

- Human resource capacity: The CMD is governed not by any of the sundry public employee legislation and promotion schedules seen nationally but by a more unified framework. In 2013, there were 64 permanent and provisional employees in the Directorate General of which the CMD forms a part, in addition to top authorities, highest-level staff, and instructors.²¹ In 2014, the CMD employed 23 employees in operations management and 10 in the design section. Regarding their profile, it has been observed

²¹ The data for the Ministry of Economic Development include only permanent staff for 2013, which totaled 1,355.

that “the majority of human resources staff was historically comprised of professionals. On average, 60 percent of CMD team members had university training in areas such as design, administration, economics, sociology, communications and engineering” (Becerra, Rondina, and Kogan 2013, 154). Staff stability is quite low or limited. The management change that took place in late 2007 led to the removal of a considerable share of the bureaucracy. Only permanent payroll public employees continued, many of whom were relocated to other functions.

- Political capacity: The CMD is another of the development agencies that has strong political support. The Deputy Secretary enjoys the backing of the Minister of Economic Development and the Chief of Government, which facilitates and lends legitimacy to the center’s work. It also was able to create professional alliances. The CMD formed an alliance with the School of Architecture and Urban Studies of the University of Buenos Aires (FADU/UBA), and also with professional associations and nongovernmental organizations, including Cosiendo Redes (Sewing Networks).
- Budgetary capacity: The CMD budget covers both general operations and costs of design promotion activities. Budgetary stability is another matter; allocations have fluctuated. Whereas in 2003 and 2004 the budget exceeded ARS 4 million, the next year it fell. The year after it bounced back and surged to ARS 11 million, then fell again in 2007, only to bounce back in 2008, fall again in 2009 and 2010, recover in 2012, and drop again in 2013.²² Some programs have outside funding,²³ and some are financed by the CMD’s Network of Friends.²⁴

5.5. Capacity in Action

The capacity in each agency becomes apparent with the implementation of policies. Thus, the way to examine that capacity is by reconstructing the implementation process. This section reviews different policies that were implemented, giving particular attention to which types or levels of capacity have failed to execute policy programs and which have succeeded. The

²² Nominal deflated figures (annually for December of each year) based on Provincial Statistical Directorates.

²³ Among the programs receiving external funding are the Program for Design Management Incorporation into Businesses, funded by the Andean Development Corporation, and the International Festival of Design, made possible by sponsors during 2015, when it was budgeted one-fourth the amount of the previous year’s budget.

²⁴ The Network of Friends of the CMD is a nonprofit organization funded during the CMD’s first years of operations by businesspersons and professionals. Over the years, it has provided CMD with technical assistance and resources for specific initiatives.

section identifies the factors in the agencies that have both facilitated and hindered their scope.

5.5.1. *The Case of the Seal of Good Design (PND)*

The Seal of Good Design, an emblem of distinction for companies working with design, began to be used in 2011. Three annual series were held between 2011 and 2013 in which 800 firms took part and 360 products were recognized. Some of the winning products were presented at exhibits or international commercial fairs, or gained access to special financing instruments.

The seal was proposed by the PND in 2002, although the program was not consolidated until 2011. The idea to design and implement the emblem was a systematic part of PND working groups in which INTI and the National Institute of Industrial Property (INPI) took part.²⁵ In the early years of the PND, the seal was not used due to lack of agreement on its objectives and structure. When the current PND coordinator assumed her post in 2008, it still was not launched due to a lack of political support. Budgetary constraints prevented the formation of a stable working group of design professionals. In the meantime, PND promotion activities were centered on the creation of a national design network and on holding training and dissemination events. The network disseminated information on the services offered at public and private institutions that worked in industrial design, and it promoted participation by provincial and local governments so that they could articulate the demand for design throughout the country. The training and dissemination events raised awareness among firms about design issues.

In 2011, the seal became the PND's main design promotion tool thanks in large part to a working group that was reduced in size but well trained in design, and also thanks to the political support and commitment of the minister to make design the main tool for promoting business competitiveness.

The precedent for the seal lay in the G-Mark System instituted by Japan's Ministry of International Trade and Industry to raise the quality of products and promote the value for products of original design. Another source of inspiration was the Good Design Label created in the 1960s by INTI's Center for Research into Industrial Design, which was the predecessor of INTI DI until the 1980s.

The program has achieved good results in promoting design throughout society. The three series featured companies from different sectors and regions of the country. Nevertheless, the effect was quite modest in the absence of

²⁵ INPI is the other decentralized entity under the jurisdiction of the Ministry of Industry.

a stable team, a budget, and internal and external political support. These deficiencies hampered the scale of the program.

Types of Capacity Required for Implementation

The seal is a development promotion intervention classifiable as the provision of a horizontal public good. As such, the seal is intended to generate an effective conduit to convey information on the importance of design as a factor of competitiveness for businesses. The award of the Good Design Seal to winning firms is a high-visibility event that conveys information to other business concerns. Thus, this development promotion tool seeks to offset a market failure through the conveyance of information as a public good.

The seal shows the evolution of the political, human resource, and budgetary capacity of the PND, which, because it operates within the central administration, has far less room for innovation and organizational learning than the two INTI programs. The program is subject to constant political and organizational restructuring, reflecting the changes in the highest echelons of city government, changes in policy directives, and resource fluctuations, among other factors. In fact, this case illustrates the weight that the organizational context can take on. The preexisting capacity of the agencies coincided with the evolution and strategies of the programs. The organizational and human resource capacity would appear to have been crucial. This is particularly relevant, as it demonstrates an intra-sectoral element in the analysis. This can be appreciated in the next case involving INTI, where both agencies functioned under the Ministry of Industry, answering to the same authorities, the same general policy directives, and the same development policy content. Nevertheless, the different organizational histories, the difference between a centralized agency (PND) and decentralized ones (INTI DI and INTI Textiles), the different hiring and promotion systems—with the PND under the national civil service system (National Public Administration-National System of Public Employment – APN-SINEP) versus INTI with its own technical-professional employee contracting arrangement—and the longstanding organizational history of the agencies versus the erratic history of the ministry (created as such after splitting off from the Ministry of Economy in 2008) all in combination had considerable impact on the PND's capacity to implement proposed policies.

Finally, it bears mention that since 2008, with the appointment of Débora Giorgi as Minister of Industry, the PND developed the greater external political capacity needed for program implementation.²⁶ However, this capacity

²⁶ The capacity is deemed external because it relates directly to political support from higher political authorities and does not represent the job-based build-up of a work team.

is limited in its development, given that the PND still has not been recognized as a directorate within the structure of the ministry. Minister Giorgi's political support enabled the PND coordinator for the first time to add new design-related professional profiles to her work team. Although most of the new hires were incorporated into other PND programs (territorial and sectoral development), they still made it possible to provide to firms that were awarded the Seal of Good Design a complementary program of technical assistance to incorporate design strategies. This step forward was undercut, however, by an inadequate budget, which also hindered the program's coverage. In 2013, the program received its own stable budget allocation. Only then did it receive budgetary autonomy and develop planning capacity and the capacity to attract and retain qualified professionals.

5.5.2. *The Argentine Design Map (INTI Textiles)*

The Argentine Design Map was established in 2007 as a product of the INTI Textiles Trend Observatory, which created the program and developed the map survey methodology on the basis of work experience in international trend mapping and surveying for fashion supply and demand in European fashion centers since 1999. The map was designed as a long-term activity to be undertaken by the observatory within the framework of new activities at INTI Textiles geared toward clothing designers and firms. From the start, INTI Textiles relied on the collaboration and funding of Pro-Tejer, the main organization representing the textile sector in Argentina. In addition to underwriting the program, Pro-Tejer expanded the dissemination of INTI Textiles' work.

The observatory surveyed and analyzed information from 250 designers in 19 provinces regarding signature design clothing in Argentina. In addition, during the course of the program the observatory also provided technical assistance to many of the designers in the areas of design, production, and marketing. On the basis of the designers' needs identified, it also organized programs for dissemination and designer networking and training, which broadened the development policies being implemented in the sector. Program outcomes have been published by the observatory (e.g., the book *INTI Design Map: 101 Signature Designers*) and presented in Argentine design promotion activities in the local and international markets (exhibits, commercial fairs, and academic settings).

Types of Capacity Required for Implementation

The map is an intervention classifiable as the provision of a vertical public good, or two public goods in this case. The first is similar to the seal. The public good is the creation of a conduit to transmit information on the importance of

design as a factor of competitiveness in businesses. This is undertaken by using the map to raise the visibility of the designers' endeavors. The development activity also is intended to create a second public good: positioning signature design in the clothing market by enhancing consumers' recognition and appreciation of original design. The market failures that INTI Textiles sought to address through the map were based on public goods, only in this case the limited applicability of these goods in the clothing sector made their impact vertical. Another positive effect of the program was to bring together and organize information in the signature clothing sector that can then be used in other public policies and activities geared to this market. This activity, it should be noted, has been increasingly complemented by other vertical market interventions, including subsidies for training and participation in domestic and international trade promotion events. This indicates progress in the range and complexity of the activities undertaken by INTI Textiles. Just the same, the coverage is limited to one slice of the sector.

With respect to the capacity involved in its implementation, the map is a clear indicator of institutional learning. The program originated in and was developed in INTI, a decentralized, autonomous agency with a high-level technical profile and a prestigious track record. Thus, there is a dynamic that reflects the characteristics emanating from this context. These characteristics boosted the profiles of the director and vice director who gave impetus to the observatory. Their capacity for innovation coupled with the development-facilitating context (and the flexible organizational context that could well appeal to innovative profiles) was crucial to the performance of several types of capacity at the agency.

The first type of capacity was the ability of the directors to respond strategically to a window of opportunity that opened with the economic crisis that hit the country after 2001 by broadening services and activities geared toward designers and clothing labels. In the early 2000s, several Argentine clothing and textile design professionals broke through into the local clothing market with enterprising work featuring highly distinct products (Bisang et al. 2014). The emergence of these new actors spearheaded an appreciation in the local market of the value offered by distinct design and provided an incentive for other actors in the sector (largely, clothing labels) to incorporate design into their product lines. At the same time, the devaluation of the Argentine peso in 2002 improved the competitiveness of the country's exports. These were propitious factors for carrying out design promotion development activities. The directors had the capacity to perceive the window of opportunity and to take the center in a new direction. They formulated their plans and put in place a work methodology that molded the activities they carried out with quality and coherence.

The second type of capacity was for human resource development. A small, technically solid team was created at the observatory that learned through trial and error, but the team always adhered to an established plan and to a methodology previously determined and reviewed. Having defined clothing design promotion as the central axis of the INTI Textiles strategy, the team brought in new professionals with different design-related profiles and, albeit on a small scale, turned into a solid, consistent, coherent team with the vision and planning that developed its work tools. This was also a result of the people in charge: INTI Textiles, in addition to bringing on board new professional staff with different profiles, also encouraged training in specialized areas of consumption and trend-spotting and retained those who were trained at the center. This human resource development led to information capacity. The map was one of the pillars of the design research tasks.

Although the development of specialized human resources in signature clothing design advanced, it also resulted in two constraints. First, the focus limited the agency's coverage or scope of work to the specific designer clothing niche. Although this segment has grown remarkably in recent years, it still represents only a small portion of the textile and clothing sector. Accordingly, promoting human resource development by positioning design in the clothing sector is still in its infancy. It should be possible to broaden the scale and coverage toward clothing companies geared toward other segments of the market or toward textile producers, even if in doing so other problems that at present do not appear in the map may have to be addressed. The second constraint was that retention of highly specialized people postponed putting in place formal organizational processes that would serve in their absence and that would be needed to build future capacity. Because there are few team members, and for years they have interacted informally, there are neither incentives nor resources to set up explicit work methodologies. This is evident in the fact that the methodology used to map and survey the designers has not been systematized.

Finally, the map shows that in certain circumstances political capacity can be built on the basis of the seriousness and professionalism brought to bear on a task, and that there is particular relevance in the intersection of political capacity with human resource development for carrying out design promotion. The directors of INTI Textiles developed both types of capacity when in 1997 they defined a long-term strategy based on promoting development and positioning design in the clothing sector. For much of the period under study, the scarcity of political support from the authorities in INTI and the Ministry of Industry for initiating policy activities was offset by strategic alliances with public and private sector entities, and by the recognition received from other public agencies and designers. These alliances funded

emerging and established activities throughout the course of the program, which allowed it to overcome the constraints of its small budget. The funding from the alliances enabled the development process to continue, facilitated the growth of the number and variety of observatory activities, and increased staffing. The stability, professionalism, and connections of the INTI Textiles directors facilitated the higher political capacity required for adoption of the initial strategy to develop the area and to follow through with the Design Map Project. This capacity is all the more clear and relevant today.

5.5.3. *Design Management as a Factor of Innovation (INTI DI)*

INTI DI played a major role in the formulation and performance of the Design Management as a Factor of Innovation Program (hereinafter referred to as the Design Management Program). Together with the UIA, INTI-DI defined the program structure, the methodology for the consultation sessions, and the modality for the call to firms and individual design professionals who would work as consultants. INTI DI was responsible for the methodology to carry out the program and for the selection, training, coordination and supervision of the consultants. The European Commission's AL-Invest IV Program funded the program. The CMD took part in the initial deliberations, but did not continue with the development of the methodology or the consultancies.

The major challenge for the Design Management Program was the formulation of the methodology and the training of the consultants. The prior experience of the INTI DI team was crucial in formulating the methodology for the diagnostics. Staff had worked on two technical assistance programs in design, on the creation of a certification program of good design practices, on a product assessment program, and on INTI expert referrals for management technologies. In the training for professionals, INTI DI concentrated in particular on the stage of selection of experts for the consultancies, defining the precise criteria for the profiles sought and for training in the methodology. Once the professionals were selected, INTI DI conducted intensive training to convey the design concept that should be used and to teach the methodology.

Another challenge was attendance by the firms that would take part in the program. The UIA initially expected to have 250 firms as program beneficiaries, but coverage was far smaller, with only 92 firms participating despite the program promotion done by the UIA and INTI DI. The biggest issue was the lack of resources for publicity. The AL-Invest funding did not provide for dissemination of information about the program, and the UIA and INTI DI had limited ability to attract firms. Much of the attendance achieved was thanks to the designers who took part in the program.

The Design Management Program was successful in promoting a culture of design among Argentine SMEs. Participating firms were linked to design issues through a diagnostic for product development after which they each received proposed work plans. No impact assessments are anticipated, but INTI is planning some follow-up efforts with the participating companies to see how their approach to design has evolved, and to see what decisions have been made in relation to each of the suggestions for proposed improvements. In addition, a network was formed of consultants who specialize in design management. This extended the promotion of design culture to many firms with which the consultants work, but which were not direct beneficiaries of the program. This network trained 110 professionals.

The Design Management Program lasted from 2009 to 2013, when UIA funding ran out. In that time frame, INTI DI assisted 92 firms from different industrial sectors and diverse locations. The major achievement of the initiative was to create an institutional program to promote design management (Design for Innovation). The main objective of the program was to transfer the INTI DI work methodology for design diagnostics to the regional INTI chapters in order to boost the competitiveness of firms in their respective regions through design technologies. In addition, the work methodology for design diagnostics began to be transferred to other areas within and outside the country (e.g., National University of San Juan and the Chamber of Industries of Uruguay).

Types of Capacity Required for Implementation

The Design Management Program had a component classifiable as the provision of a public good and another that can be termed as a market intervention. In both cases, the policy activities are horizontal. The main intended public good was to develop a body of knowledge on the exercise of design management practices and a network of specialists in that knowledge. The program activities encouraged the formation of the network of specialists in design management who could provide consultations and disseminate information on the contribution to the competitiveness that Argentine SMEs gained from incorporating design and adopting design management practices. INTI DI also created training manuals to perform design-management diagnostics and publicized the cases of companies that participated in the program in order to spread the word about the benefits of adopting design management practices. The program thus sought to address market failures in relation to these public goods. In addition, its market intervention consisted of subsidizing the hiring of consultants to perform diagnostics in design management. What justified this was the positive externality from the adoption of the practices by firms that had not originally been beneficiaries of the program. The externality was

fostered by the dissemination of information on the increased profits realized by the firms that adopted the design management practices, which gave a strong incentive to the other firms to follow suit and adopt similar practices.

Although the Design Management Program shared the same political, institutional, and organizational context as the Design Map Project, it relied on a different sequence in developing capacity. In both programs, political and human resource capacity was noteworthy. The Design Management Program showed the capacity of a development agency to implement design policy and also to embark on an organizational learning process. Organizational capacity developed through the program as it grew within INTI. Moreover, as the program exhibited this growth capacity it became a national reference point for technology in design. Certainly, this reflects INTI's status as a meritocratic island within the national public administration. INTI is a decentralized agency under the Ministry of Industry, so it depends largely on the central administration for its resources (although it also derives income from charges for services provided by its centers). But its traditional prestige and organizational autonomy have helped to maintain it as a quality entity. INTI is the main institute for public research in industrial technology. Despite the general deterioration in institutional capacity in the industrial area, INTI has shown a capacity to create and maintain quality programs.

At the outset of the Design Management Program, INTI DI embarked on a long-term strategy to bring industrial design into a place of its own. With this underpinning, it created political capacity grounded in professionalism, persistence, strategic vision, and a capacity for human resource development to serve the strategic plan. The Design Management Program demonstrated the importance of organizational capacity in a development agency that could also engage in strategic planning of activities and human resources, while constructing a collective body of knowledge. Most INTI DI staff know the fundamental concepts and the diagnostic methodology for design as a tool of product development, which broadens the scope of coverage for these types of policies. Due to the professionalism of its leadership, INTI DI quickly won the political support of the INTI president and the development program coordinator in order to situate itself in a position to implement design policies.

This political capacity led to a relationship with the UIA and to earlier public-private collaboration arrangements that laid the foundation for the Design Management Program. Here there is an intersection between organizational capacity for strategic definition and political capacity and human resource development capacity. INTI DI planned the incorporation of specialized professional profiles in the short, medium, and long terms and trained the incorporated professionals in design policy implementation using specialists in technical assistance and transfer programs from other INTI centers and

international consultants. This human resource development, coupled with the stability of INTI leadership in each of its specialized areas, provided the program with clear coordination and supervision, and ensured that it would earn prestige and domestic political support.

5.5.4. *Incuba (CMD)*

The structure, work team, and role of Incuba changed over time for several reasons. The major changes occurred between 2008 and 2010 with the inauguration of a new municipal government in Buenos Aires, and with it a new Minister of Economic Development and new leadership at the Metropolitan Design Center (CMD). The program had three stages: (1) Launch, learning, and evolution from 2002-2007; (2) A period of interruption from 2008-2009; and (3) Re-launching over 2010-2013.

In its first stage, the program consisted of an ideas and projects competition in the sectors of design, tourism, and culture. This was a time of considerable learning among the staff, as different annual cycles of events were held. Changes were made in the focus for the projects, the scope of coverage of the competition, the methods of project selection, the make-up of the groups of jurors, and the assistance provided to the selected candidates. The original thematic areas included fashion, equipment, children's toys, print publications, and audiovisual production, which were recombined and complemented with other areas.

The scope of the program changed in 2006 when three stages of assistance were delineated: pre-incubation, which consisted of a service to analyze and validate the business model to be presented in the competition; the incubation itself, consisting of services for training, business consultancies, and design for the incubated projects; and post-incubation, which involved services to encourage growth and track the progress of the entrepreneurs who graduated from the incubator. The selection of projects was done through an open annual competition, but those responsible for evaluation and the make-up of the juries changed.²⁷

²⁷ In the first three years of the competitions, a four-stage evaluation was used with a specialized jury at each stage made up of the Incuba team and other public employees, the secretaries for economic development and culture, the Endeavor Foundation, and high-profile businesspersons from different industries. The evaluation was concentrated on two phases. In the first, the public officials took part in the jury, while in the second the businesspersons took part. Financial assistance was provided to the selected projects with technical assistance and training in areas of business management and mentoring from experts. The business management training, coordinated by Incuba staff, was compulsory for the selected participants. The mentoring aspect provided an incentive for participants to continue with their projects after the incubation concluded.

The major challenge for IncuBA was to establish a structure flexible enough to allow for adjustment each year while meeting the projects' objectives and scheduled evaluations and incorporating professionals into the team. Active participation from government officials facilitated the involvement of outside experts in the evaluation of projects and the assistance offered them. Professionals from several disciplines were hired as specialists in business themes to serve as evaluators and counselors for the projects. In 2002, only two people were hired to work full-time on IncuBA, but by 2004 there was a six-person team of professionals from diverse disciplines with private sector experience (although not a single designer). By 2007 the team had grown to nine professionals, two of whom were designers (an architect and an industrial designer). During the entire five-year period, proposals for 407 projects were received, of which 51 were chosen.

The second stage of the program (2008–2009) saw changes in the assistance provided to incubator participants and in the team composition, due largely to changes in CMD policy coordination brought on by the change in city government. Only one competitive selection took place and program operations were limited to the locale being made available to the Incubator projects already selected. By late 2007, no members of the work team or leadership from the first stage remained.

In the third stage starting in 2010, a new program was created. The CMD was then transferred to the Under Secretariat for Economic Development in 2012.²⁸ The major change during this stage was to bring sponsoring entities into the process of selection of participants and the provision of technical assistance to those participants.²⁹ IncuBA succeeded in assisting and promoting the growth of projects related to design and cultural industries. The projects mentored received infrastructure and business consultancy support during their first years in the market. In some cases, financial assistance for seed money was also provided.

²⁸ The Under Secretariat for Economic Development has the authority over two other entrepreneurship programs in Buenos Aires: Buenos Aires Emprende (Buenos Aires Gets Going) and Baitec (Buenos Aires Technology Incubator). Since 2012, the call to participate in IncuBA competitive selections has taken place within the framework of the Program to Promote the Development of SMEs in Buenos Aires under the Ministry of Economic Development.

²⁹ These entities are organized as nonprofits that receive a set amount for each selected project they sponsor and a monthly amount for the assistance provided to the Incubation participants. Once the sponsors select the projects, IncuBA staff interview the candidates and then an evaluation committee made up of businesspersons and experts from different fields evaluates the project and the interview. Finally, the candidate presents the project to a jury of specialists. Of 130 projects presented, 54 were chosen for the Incubator. The relationship between the General Directorate of Creative Industries and IncuBA allowed for obtaining a locale for the incubators.

Types of Capacity Required for Implementation

Incuba is a horizontal market intervention. It was intended to address three market failures. The first involved asymmetric information, which had posed a constraint to matching up the entrepreneur with risk capital. The second was the information deficit among entrepreneurs. In general, entrepreneurs had talent for generating good ideas but lacked the technical business knowledge needed to implement ideas effectively by turning them into marketable products or services. Program activities were geared toward those business management aspects by providing a complementary public good. The third market failure was the externality of the entrepreneurial activity. The CMD provided infrastructure because it sought to foster collective learning between the entrepreneurial candidates and those who provided consulting assistance. Although the program defined design, cultural, and tourism initiatives as beneficiaries, it also covered many other economic sectors, which is why it is defined as horizontal assistance. This effort also was coordinated with other market intervention activities, such as subsidies.

Capacity development stemming from Incuba included access to the CMD building itself at the outset of the program. It was a place for productive development and neighborhood culture, as well as a center for government offices.

The capacity to develop human resources was built up in the initial years of the program, along with the stability of the work team, allowing for the accumulation of greater knowledge and modifications in the program structure and services. The support the CMD received from the authorities in the ministry was also crucial because the outside political support made it possible for the team to develop. During the first stage of the program, alliances with the CMD's contacts (i.e., the Network of Friends of the CMD, businesspersons, and experts in design-intensive industrial sectors) strengthened the Incuba team to a considerable degree. In the third stage of the program, following the shock from the change in city government and the poor leadership in the second stage (which led to the dissolution of the team), the political capacity for networking with others in the Ministry of Economic Development enabled the incubator (by then known as Baitec - Buenos Aires Technology Incubator) to reorganize its team and resume activities.

A key element in the CMD, and in the Incuba program in particular, was the management change in late 2007. The director who took over at that time halted nearly all the existing programs. The episode calls attention to the weight that political changes can exercise over the success of public policies. Despite having available a building, resources, and a team that had learned from its own record of good work, the change in authority that

brought poor administration to the CMD adversely affected the program. In countries such as Argentina, a change in authorities tends to bring policies to a halt and wipe the slate clean because the existing policies are often associated with the political leanings of the administration that launched them. Such a change frequently leads merely to a reinstitution of the same range of programs. This undermines plans and programs that depend on continuity over the course of successive periods to achieve their objectives. This was quite clear in the case of IncuBA. The change in management led to the exit of almost the entire staff that had been crucial throughout the course of the program. After the disbanding of the teams that had launched the program, little capacity remained and shortly thereafter the program was re-launched starting from zero. The episode shows that even when infrastructure and other resources are available, including internal and external political support, they may prove insufficient to implement policies in the absence of stability. This last element is indispensable because it allows for organizational and team learning, steady improvement in processes, dissemination of information, a build-up of prestige, and, above all, the development of the capacity in public agencies that can transcend political-institutional shocks.

5.5.5. Incorporation of Design Program (CMD)

The Incorporation of Design Program (PID) was created in 2002. As discussed earlier in the chapter, the CMD coordinated two modalities: under the Systems Value Operations Program, five projects were carried out from 2002-2006 and another in 2011; and under the Incorporation of Design Program, 43 projects were carried out in 2013.

The Systems Value Operations Program was meant to convey how design contributes to business by providing a concrete work experience for SMEs with designers. It offered to those that represented links in a value chain (a different chain was selected each year) the opportunity to work with designers on product development. The CMD coordinated the program by announcing the process to select SMEs and individual designers or design studios, provided product development assistance available in some cases, and coordinated with other entities such as research institutes (INTI and the Instituto Nacional de Tecnología Agropecuaria, INTA, the main agricultural extension public institute in Argentina), chambers of commerce, and national government agencies. The SMEs that were selected paid for the projects that were carried out with the designers. The program director was an industrial designer whose academic background included graduate studies and 15 years of work experience in major design companies in Italy. She incorporated into her team at the CMD several industrial designers whom she trained in the

strategic design perspective. The projects were carried out with the value chains of furniture and wooden articles (Eucalis, Salix, Brico, and Lenga), bazaar products (everyday items), and leather goods with chinchilla fur. The choice of value chains was based on prior studies undertaken by the Buenos Aires Ministry of Production that highlighted wooden and furniture products (and decorative goods) and fashion as growth sectors. The scope of program coverage ranged between 10 and 30 participants in each annual cycle, with the number increasing each year, although it was not scaled.³⁰ Finally, the links in the value chains lasted only during the product development phase, but failed to thrive when the producers and product marketers needed to set the operating conditions for market sales.

The Incorporation of Design Program provided SMEs the opportunity for comprehensive subsidized assistance through intensive consultancies in strategic design offered by professional teams from specialized design studios. At the conclusion of the consultancies, the target enterprises received a summary report and a strategic design plan that included a near- and mid-term activities guide to help them proceed with the process of incorporating design. The CMD subsidized 70 percent of the consultants' professional fees, while the beneficiaries paid the remainder at the conclusion of the consultancy. In 2013, of 48 beneficiary enterprises expected, 43 registered,³¹ while in 2014, 31 enterprises were expected.³²

Types of Capacity Required for Implementation

As with the Design Management Program, the CMD's Incorporation of Design Program has components of both public good provision and market intervention. The activity is horizontal. The program sought to mitigate several

³⁰ Altogether, the six cycles involved 71 SMEs and 60 design studies. Only five design studies took part in two programs. Significantly, the geographic coverage of the program transcended the limits of the CMD's jurisdiction. All of the suppliers for the wood product and furniture value chains, for example, were from other provinces.

³¹ Among the sectors represented were record labels, publishers, furniture makers, producers of clothing, software, laboratory equipment, medicine, tourism, and cosmetics.

³² Authorization for the second program cycle (369/2014) set a budget of US\$312,000 for 24 enterprises. In order to involve more participants, the program introduced promotion entities tasked with recruiting enterprises and assisting them with their registration. These entities were mainly specialized business or professional associations (e.g., the Book Association, Furniture and Upholstery Association, Manufacturers' Association – Cafydmal) and other organizations that work with SMEs such as the Bank of the City, the SME Institute, and the Argentine Chamber of Mid-size Enterprises (CAME). In addition to broadening the participation of target enterprises, these relationships form part of a long-term strategy in which these groups become partners in incorporating design management into the enterprises.

market failures, three of them in its first phase. The first market failure, as was the case with the Design Management Program, was the positive knowledge externality to other firms generated—but not internalized—by the firm incorporating design practices. The second involved coordination between different links in the selected value chain. The third was the provision of a public good (information to contribute to incorporating design into Argentine SMEs), as was seen in the activities described above. In its second phase, the program managed to exploit the positive externality from incorporating strategic design practices. As for the type of market intervention produced, the first such intervention provided a public good through coordination between the agency and the different links in the value chain and through planning for the activities performed with each link; the second, which involved subsidies for strategic design assistance, was a case of horizontal market intervention.

The history of the Incorporation of Design Program shows that external political capacity, which is usually crucial in implementing public policies in any sector, is not always sufficient to achieve success. Each case involves a specific set of conditions that, when combined appropriately, produce the desired results. In fact, one sees in the Incorporation of Design Program the difficulties of building and sustaining capacity in the midst of an adverse institutional political context (the change in leadership and the bad management in 2007). An example occurred in 2008 when the CMD took part in the formulation of the Design Management Program developed by the UIA and INTI DI. The official responsible for the program at the CMD took part in several meetings that defined the general program guidelines. Originally, the parties had agreed that the CMD would carry out the work with the proposed firms from metropolitan Buenos Aires, but it was INTI DI that implemented the program. It is likely that the UIA was wary of relying on a debilitated organization, as was the case of the CMD with its leadership change in 2007. Nor did the broader context favor a coordinated effort between a development agency (INTI DI) dependent on the Ministry of Industry, headed by the recently appointed Minister Giorgi, and an agency of the Buenos Aires municipal government.

Without a doubt, the CMD's demonstrated capacity to attract well-regarded and well-established professionals made it possible to design new programs. It hired personnel not only for their technical know-how but because of their commitment to their vocation. Yet, it was unable to retain them when political-institutional shocks led to bad management by the authorities. It could be argued that political support from the highest-level authorities as cover for some decisions is not necessarily sufficient leverage to produce good outcomes. Thus, the city could not convince a solid organization such as the UIA that the CMD could implement this program. The issue is perhaps

intertwined with jurisdictional issues indicating that even the highest level of political support can prove insufficient for a federal organization.

5.6. Comparative Analysis

This chapter has examined the capacity that development promotion agencies must bring to bear in order to implement policies that promote the development of design. These policies have become essential in the Argentine political context where shocks in the political system impact state agencies. Changes in the political priorities of government, in policies concerning the promotion of design as a factor of commercial competitiveness, and in turnover in the leadership of public agencies all impact capacity. These contextual factors are out of the hands of the development agencies themselves—there is little they can do to affect what is a constraint on their activities.

The cases examined indicate that any change in the upper echelons of political leadership will affect the agencies that have the highest functional hierarchy and political visibility. One finding of this chapter is that a public agency's political visibility when it operates at the upper levels of institutional structures can be counterproductive for the continued existence of programs. For example, as shown in the chapter, the CMD is the *pampered baby* of the city government and of its chief executive, and the Ministry of Industry is very close to the presidency. When changes occur in the top leadership or the strategic direction of government, programs tend to grind to a halt or are left hanging. Thus, political support, useful for development actions while it lasts, will not necessarily build capacity in the agencies.

In this regard, organizational capacity is key to designing and implementing the policies examined in this chapter. The combination of autonomy, organizational flexibility, and human resource stability represents an essential capacity. Organizational autonomy apparently flows from closeness to the central political power.

On a scale of capacity, INTI is at the top. It is decentralized and organizationally flexible, structured around the operations of its autonomous centers, and has the ability to network with the private sector. At the other extreme is the Ministry of Industry, which is part of the central government administration. The ministry is inflexible and still has a structure that dates to the times of Juan Domingo Perón—that is, it is captive in the extreme to changes in the top leadership. INTI, by contrast, is cushioned from changes in the government leadership and from political shocks, which allows it to maintain a more stable agenda. Toward the middle of these two extremes is the CMD, which, as part of the municipal central administration, is close to political power yet has a more flexible organizational structure. The CMD

has had mixed results. It succeeds in some programs but can be captive to changes in the top political leadership, which affects the stability of its human resources and leaves some areas of intervention more vulnerable.

The cases examined in this chapter show that the closer an agency is to central decision-making, the greater its risk of exposure to political volatility. The more the organization is part of the national central administration, the more rigid it will be. This contradicts the notion that greater political support fosters the development of greater capacity. By way of contrast, internal political capacity is useful to agency leadership and builds legitimacy with superiors, as has occurred with the INTI centers.

In taking account of the agencies' organizational capacity to implement development policies, the chapter has shown how important this capacity is for policy interventions to promote design. Crucial among the types of capacity in the Argentine context is the need for a degree of autonomy that allows for networking with the private sector, and the capacity to attract and retain personnel. In particular, the chapter finds that organizational capacity, in combination with human resource stability, is key in management positions.

Organizational autonomy, flexibility, and stability in staffing are possible when they are sheltered from centralized decision-making, although this also results in a loss in coverage capacity. There is an apparent trade-off between independence from volatility and achieving greater program coverage. For example, the Seal of Good Design of the National Design Plan (PND) could have considerable coverage if the minister supported and promoted it. That support is sporadic, however, and is based on an external policy at any given moment. At times a budget supplement is needed, but the effort does not generate internal capacity.

Human resources are the principal capital of the institutions whose capacity thrives in favorable organizational contexts. Organizations need the capacity to attract good staff, let them perform, and retain them over time. If the organization is inflexible, or attracts appropriate personnel but fails to allow them to take initiative (as in the case of the Ministry of Industry), personnel will go elsewhere. In these cases, a general lack of stability is compounded by a high turnover of human resources, and capacity will not build up. At the same time, if there is capacity to attract resources without retaining them (as in the case of the CMD due to its vulnerability to political changes), the factors will fail to combine, and capacity again will not build up in contexts of weak and volatile formal institutions.

In the case of the PND run by the Ministry of Industry, the program is part of the central administration and current management is concentrated in the hands of the minister. Her organizational style inhibits initiative and the attraction and retention of talent. The PND ranks low in the ministry

and is relegated to an under secretary who has little autonomy to generate new actions. The under secretary lacks the capacity to generate information relevant to intervening in the sector effectively or efficiently. There was no budget stability until most recently, and the staff is unstable, consisting of temporary hires (i.e., without the stability normally enjoyed in the public sector). Nevertheless, when the political power so decides, PND actions can quickly achieve visibility, as was seen in the seal program. The authorities' political power drives the implementation of an action, but the capacity in the agency is not built up.

The capacity of the two INTI centers largely reflects the larger development agency to which they correspond. INTI has organizational autonomy and flexibility. Both centers have their own supervisory board with interested parties, which allows them to build close relationships with the private sector. The INTI centers combine a clear strategic vision and their directors' considerable capacity for initiative. These centers generate pertinent information for sectoral interventions through their activities. Even though their regular budget is small, they have managed to broaden their budget capacity through alliances with other actors in public and private spheres. Their ability to carry out planning allows them to develop the capacity to attract and hire professionals with ideal profiles and provide them with the remuneration and benefits they deserve. INTI has its own employee hiring and promotion system, unlike the central administration (within which the Ministry of Industry operates). The centers are relatively cushioned from political shocks and have thus managed to build up internal political capacity through concrete actions. In short, there is an organizational context that nurtures initiative in capable employees who are able to carry forward projects, benefit from learning experiences, generate capacity, and on this basis build political support within the development agency. The trade-off in this case is that the agency's capacity to achieve its objectives, although quite good, has a limited scope owing to its political isolation.

The CMD exhibits a mix of the characteristics (good and bad) seen in the Ministry of Industry and in INTI. In organizational terms it is close to political decision-making, so it is far more exposed to the volatility of political changes, such as in leadership. At the same time its structure is less responsive to innovation and to private sector ties than a ministry of the national central administration. The CMD is close to political power, but in its case that power is the City of Buenos Aires, which functions on a different scale than the national government. On the one hand, the agency has the capacity to generate information and the stability that derives from having financial resources available. On the other hand, consistent with its political exposure, it has less capacity to retain the talent it is able to attract due to the changes of municipal ministers and its institutional fragility.

Often, common sense analyses conclude that public sector capacity depends on political will. The research for this chapter shows the need to distinguish between an internal political capacity that is built by staff tasked with concrete programs, and capacity relying on a momentary political situation that provides temporary support from the highest political leadership (or not). Internal political capacity is crucial, and it would appear possible to build it in some specific organizational contexts, given that the decisions over the types of actions to carry out are made at high levels of nonpolitical leadership in the public agency (nonpolitical upper management positions). Thus, political capacity remains internal and can be developed by public employees with initiative who build political legitimacy with their actions. It also derives from forging alliances with relevant private sector actors who can perhaps cushion the agency to a degree from the winds of political change.

5.7. Conclusions and Discussion

The analysis in this chapter shows that the capacity that appears to be critical to implementing design policies reflects a combination of organizational flexibility and staffing stability. This allows for the build-up of internal political capital to help prevent the political authorities from deciding to take apart existing policies. The process that leads to this construct can be interpreted from the perspective of “institutionalization as equilibrium” (Scartascini and Tommasi 2012, 2013).³³ A virtuous circle can be generated if a given agency enjoys a good reputation for professional performance, considerable public recognition, a stable horizon with credibility among its own professional staff and relevant constituencies such as private sector groups and other public sector colleagues, and the ability to recruit specialized human capital. The dynamic of that virtuous cycle functions as follows:

- Good professionals will be willing to devote their long-term careers to the agency.
- Relevant outside interested parties, such as businesses from the sector, will be willing to invest resources and time to collaborate with the agency to develop conditions and policies for the sector (including training).
- Other government agencies or political organizations at the same level will view the agency as an advantageous and trustworthy partner and interlocutor.

³³ This perspective is applied to another organization, the Congress, in Palanza, Scartascini, and Tommasi (2013, 2016).

- The political authorities at any given moment may find it to their benefit to seek the agency's support in order to implement policies that meet their own priorities (and it may be politically costly for them to attack or debilitate the agency or try to impose their own people as part of a patronage scheme).
- The agency may get priority for budget resources as well as for hiring and training appropriate personnel.

Organizational inflexibility hinders success in unstable political institutional settings, such as that in Argentina, and thus hinders the possibility of taking initiative by networking with private sector actors and establishing fruitful informal coordination, both of which are key ingredients for programs to function. It is a commonplace in instances of formal institutional weakness for it to become necessary to follow strong informal rules to replace the formal ones. In other words, some source of stability is required: either formal rules transcend the turnover of actors, or the organizations function well and are resistant to changes in their leadership. The research for this chapter indicates that keeping employees in their positions requires a certain favorable organizational context cushioned from political shocks.

The chapter has also shown that decisions about program actions work best when they are made by public professional leadership (positions underneath political figures, but executives nonetheless) that is allowed the freedom to carry them out (as illustrated by the INTI centers, for example. By contrast, when the policy directives are set by the top political leadership but the public directors lack the autonomy to carry them forward—and thereby to build up capacity—the actions will proceed with several constraints, as shown in the case of the Seal of Good Design under the Ministry of Industry and to a degree in the IncuBA and Incorporation of Design Program under the CMD.

It is no small matter to recall that the people who make up the public administration of government either constrain or facilitate implementation of policies; just as it is no small matter to have proper funding. Just the same, although common sense would indicate that the availability of a budget is a key condition for policy implementation, this chapter has shown that it is also essential how the budget is combined with the organizational forms, leaving aside the problem of what occurs when funding is lacking (as with the policies that financed the SMEs and the designers). And just as with financial resources, organizational form has a key role. This is clearly seen in the contrast between INTI and the PND. Even though both are under the national central government, the PND operates within the central administration (Ministry of Industry), whereas INTI is decentralized and its centers have considerable leeway for action, enabling them to respond quite differently when resources

are limited. INTI centers forge alliances with the private sector because their organizational form allows them to do so, but the PND lacks that leeway.

Another interesting finding is that the agencies do not just need to develop a path to reach SMEs but also to formulate an effective mode of work to engage them. In some cases, SMEs are skeptical of the contribution that design can make to competitiveness, whereas other businesses are more open to design but are uncertain about how it can be incorporated. One path to reach SMEs consists of the designers themselves. With the agencies observed here, the low capacity to reach SMEs has stemmed from the use of passive strategies to reach out to them. This issue could be resolved by actively targeting the beneficiaries of the development policies—but this would require resources that are not available due to a lack of political support.

The development actions are framed within specific political institutional contexts that can be fueled or weakened by actions with horizons that can be facilitated or debilitated over the long run. Of course, different agencies approach opportunities differently, depending on the traits of the people who lead them, the nature of the public issues they face, and the organization of the economic sector in which they operate. INTI Textiles figured out how to seize the moment: at least in cases of relatively novel policies, as is the case with design, and in an institutional context such as that in Argentina, the initiative and long-term vision of the agency's leadership and a bit of political institutional good luck all proved crucial. These factors allowed for the forging of virtuous circles of relationships with entrepreneurial organizations and with other actors in the sector, or at least with that segment in which INTI Textiles specialized. Those partners became relevant actors in the long term and helped to incorporate design into the general framework of the sector in Argentina. In fact, it is important to frame INTI Textiles in the context of organizational structure and the institutional characteristics and general policies of INTI, because the analysis of INTI DI reinforces this lesson. If an organization embarks on the implementation of a design policy that lies far beyond its capacity, it is likely to fail, even if it has settled on an “ideal” policy. In short, given that the choice of public policy instruments should be guided by the match between policy requirements and existing capacity (Crespi, Fernández-Arias, and Stein 2014), INTI would appear to be an agency that can be entrusted with responsibility for specific efforts to promote productive development.

Another lesson that emerges from the chapter is that a very fine lens is required to examine the capacity of agencies to ascertain the match between capacity and public policy actions, and the match between these and the general institutional context. In a country such as Argentina, it would seem more important that the organization give leeway for innovation to creative

and capable people who can develop work methodologies that are proven over time and that maintain continuity and quality in their actions, as opposed to relying on an infrastructure without capable people who can carry out stable interventions. Of course, combining both aspects would be the best situation, but the crucial finding is that the fitness, initiative, and leadership capacity of staff, and their continued presence in their posts, are significant when examining the capacity of public sector agencies.

Finally, it should be noted that it would be most worthwhile, in the broader context of the research within which this chapter is framed to consider the role that international institutions such as the Inter-American Development Bank can play (and in fact do play) in these processes of capacity-building (or not building), particularly in light of the functional continuity (or lack thereof) and political visibility of the interventions.

Annex 5.1. List of Interviews

Ariza, Raquel (2012, 2014). Director of the Industrial Design Center of INTI
Arrospide, Viviana (2014). Ex-Coordinator of IncuBA
Avogadro, Enrique (2014). Under Secretary for Creative Economy, Ministry of Economic Development, Autonomous City of Buenos Aires
Cervini, Analía (2014). Creator of IMDI, CMD; consultant in strategic design
Díaz, Juan (2014). Former Under Secretary for Industry, Secretariat of Industry, Ministry of Industry
Ferreira, Mariana (2014). Coordinator, Incorporation of Design Program, CMD
Jablonka, Patricia (2014). Deputy Manager for Operations, CMD; former Coordinator of IncuBA
Locatelli Hoops, María (2011). Assistant in the Office for Fashion, CMD
Mardaraz, Javier (2014). Creator and first Coordinator of IncuBA
Marino, Patricia (2012, 2014). Director, Textiles Center, Marketing Manager, INTI
Martínez, Carolina (2014). Coordinator, PND
Mora, Scillamá (2014). Director General for Creative Industries, Under Secretariat for Creative Economy, Ministry of Economic Development, Autonomous City of Buenos Aires
Offenhenden, Camila (2014). Coordinator, IMDI, CMD
Pérez Zelaschi, Marina (2011). Vice Director, Textiles Center, INTI
Ramírez, Rodrigo (2014). Coordinator of the Transfer Unit, Industrial Design Center, INTI
Risso, Laura (2014). Former Coordinador, PND
Rondina, Anabella (2014). Operations Director, CMD
Rozemberg, Ricardo (2014). Former Director, Center of Studies for Production (CEP), Ministry of Industry
Sauret, Beatriz (2014). Coordinator, PND
Salás, Victoria (2011). Coordinator of the Office for Fashion, CMD

Annex 5.2. Criteria to Determine the Score for Productive Development Agencies

This annex details the criteria used to score each agency for each indicator and each type of institutional capacity.

1. *Organizational Capacity*

- a. Structure: A high value (3 points) was assigned to productive development agencies (PDAs) in the third level of hierarchy during the period under study; a medium value (2 points) to those in the fourth level of hierarchy during most of the period under study; and a low value (1 point) to those situated outside the formal structure during most of the period under study.
- b. Generation and use of information: A high value (3 points) was assigned to PDAs that possessed a specialized research section and staff exclusively devoted to research during the period under study; a medium value (2 points) to those that had a specialized research section but staff who were not exclusively assigned to research; a low value (1 point) to those that conducted research without having a research section; and a null value (0 points) to those that did not conduct any research.
- c. Existence and types of coordination among agencies under study: A high value (3 points) was assigned to PDAs with three active coordination linkages during most of the period under study; a medium value (2 points) to those with two active coordination linkages during most of the period under study; a low value (1 point) to those with only one active coordination linkage during most of the period under study; and a null value (0 points) to those without any active linkages during most of the period under study.

The structure indicator was weighted by 0.500; the other two indicators were weighted by 0.250.

2. *Budget*

- a. Amount assigned annually to each agency: A high value (3 points) was assigned to PDAs that, after discounting operating costs (work inputs, salaries, services, etc.), still had resources allocated under the budget law for programs during most of the period under study; a medium value (2 points) was assigned to those that, after discounting operating costs, still had resources for programs during most of the period under

study, without these resources being allocated under the budget law but rather assigned from discretionary funds at the hierarchical level; and a low value (1 point) to those that were not even assigned discretionary funds for carrying out programs during most of the period under study.

- b. Budgetary stability: A high value (3 points) was assigned to PDAs if the amount allocated (whether to the PDA and/or to the decentralized agency under study) was stable throughout the period under study; a medium value (2 points) to those whose budget was cut significantly between one and three times during the period under study; a low value (1 point) to those whose budget was cut significantly and more than three times during the period under study; and a null value (0 points) to those that were not allocated their own budget during most of the period under study.
- c. Source of agency revenues: A high value (3 points) was assigned to PDAs with a capacity to raise funds (through sales of products and services) and use 100 percent of them directly; a medium value (2 points) to those with a capacity to raise funds and use less than 100 percent of them directly; a low value (1 point) to those with a capacity to raise funds but not to use them directly; and a null value (0 points) to those unable to raise funds.

The first indicator was weighted by 0.750; the other two were weighted by 0.125.

3. Human Resource Capacity

- a. Profiles: A high value (3 points) was assigned to PDAs whose share of professionals on staff exceeded 75 percent during the period under study; a medium value (2 points) to those whose share of professional staff averaged between 50 and 75 percent during the period under study; a low value (1 point) to those whose share of professionals on staff averaged between 25 and 50 percent during the period under study; and a null value (0 points) to those whose share of professionals on staff averaged below 25 percent during the period under study.
- b. Team stability: A high value (3 points) was assigned to PDAs whose retention rate exceeded 75 percent;³⁴ a medium value (2 points) to those with a retention rate between 50 and 75 percent; a low value (1 point)

³⁴ The retention rate is calculated as the quantity of employees of the PDA who remained on staff in relation to the total number who were hired.

to those with a retention rate between 25 and 50 percent; and a null value (0 points) to those whose retention rate was below 25 percent.

c. Type of contract: A high value (3 points) was assigned to PDAs whose share of staff hired under the Work Contract Law (INTI) or the Framework Law (Ministry of Industry) averaged more than 75 percent, whether permanent, transitory, or contracted, during the period under study; a medium value (2 points) was assigned to those with the same type of contracts averaging between 50 and 75 percent of staff during the period under study; a low score to those whose staff averaged 25-50 percent during the period under study; and a null value (0 points) to those whose contracting was under 25 percent during the period under study.

The first indicator was weighted by 0.600, the second by 0.300, and the third by 0.100.

4. *Scope of Coverage*

a. Capacity to reach the target public: A high value (3 points) was assigned to PDAs that were successful in reaching their defined target public; a medium value (2 points) to those that reached their targeted public with a given set of programs or activities; a low value (1 point) to those that reached part of their targeted public with a given set of programs or activities; and a null value (0 points) to those that did not even partially reach their targeted public.

b. Coverage strategy: A high value (3 points) was assigned to PDAs that presented an active strategy to reach their targeted public during most of the period under study; a medium score (2 points) was assigned to PDAs that presented a mixed strategy (active and passive) during most of the period under study; a low score (1 point) was assigned to the PDAs that presented a passive strategy during most of the period under study; and a null value (0 points) was assigned to those PDAs that did not define any strategy during most of the period under study.

The first indicator was weighted by 0.750 and the second by 0.250.

5. *Political Capacity*

c. Construction of political support to launch policies: A high value (3 points) was assigned to PDAs that relied on maximum authority from the jurisdiction and institution during most of the period under study; a medium value (2 points) to those that relied on the support of the

maximum authority of their institution during most of the period under study; a low value (1 point) to those that, without either jurisdictional or institutional support, were at least not prevented from performing their work during most of the period under study; and a null value (0 points) to those that were prevented by the authorities from performing their functions during most of the period under study.

d. Forging alliances: A high value (3 points) was assigned to PDAs that succeeded in creating alliances with the industrial sector, the academic sector, and the third sector; a medium value (2 points) to those that built alliances with the industrial sector and one of the other two, either the academic or the third sector; a low value (1 point) to those that built alliances with either just the academic or the third sector; and a null value (0 points) to those that did not generate alliances.

Both indicators were averaged (weighted equally).

Building Institutional Capacity for Productive Development: Evidence from Three Case Studies in Argentina¹

Lucio Castro and Paula Szenkman

Recent evidence suggests that the success or failure of productive development policies (PDPs) depends to a large extent not so much on the particular characteristics of the policies but on the institutional capacity of the public organizations responsible for their implementation. The aim of this chapter is to contribute to understanding the role of institutional capacity in the design and implementation of PDPs through analysis of three case studies of productive development agencies (PDAs) in Argentina: the Technology District of the City of Buenos Aires, a vertical program of territorial and sectoral stimulus; Fundación Export.AR, the national export promotion agency; and the Ministry of Science and Technology (MINCyT), the leading public scientific and technology entity. The chapter finds that, apart from

¹ The authors wish to thank Ernesto Stein, Ernesto Dal Bó, and Gonzalo Rivas for their valuable comments and suggestions on a preliminary version of this chapter. The authors also thank Julia Pomares and María Page for their collaboration on the analysis of the dynamics of the relation between the executive and legislative branches of the City of Buenos Aires; Estefanía Lottito for her support with the analysis of Argentina's Ministry of Science and Technology; and the participants in a seminar held at the Inter-American Development Bank in Washington, DC in December 2013 for in-depth discussion of the initial hypotheses and ideas for this project. Finally, the authors thank the more than 60 officials, businesspersons, and specialists who participated in the interviews conducted for the chapter.

the institutional design of the PDAs, political capacity—in particular, support at the highest level of political power—plays a crucial role in the success of PDPs. The chapter also finds that the challenge of PDAs is to build technical and organizational capacity that leads to consolidation of effective PDPs that go beyond the *public entrepreneurs* that have implemented these policies, especially in the context of policy volatility, low levels of bureaucratic professionalization, and lack of institutionality in the public sector, as is the case of Argentina.

Between 2008 and 2014, the Buenos Aires city government (*Ciudad Autónoma de Buenos Aires* – CABA) implemented the Technology District, a vertical PDP to stimulate the information and communications technology (ICT) sector in a defined area: the Buenos Aires district of Parque de los Patricios. Implementation of the Technology District required informal coordination of the actions of six ministries of the CABA and passage of a law in the local legislature.

As a result of the Technology District, almost 200 ICT companies made investments of more than US\$150 million in the promoted area. Along with a major public investment effort by the CABA, this resulted in the transformation of what at the time was one of the less-developed areas of the city. In parallel, the Audiovisual District, a district initiative with similar characteristics but applied to a productive sector and a different urban environment, led to questions about the local government's sectoral and territorial incentive policies.

Unlike the informal coordination scheme of the Buenos Aires Technology District, the creation in 2007 of the MINCyT involved setting up a formal centralized structure for design and implementation of science and technology PDPs in Argentina. Before creation of the ministry, Argentine technology policy was divided among various national agencies that operated in a context of clear resource fragmentation and low priority of science and technology policies on the national government's agenda.

In the period between 2002 and 2010, the Export.AR Foundation went through a process of institutional strengthening marked by expanding the number of actions taken and by innovation in the types of services offered. This stage was interrupted by the dismissal of the foundation's executive director in 2010, which began a process of gradual institutional deterioration. In contrast, faced with a similar episode, ProCórdoba, the export promotion agency of the Argentine province of Córdoba, was able to maintain and strengthen its existing institutional capacity.

These different experiences and results of PDAs raise some key questions. What types of technical, organizational, and political capacity do PDAs require to implement successful and sustainable PDPs? What institutional designs lead to the success or failure of PDPs? What are the characteristics

of the PDP formation process and how do they influence the institutional capacity of PDAs and the results of these policies?

Traditionally, the economic literature has made attempts to understand the costs and benefits of PDPs. However, the institutional conditions that make it possible to maximize the benefits and reduce the costs of these public policies have been researched less in the literature (Crespi, Fernández-Arias, and Stein 2014; Scartascini and Tommasi 2010).

This chapter aims to contribute to filling that gap in the literature and offer an initial response to the questions raised through the three aforementioned case studies on the institutional capacity of PDAs in Argentina. The chapter uses an analytical approach that combines the conceptual framework of institutional capacity of Cornick (2013) with the broader scheme of the public policymaking process developed by Stein and Tommasi (2008) and Scartascini et al. (2011) to analyze PDAs and selected PDPs. The main objective is to identify the institutional capacity required to implement PDPs from the selected case studies. In particular, the aim is to understand the process of construction and/or destruction of this capacity in PDAs with responsibility for the PDPs analyzed.

To assemble the case studies, 60 interviews were conducted with the main decision-makers of the CABA, the Export.AR Foundation, and the MINCyT; mid-level officials of the selected PDAs; representatives of the private sector directly affected by the PDPs under analysis; and specialists in urban economy, foreign trade, and PDPs in general. Also compiled and analyzed were existing studies on the institutional context, characteristics, and outcomes of the PDPs examined, together with the relevant available statistical information.

The results of the case studies suggest three main conclusions. First, PDAs can implement successful PDPs with different institutional designs, depending on their capacity to generate stable and effective public policies oriented to the public good. Second, aside from the institutional design of PDAs, political capacity, particularly support at the highest level of political power, plays a crucial role in the success of PDPs. Third, even in contexts of volatility, low levels of bureaucratic professionalism, and lack of institutionality, there are innovators or entrepreneurs in the public sector. The challenge for PDAs is to build technical and organizational capacity that reinforces innovative PDPs that go beyond these individual public entrepreneurs.

6.1. Analytical Approach

This section presents the analytical approach proposed for the study of the institutional capacity of the PDAs examined in Section 6.3. This section first classifies PDPs according to the scope and type of policy intervention and

analyzes the institutional demands created by these characteristics of the different PDPs for the implementing PDAs. The section then describes, in stylized form, the *production process* of PDPs, which explains the institutional capacity of PDAs and the results of PDPs in the broader framework of the public policymaking process (Stein and Tommasi 2008; Scartascini and Tommasi 2010).

6.1.1. *Types of PDPs and Institutional Demands on PDAs*

According to Stein (2014), PDPs can be classified into two key dimensions: scope and type of intervention. Scope helps distinguish two types of PDPs: (1) horizontal or cross-cutting, without sectoral focus, and (2) vertical, which benefit a specific type of company, sector, and/or region. Type of intervention distinguishes between market interventions (such as subsidies, tax exemptions, and tariffs) and the provision of public goods (such as technical standards and infrastructure, among others).

These specific characteristics of PDPs impose different institutional demands on the implementing PDAs. First, market interventions tend to offer greater opportunities for rent capture by the private sector than does the provision of public goods. Similarly, risk of capture tends to be greater in vertical PDPs than in horizontal PDPs (Crespi, Fernández-Arias, and Stein 2014).

A possible problem of political economy of vertical PDPs is that those that grant the benefit may be enjoying the political benefits associated with the PDP, while not meeting the fiscal costs that those that come after will have to deal with. This problem may result in overly generous benefits that last longer than necessary.

Vertical PDPs also imply picking the winners that will benefit from state intervention. So this type of PDP creates dilemmas about how to pick these sectors, identify the public inputs required from the state, structure public-private dialogue to recognize these inputs, and avoid problems of capture by the private sector.

Likewise, PDPs aim to produce changes in the behavior of a set of actors in the economy. As a result, the success of PDPs goes beyond the control that the PDA is able to exercise and depends on the response of the targeted economic agents and of other economic and political agents. Consequently, both the characteristics of the selected PDP and the context of implementation have a direct impact on the outcomes of PDPs.

6.1.2. *PDPs and the Desirable Characteristics of Public Policies*

Aside from the specific modalities of PDPs, recent literature emphasizes that policy outcomes are explained not so much by the particular features of each

policy, but by a set of general characteristics of public policies. According to Stein and Tommasi (2008), Franco Chuaire and Scartascini (2014), and Pomares et al. (2014), in general terms, public policies have eight desirable characteristics: stability, adaptability, coherence and coordination, effective implementation, validity and reliability of information, efficiency and productivity, representativeness, and orientation to the collective interest.

These ideal characteristics of public policies are not exogenous but depend on the quality of government institutions. Franco Chuaire and Scartascini (2014) identify at least four crucial characteristics of the institutions that shape the public policymaking process and the ideal aspects of the public policies described above: capacity of the legislative branch, presence of an institutionalized party system, efficiency and effectiveness of the state bureaucracy, and an independent judicial system.

6.1.3. The Production Process of PDPs, the Institutional Capacity of PDAs, and the Process of Formulating PDPs

Within this general framework, this chapter aims to address the provision of PDPs, in stylized form, as a production process of PDAs with four main components: inputs, technology, outputs, and outcomes. Inputs include human and budgetary resources, technological equipment, and physical infrastructure of the PDA implemented by the PDP. These inputs are combined through technology, activities, processes, and formal and informal rules that structure and make possible the generation of the outputs of the PDP (e.g., the number of trade missions organized annually in an export promotion PDA). Finally, the PDA production process affects the outcomes that the PDP aims to promote (e.g., an increase in export volume).

This stylized production function depends on the institutional capacity of PDAs to generate the outputs of the PDP. According to Cornick (2013), there are three main types of institutional capacity, the so-called TOP capacities: technical, organizational, and political.

Technical capacity is observable by analyzing PDA inputs, particularly those linked to human capital, such as level of training and the trajectory of human resources, wage competitiveness, and human resource policy and professional and technical training.

Organizational capacity is linked to the technology of the PDA: procedures for action, formal and informal mechanisms of coordination with other government agencies, and dialogue and linkage with the private sector for provision of the PDP.

Finally, *political capacity* is used to obtain the necessary consensus within the PDA, among other public agencies, and among the private sector

actors targeted by the PDP. In particular, this refers to the capacity to build consensus, create trust and credibility, secure budgetary resources, and isolate policymakers from the undue influence of their beneficiaries, all of which play a fundamental role in the viability of PDPs.

TOP capacity must not be seen as a set of mutually exclusive analytical categories. On the contrary, in practice, these three types of capacity interact continuously during the PDP implementation process. In this respect, TOP capacity should be seen more as a flow than as a stock, coming out of a dynamic process of construction, consolidation, erosion, and even destruction of those different types of capacity as a result of the public policymaking process.

For its part, this institutional capacity is the endogenous result of intertemporal interactions and exchanges between multiple political and socioeconomic actors that take place in different institutional arenas under a specific set of formal and informal “rules of the game” (Saiegh and Tommasi 1998; Stein and Tommasi 2008; Scartascini et al. 2011; Scartascini and Tommasi 2013). In this respect, the operating characteristics of the PDPs selected are understood to be a consequence of a particular political economy equilibrium with the characteristics described below.

Following Stein and Tommasi (2008) and Scartascini et al. (2011), this public policymaking process can be understood as the result of a series of agreements and negotiations between public actors (legislative branch, executive branch, state bureaucracy, etc.) and private actors (companies, business associations, unions, etc.). The type of agreement is, in turn, determined by the characteristics of the institutional arena where the interactions between these political and socioeconomic actors take place, defined fundamentally by its formal and informal rules.

As a result, the behavior of actors in the public policymaking process depends on the individual interests pursued by each and on exchanges with the other actors in the context of the institutional arena where these exchanges take place. This analytical scheme takes into account the presence of information and power asymmetries, and therefore, the differences in the actors' capacity to change or maintain the existing rules of the game.

According to the positions they take with respect to specific institutional processes of reform or change, it is possible to identify three types of actors in the public policymaking process: (1) reforming individuals or groups, (2) champions of reform, and (3) veto actors who oppose the reforms (Saiegh and Tommasi 1998). These reforms can include the launching or genesis of a PDP or an increase in its complexity, among other possible reformist events.

In summary, the analytical approach applies the conceptual framework of the three types of institutional capacity as defined by Cornick (2013) to the broader public policymaking process scheme developed by Stein and

Tommasi (2008) and Scartascini et al. (2011) to analyze the selected PDAs and PDPs. The aim is to identify the relevant types of capacity for creating stable and adaptable PDPs. Figure 6A1.1 presents in stylized form the *production process* of PDPs. It should be noted that the outcomes or impact of the PDP are included only for analytical consistency but are not the subject of study of this chapter.

6.2. Methodology

To analyze the institutional capacity of the selected case studies, this chapter uses the Embedded Case Study methodology. This involves an integrated and systemic approach to qualitative and quantitative case study methods (Scholz and Tietje 2002). The method combines analysis of the outputs and outcomes of PDPs, especially through information sources, with the study of the institutional capacity of the PDA, mainly using qualitative techniques such as semi-structured interviews with key informants.

The three case studies selected are the Technology District of the Buenos Aires city government (CABA); the Export.AR Foundation, which is Argentina's export promotion agency; and the Ministry of Science, Technology and Productive Innovation (MINCyT). The proposed case analysis methodology has two main components: use of a *revealing episode* of institutional capacity, and the counterpoint of a counterfactual case for each PDP, as explained below.

6.2.1. *Revealing Episode*

The institutional capacity of PDAs was analyzed in light of a particular moment of organizational change. In stylized form, it is possible to identify three main types of organizational change in PDAs: (1) changes in leadership or other relevant human resources; (2) changes in *technology*; and (3) changes in inputs.

These episodes of *organizational stress* put institutional capacity to the test. This chapter considers this type of situation as the revealing episode that leads to a deeper understanding of the process of gestation, management, development, and interrelationships of the institutional capacity of PDAs.

Although the focus of this chapter covers these moments of organizational change (the *photo*), it is equally important to analyze, at least in a brief and stylized way, the prior process that led to the revealing episode (the *movie*). This analysis allows a more complete understanding of the dynamics of the processes of organizational change in relation to the creation, strengthening, weakening, and, in some of the cases, destruction of the institutional capacity of the PDA analyzed.

To study the Technology District, the proposed revealing episode is the period of creation and startup of this PDP, from its start in 2008 to its first half-year of operation. Also analyzed is the process that led to the design of this PDP, particularly the influence of similar PDPs in other countries. For the Export.AR Foundation, the revealing episode chosen is removal of the executive director in 2010, as a moment of organizational change that put to the test and shed light on the institutional capacity of this PDA. The previous process of capacity strengthening of the PDA (2002-2010) is also analyzed, particularly the critical path that led to the executive director's removal. In the case of MINCyT the revealing episode is the creation of the ministry and the linking of Argentina's science, technology, and innovation policy in that public body.

6.2.2. Counterfactual Case

To enrich and validate the conclusions on the institutional capacity of the analyzed PDAs, PDAs were also chosen to serve as a counterfactual case. The objective was to select a comparable PDA for each of the selected PDAs, but with a different performance in terms of institutional capacity development and policy outcomes.

The counterfactual cases selected are the CABA Audiovisual District for the Technology District, and the Córdoba export promotion agency, ProCórdoba, for the Export.AR Foundation. A specific counterfactual was not developed for the MINCyT; instead, the Technology District was used to make certain counterpoints.

The choice of counterfactuals follows four main criteria. First, the counterfactual PDAs have a mandate similar to the PDAs chosen for the case studies. Second, these organizations experienced revealing episodes similar to those of the selected case studies. Third, counterfactual PDAs belong in some cases to different levels of government, which meets the objective of observing differences in the institutional capacity of national and subnational PDAs. Finally, the counterfactual cases have PDPs with desirable characteristics different from those of the selected study cases.

6.2.3. Information Sources

The main source of information for the selected case studies is a series of semi-structured interviews with key informants. Annex 6.2 contains the full list of scheduled interviews for the Technology District, the Export.AR Foundation, and the MINCyT and their counterfactual cases. The interviews were conducted with four groups of actors related to the PDAs under analysis.

The first group of interviewees is comprised of the main public officials linked to the selected PDAs. For the Technology District, nine CABA ministers and secretaries were interviewed. For the Export.AR Foundation, two former executive directors and other officials were interviewed, and for the MINCyT, a secretary, an undersecretary, and three national directors were interviewed.

A second group of interviewees consists of lower-ranking officials in the selected PDAs and other public entities directly involved in the PDPs analyzed. A third group of interviews consists of actors external to the PDA, such as legislators and specialists. Interviews with legislators are particularly important in the case of the Technology District (and its counterfactual, the Audiovisual District), since passage of the district law required the approval of the CABA legislature. Some specialists also played an important role in drafting the bills of the CABA districts, and in other cases specialists provide an informed external view of the PDA and PDP under analysis.

A fourth group of interviewees consists of public and private sector actors affected by the analyzed PDPs. This group includes executives of private companies and representatives of business chamber beneficiaries of PDPs. The aim here is to understand how the institutional capacity of PDAs is perceived from the PDP user point of view. These actors can also play a decisive role in terms of public-private linkage, as shown in the organizational capacity of the PDA.

6.3. Results

This section presents the results of the selected case studies. It describes the characteristics, revealing episode, and TOP capacity for the cases of the Technology District, the Export.AR Foundation, and the MINCyT.

6.3.1. *Technology District*

The district policy is one of the most important PDPs of the CABA. In general terms, this PDP consists of creating incentives for establishment of private companies in specific sectors in the less-developed geographical areas of the city through public investment and granting of tax benefits. The general objective is to promote an entrepreneurial spirit, innovation, technology, export development, and creative industries. At present, the city government promotes five district initiatives: Technology District, Audiovisual District, Design District, Arts District, and the Comuna 8 Project (Map 6A1.1).

According to the taxonomy presented in Section 6.1, in terms of scope, the district policy is a vertical PDP aimed at promoting specific sectors and geographical areas. With respect to the type of intervention, the districts combine

market interventions, such as the granting of tax exemptions and subsidized credits to ICT companies, and the provision of public goods, such as improvements to the public space, security, and accessibility of the promoted areas.

The Technology District was set up on December 4, 2008 by Law 2.972 for Promotion of ICT Companies in the Neighborhoods of Parque de los Patricios, Boedo and Nueva Pompeya. The objective of the Technology District is to create a center for technology promotion and development that contributes to positioning the CABA as the Latin American capital for information, communications, and technology (ICT) and to developing the promoted area (Map 6A1.2 shows the Technology District).

Following the analytical approach proposed in Section 6.1, the Technology District can be analyzed as a production process that generates a set of benefits as outputs that apply to natural or legal persons with at least half of total sales produced by activities linked to the ICT sector. Table 6A1.1 shows the activities that benefit from the Technology District incentives regime. In this way, the district provides a series of tax incentives to companies that set up in the promoted neighborhoods and meet the requirements set forth. Table 6A1.2 describes in detail the tax stimulus mechanisms offered by the Technology District.

Finally, the Technology District outputs also include construction of public buildings, such as the new city government headquarters and the Metropolitan Technology Center in the promoted area. The center is a vertical action aimed at the ICT industry. Two universities will be located there: the Universidad del Salvador and the Buenos Aires Technological Institute (ITBA), both of which train human resources for the ICT industry. The center will also have offices for the use of the chambers of the ICT industry (300 m²), common areas (600 m²), an auditorium (300 people), classrooms, and a meeting and events room.

From the point of view of the inputs of the production process stylized in Section 6.1, the city government made important public investments in the promoted geographical area. A study by Castro, Rubio, and Jorrat (2013) estimates that between 2002 and 2012 public investment in the Technology District totaled US\$150 million and could reach US\$262 million by 2018.

Six areas of the CABA are involved in implementing the Technology District: Ministry of Economic Development, Ministry of Urban Development, Undersecretariat of Transport, Ministry of Education, the Ministry of Environment and Public Space and the Ministry of Security. In addition, other entities of the CABA participate, such as Banco Ciudad Buenos Aires, which offers loans at favorable rates for real estate developments in the Technology District; the Public Revenue Agency (AGIP); and SBASE, the city's mass transit company. (Figure 6A1.2 presents a stylized version of the Technology District production process.)

In terms of outcomes, although this type of vertical PDP for sectoral and territorial development requires a prolonged evaluation horizon over time, a preliminary study by Castro, Rubio, and Jorrat (2013) produces some conclusions that suggest that the Technology District may have had a relatively successful performance. First, the number of ICT companies based in the district grew almost 10 times in less than five years, from 11 firms in 2008 to 184 firms based there or in the process of locating there in mid-2014. Second, ICT companies based in the district invested US\$95.2 million between 2008 and 2012, to which can be added a projected investment of more than US\$157 million by 2018. In parallel, private sector enterprises not promoted are projecting investments of US\$60 million (Castro, Rubio, and Jorrat 2013). Third, between 60 and 70 percent of businesses located in the promoted area perceive improvements in the security, quality of, and access to public transport, according to a representative survey by Castro, Rubio, and Jorrat (2013). Fourth, improvements in the services and amenities of the promoted area, among other measures, were reflected in an increase in the price of residential and commercial real estate greater than in the rest of the CABA (Castro, Rubio, and Jorrat 2013; Goytia and Pasquini 2012). Considering that 60 percent of the inhabitants of the Technology District are owners, the real estate valuation could be creating a kind of wealth effect for most of the homes in the area (Castro, Rubio, and Jorrat 2013).

Finally, the direct fiscal cost of the tax exemptions and public investments committed in the Technology District for 2008–2018 was relatively moderate. According to estimates by Castro, Rubio, and Jorrat (2013), the cost is equivalent to about 7 percent of the CABA's annual tax collection for 2012. If public investments are excluded, the fiscal cost of the Technology District, according to these authors, barely exceeds 1 percent of the annual tax revenues of the CABA.

Likewise, the cost per job created in the Technology District is significantly lower than in other similar district experiences in the United States and United Kingdom. While the fiscal cost of each new job in the Technology District is estimated to be around US\$24,000 on average between 2008 and 2018, the cost per job in the Empowerment Zones in the United States and the Enterprise Zones in the United Kingdom was more than US\$100,000 (Castro, Rubio, and Jorrat 2013; Busso and Kline 2008; Schwarz and Volgy 1988).

6.3.1.1. The Public Policymaking Process

The capacity of the executive branch to determine the projects to be considered by the legislature, and the timing and manner in which they will be dealt with, depends on the executive's constitutional and partisan powers (Carey

and Shugart 1998). Thus, the CABA public policymaking process, which led to approval of the Technology District and Audiovisual District laws, has four main characteristics: (1) an executive branch potentially dominant in relation to the legislative branch²; (2) a highly fragmented party system³; (3) a high level of parliamentary fragmentation⁴; and (4) the relative weakness of opposition blocs in the Buenos Aires legislature.

These characteristics have direct implications for parliamentary approval processes. According to the interviews, the weakness of the opposition allows the CABA executive branch to approve laws based on benefits for special interests.

A fragmented legislature is fertile ground for project exchanges—that is, the ruling party obtains the support of legislators from small or single blocs for critical projects in exchange for approval of projects presented by the deputies in those blocs. In particular, there are numerous one-person blocs or blocs of two or three legislators who, having been elected by the opposition, systematically give their support to the ruling party's projects.

In turn, given that fragmentation increases legislators' bargaining power and room for maneuver when voting on bills, the formation of one-person blocs creates incentives to exchange their votes for approval of their own initiative. As a result, legislators who form one-person blocs become veto players: they are one more instance of negotiation.

6.3.1.2. Revealing Episode: Genesis and First Steps of the Technology District

The revealing episode chosen to analyze the institutional capacity that made possible implementation of this PDP is the gestation process of the Technology District. This revealing episode consists of a change in the objectives and functions of investment promotion policies in the CABA.

² The CABA Constitution grants tools to the local executive branch, such as veto power, exclusive introduction of spending and resources in the budget, and the power to issue decrees that create a bias in favor of the executive in decision-making, making it potentially dominant over the legislature (Mainwaring and Shugart 1997).

³ There are 48 parties eligible to participate in CABA elections. This number is double the average of national parties by district (Pomares et al. 2014). In electoral terms, the system is organized around the government party (the PRO), and a heterogeneous conglomerate of opposition parties and fronts, organized into two main blocs defined in relation to their opposition to national and/or local governments.

⁴ During the period under study, as many as 13 parliamentary blocs were operating, a very high number by international comparison (Mainwaring and Shugart 1997).

With the start of a new CABA administration in December 2007, the city's Ministry of Economic Development (MDE), through the Undersecretary of Investment, faced two policy options when defining the city's investment attraction strategy: promote the business climate through horizontal PDPs, or pick and stimulate strategic sectors (*picking winners*) through the implementation of vertical-type PDPs.

Initially, the MDE chose to promote horizontal-type PDPs aimed at improving the business climate. To that end, the Investor Service Center (CAI) was set up in the General Directorate of Investment Promotion (DGPI) of Software and Computer Services (SSI). The objective of the CAI was to facilitate foreign direct investment in the CABA. Despite these initial intentions, the global financial crisis, and in particular the conflict between the national government and the agro-industrial sector in 2008, created an unfavorable environment for attracting foreign direct investment. This obliged the MDE to move ahead with the alternative strategy of picking strategic sectors.

As a result, the SSI established four criteria for selecting the "winning" sectors in a context of viewing the CABA as a global center of creativity and talent: (1) the presence of companies created with a global market orientation (companies *born global*); (2) provision of services or products with high added value; (3) absence of significant environmental impacts; and (4) capacity to generate formal jobs.

Based on these criteria, the MDE identified five strategic sectors for the CABA: ICT, audiovisual services, design, sport, and art. In turn, the MDE defined the CAI's role as developing these promoted sectors through direct contact with private sector companies. It also selected ICT as the first sector to be promoted.

The next step was to design the characteristics of the PDP that would attract investments into the ICT sector. First, the SSI worked to identify the ICT activities to be promoted. In particular, a broad scope was defined, encompassing the entire ICT value chain. During this process, the SSI called on specialists from the ICT industry.⁵

Second, with the support of then head of the CABA Mauricio Macri, the SSI and in particular the CAI began a process of dialogue with the ICT sector through meetings with technology companies to test the idea and get to know the sector's needs. It should be noted that MDE officials interviewed mentioned the head of government's presence in some of these meetings, which lent political support at the highest level to the PDP.

⁵ Based on the interviews with SSI officials, two experts were identified: Roberto Álvarez Roldán (Accenture) and Andrés López (UBA-CENIT), who played a key role in drafting the Technology District bill.

From this public-private dialogue, three needs of the ICT sector were identified in relation to the PDP to attract investments. In the words of sectoral entrepreneurs, those needs were (1) “a cheap square meter;” (2) “first-world infrastructure;” and (3) “access to transport.” Consequently, the public-private dialogue was the origin of the idea of using the PDP to promote the ICT sector as a geographically localized district.

As a result of the sector’s requirements, the MDE defined three characteristics the selected area would need to have to promote the ICT sector: (1) reasonable geographical size in terms of the public investment effort required;⁶ (2) an attractive real estate offer for ICT companies and real estate developers; and (3) adequate accessibility and connectivity with the rest of the CABA. The critical question at that time was, in the words of an SSI official, “Where can this laboratory design be brought down to earth?”

This requirement for geographical localization of the MDE’s PDP coincided with the CABA urban development policy for the southern area of the city led by the Ministry of Urban Development (MDU). Since 2007, the MDU had been working to identify the relatively less-developed areas of the CABA based on a series of socioeconomic indicators at the commune level.

In this framework, the MDU General Directorate of Urban Planning (DGPU) proposed to the MDE the Parque de los Patricios area as the Technology District headquarters. This area met the three desirable characteristics defined by the MDE: (1) presence of a potentially adequate urban infrastructure, with deteriorated public spaces but with possibility of recovery; (2) availability of commercial real estate and idle old factories with low relative cost; and (3) accessibility and proximity to the center and other areas of the CABA.

Throughout this process of change—from a horizontal PDP to attract investments to a vertical PDP for sectoral and territorial stimulus—the Technology District showed at least three desirable characteristics as public policy (Stein and Tommasi 2008; Franco Chuaire and Scartascini 2014; Pomares et al. 2014): (1) the capacity to adapt to exogenous shocks, such as the international financial crisis and the national government’s confrontation with the agro-industrial sector; (2) effective implementation of the policy; and (3) efficient selection and use of the inputs necessary for production of the PDP.

Based on the location of Parque de los Patricios as the Technology District, and with the direct support of the head of government, the MDE presented the district project at a meeting of the CABA cabinet. With this

⁶ In particular, SSI officials emphasized in interviews that the need to expand fiber optic infrastructure led to the idea of creating a district, since it would require a defined investment in a limited area of the CABA.

level of political approval in the CABA behind it, the MDE defined the specific intervention tools of the Technology District.

First, definition of the Technology District had to be embodied in the enactment of a law in the CABA legislature in order to provide institutionality and consensus to the new PDP, in contrast to similar previous initiatives created by decree that never materialized. As a result, parliamentary approval gave the Technology District stability as a PDP, generating a predictable framework for implementing public policies and making public and private investments in the area.

Second, with the help of prestigious academics, the SSI reviewed the main international experiences of technology poles and productive districts.

Finally, the MDE agreed that the Technology District would grant tax exemptions for a limited 10-year period to ICT companies that set up in the promoted area, and also offer incentives for real estate development and the establishment of university institutions.

Starting with the definition of the incentive framework, the MDE began a process of dialogue with real estate developers and universities potentially interested in the Technology District. It also began a process of dialogue with civil society from the Parque de los Patricios about the possible advantages to the area of development of the district.

Based on work with the specialists and interaction with the ICT sector and the Parque de los Patricios community, the SSI drafted the Technology District legislation. The bill was presented in the CABA legislature at the end of 2008 after passing through the corresponding parliamentary committees. Approval of the law required agreements between the ruling party and the main opposition blocs in the legislature. As a result of these exchanges, the law was passed with 41 of 52 votes cast. In addition to its own legislators (26 affirmative votes and 1 abstention), the ruling party received 15 votes from opposition parties.

In this case, the legislature operated as an adequate institutional arena for reaching the political agreements needed for approval of the Technology District. At the same time, the consultation process during the drafting stage of the bill integrated in an effective and representative way the demands of all the stakeholders potentially affected by this PDP, such as private companies and business and neighborhood associations, among others. Figure 6A1.1 presents in schematic form the development of the Technology District and the revealing episode.

6.3.1.3. Counterfactual Case: The Audiovisual District

As part of the district policy, the CABA promulgated Law 3.876 on Promotion of Audiovisual Activity in September 2011. The law declared the audiovisual sector an industry and created the Audiovisual District.

Similar to the Technology District, the outputs of the Audiovisual District consist of granting tax benefits to companies in the audiovisual industry setting up or based in the Buenos Aires neighborhoods of Palermo, Villa Ortúzar, Chacarita, Colegiales, and La Paternal.⁷ The benefits of the Audiovisual District for participating companies consist of exemption for 10 years from payment of local taxes on gross income, the stamp tax, and the public lighting, sweeping, and cleaning tax (*Impuesto por alumbrado, barrido y limpieza - ABL*). In addition, Banco Ciudad offers loans at preferential rates for construction or renovation of real estate of audiovisual industry companies located in the Audiovisual District.⁸

The Audiovisual District has its official headquarters in the Dorrego Center (popularly known as *el Dorrego*) with service offices for the audiovisual companies and an educational institution, Buenos Aires Comunicación, which offers training courses and continuous professional education for young people and audiovisual industry professionals. El Dorrego also organizes conferences, business meetings, and exhibitions. The inputs of this PDP consist almost exclusively of resources from the MDE. The Audiovisual District management is operated by a working team from the MDE with a representative of the CAI.

The outcomes of the Audiovisual District include the presence of 153 audiovisual industry companies located in the district that are beneficiaries of the tax incentives regime. However, only 56 of the companies constitute new registrations in the Audiovisual District. Another outcome is reduction of the period for issuing filming permits from one month to only four days. Currently, permits can be processed online through an ISO 9000 certified process. Filming permits play a decisive role in the audiovisual industry.

A distinctive feature of the Audiovisual District is its large land area that covers 852 hectares and includes very heterogeneous neighborhoods of the CABA in terms of economic activity, income levels, average real estate prices, and quality of public services. The vast majority of audiovisual companies are located in the area of greater relative development and already existed before the Audiovisual District was formed. Paradoxically, the district does not include differential incentives for locating audiovisual companies in the less-developed neighborhoods of the promoted area.

Another distinctive characteristic of the Audiovisual District is the absence of significant public investments by the CABA in the geographical area promoted, particularly in the relatively less-developed neighborhoods. In this respect, the only differential incentive between the north and south areas of

⁷ Map 6A1.3 shows the neighborhoods that make up the Audiovisual District.

⁸ Table 6A1.3 details the activities promoted by the Audiovisual District and Table 6A1.4 shows the tax incentives it provides.

the Audiovisual District is the value of properties and rents, while the higher quality infrastructure and public services are concentrated in the north.

In summary, the Audiovisual District has four distinctive characteristics in relation to the Technology District: (1) presence of a significant cluster of audiovisual companies already located in the promoted area; (2) inclusion of CABA neighborhoods with very heterogeneous levels of relative development; (3) absence of significant public investments in the beneficiary area; and (4) use of neutral tax incentives based on the location of audiovisual industry companies in the district.

These differences in the PDPs of the two districts merit a detailed analysis of which factors led to such a disparate configuration with respect to the Technology District, taking into account that both PDPs depend on the MDE of the CABA and that the audiovisual industry plays a fundamental role in the CABA economy.⁹

6.3.1.4. Technical, Organizational, and Political Capacity

The revealing episode of the Technology District gestation process shows that the CABA's institutional capacity played a role in the design and implementation of this PDP. Similarly, the Audiovisual District case as a counterfactual presents a counterpoint in some aspects that are crucial for identifying the capacity that gave rise to the *desirable characteristics* of the public policies identified by Stein and Tommasi (2008).

The start of the Technology District was the output of a learning process, sharing of technical capacity, coordination between areas of government, public-private linkage, and political capacity. This illustrates the creation and implementation of a PDP that to date has shown positive results. This section describes the technical, organizational, and political capacity and their inter-relationship and development in relation to the Technology District.

- **Technical capacity**

The Technology District project was led by a team with appropriate technical capacity for the design and implementation of this PDP. They were qualified professionals, in some cases with training abroad, and with work experience in the private sector. The CAI is led by a specialist in marketing and business management, with the capacity to sell the Technology District

⁹ The audiovisual industry contributes more than a fifth of the added value of the cultural industries of Buenos Aires, which in turn represents 10 percent of the CABA gross geographical product (Observatory of CABA Creative Industries 2013).

to ICT companies. The SSI undersecretary is an economist whose technical specialization facilitated the process of designing the Technology District incentives. This combination of technical capacity could be seen at its best during the identification and selection phase of the CABA strategic sectors.

Similarly, the MDE used the MDU's technical capacity during the process of identifying the area where the Technology District was to be located. As mentioned in Section 6.3.1.2, the MDU was implementing an urban planning policy based on the idea of creating a new city center in order to develop the south of the city. This MDU policy was led by a geographer with academic experience at a prestigious private university. The drafting of the Technology District bill also had the technical support of two well-known specialists with in-depth knowledge of the ICT sector. It should be noted that these specialists were specifically invited by the SSI undersecretary.

In the design of the Technology District, the SSI took into account other international experiences and the history of similar recent CABA initiatives. One experience considered was the "22@" of Spain, an innovation center in a residential area of Barcelona whose objective was to reconvert a relatively less-developed urban space by promoting economic activity.

Another previous experience used as the basis for the Technology District design was the failed attempt to create a technology hub by the previous CABA government. The hub was a program dependent on the Buenos Aires executive branch, created by decree, and therefore, without parliamentary approval. The program also promoted establishment of technology companies based on the granting of a public physical space in an area difficult to access in the Barracas neighborhood. Another feature of the initiative was the absence of public investments to improve the public space and infrastructure in the promoted area.

In this respect, it is worth mentioning that there were two positions on the future establishment of the Technology District in the CABA. On the one hand, the MDE was leaning toward the Barracas area, headquarters of the failed Buenos Aires technology hub. On the other, the MDU promoted locating the Technology District in the Parque de los Patricios neighborhood, based above all on urban considerations such as the availability of unused industrial buildings with potential for renovation and better access from downtown Buenos Aires. The MDU position prevailed, and the Parque de los Patricios area was chosen for the Technology District headquarters.

Finally, in designing the Technology District, the SSI team took into account the national legal framework for promotion of the ICT sector in order to avoid unnecessary duplication. In particular, the SSI took into account Law 25.856, which declares the software sector an industry and grants important fiscal benefits to it. The law was approved in 2004 and extended in 2011.

A separate mention is needed of the problem of possible capture by the private sector, which is usually a potential risk in cases of market interventions and, even more, of vertical or sectoral PDPs, as indicated in Section 6.1.1. According to the Technology District law, tax incentives for ICT companies last for 10 years. However, similar experiences of market interventions indicate that this type of exemption is usually extended. A critical question is whether the CABA has institutional mechanisms to avoid this type of situation in the medium term.

In the counterfactual case of the Audiovisual District, although the origin of the PDP had an orientation similar to that of the Technology District, there were significant differences between the two initiatives in terms of the definition of strategic industries and reconversion of a relatively less-developed urban space. First, the Audiovisual District team was made up of CABA officials who specialized in promoting the audiovisual industry, and therefore with close links to the main companies in the sector. Second, although the MDU urban planning experts recommended locating the Audiovisual District in the less-developed neighborhoods of Chacarita and its surroundings, the district also finally included the Palermo neighborhood where the main cluster of audiovisual industry companies in the city already existed.

For the promoters of the Audiovisual District in the MDE, the inclusion of the Palermo neighborhood was justified by the need to avoid a situation of unfair competition between the audiovisual industry companies already operating there and the new companies that might come into the district. Another factor with some influence on the final territorial design of the Audiovisual District was that a prestigious law firm related to the main audiovisual industry companies participated in the drafting of the district law.

As a result, while in the design and implementation of the Technology District the urban technical capacity of the CABA played a decisive role, in the case of the Audiovisual District it played a relatively small role. Similarly, the CABA had to use external resources for the legal setup of the Audiovisual District, in contrast to the Technology District experience.

- **Organizational capacity**

According to Cornick (2013), the organizational capacity to develop a successful PDP comes from the PDA's ability to coordinate with the private sector and other public agencies. In the Technology District case, the MDE's SSI team exhibited an aptitude for linkage with the private sector, in particular with the ICT sector in the design and implementation of this policy. The MDE also achieved successful coordination with other CABA agencies with direct involvement in the initiation and development of the Technology District.

In particular, the MDE managed to link the collective action of the CABA's five ministries: Urban Development, Transport, Education, Environment and Public Space, and Security. At the start, the intra-governmental linkage had a formal coordination arrangement in the form of a specific working committee on the Technology District. However, this scheme gradually gave way to an informal bilateral coordination mechanism between the SSI and the area of government related to each policy area.

Eventually, this capacity for intersectoral coordination led to a shared view in the CABA on the importance of the Technology District. In the words of an MDU official: "The policy [of the Technology District] was successful because of the formation of a team. Each area took care of its own business; there was team spirit. Everyone wanted it to work well." Thus, in the case of the Technology District there was a virtuous interaction between organizational and political capacity. This interaction, in turn, gave coherence to the formulation and implementation of this PDP (Stein and Tommasi 2008; Pomares et al. 2014) in the CABA.

The second type of organizational capacity is public-private linkage. This is the capacity to get the private sector involved in the PDP in order to identify existing restrictions and validate the relevance of the policy tools to be used for their removal (Cornick 2013). In this regard, the Technology District took advantage of dynamics of public-private collaboration from the beginning of the PDP design process and has continued to do so as an established and functioning initiative.

First, the central objective of the creation of the CAI by the DGPI was to set up a specialized unit for dialogue with the private sector. The CAI wanted to convey a less bureaucratic image of the state that was viewed with more friendly eyes by private investors. In the words of an MDE official, the CAI officials "were a public sector well regarded in the eyes of the privates, they were private-friendly, they came from private activity."

Second, the SSI made serious efforts to involve the private sector right from the start of the Technology District. As described in Section 6.1.1, before drafting the Technology District bill, the SSI successfully convened a group of technology companies to test the idea of a PDP for the CABA aimed at promoting the ICT sector. From this initial dialogue, in fact, emerged the key features of the subsequent Technology District law, a vertical ICT-oriented PDP with territorial focus.

Third, the organizational capacity of the MDE facilitated development of a gradual policy-discovery process that shaped the design of the PDP in terms of defining the sectoral scope, geographical location, type of intervention, and policies for attracting companies, real estate developers, and universities.

This capacity for organizational linkage is currently apparent in the creation of the Technology District Business Consortium promoted by the CAI. The consortium will bring together the companies based in the Technology District to create a community and a sense of belonging to Parque de los Patricios. In fact, the consortium represents the ICT companies with the CABA on issues related to the public space of the area promoted by the Technology District. This initiative aims to institutionalize the dialogue between ICT companies and the CABA, and encourage linkage between private entities so that they can define common objectives and interlocutors.

All of the private sector interviewees emphasized the role of the CAI in terms of the quality of attention and speed of response to the demands of ICT companies. In this respect, recognition of the private sector demonstrates that the MDE decision to set up an agency with the characteristics of the CAI was a wise move.

In the case of the Audiovisual District, the CAI plays a similar role as a receiving window for the demands of audiovisual industry companies. According to the interviews with representatives of the sectoral business associations, audiovisual firms identify the CAI as the reference point for the Audiovisual District, and they highlight its action to speed up issuance of filming permits. It should be noted that the Audiovisual District consists of very diverse sectors, grouped into chambers with very unbalanced weights.

From the organizational point of view, the Audiovisual District has not managed to coordinate with Banco Ciudad on the development of financial instruments adapted to the needs of the audiovisual industry. This point is relevant, given that, according to the interviews with the business associations in the sector, small- and medium-sized audiovisual companies (representing 95 percent of the audiovisual industry) identify absence of loans for equipment as a constraint to doing business. This constraint is important in a sector where executing projects depends almost exclusively on the ability to renovate and update equipment and expand technical capacity.

A second limitation of the Audiovisual District, in contrast to the Technology District, is the failed linkage with law enforcement. While the Technology District included operations of the Metropolitan Police (the CABA police force) in the promoted area, in the Audiovisual District there have been no specific actions by the CABA to improve security, particularly in the relatively least-developed areas of the district. In the words of a producer: "This is an area of producers and squatters. Regrettably the Audiovisual District is still not acting on [involving] the Metropolitan (Police)."

It should be noted that at the time this analysis was conducted, the Audiovisual District authorities were analyzing the introduction of improvements in the design of this PDP related to implementation of geographically

differentiated tax incentives, development of links with educational institutions, and identification of the public investment needs of the promoted area. In this respect, the Audiovisual District seems to be taking account of a learning process based on the lessons learned from the Technology District and its own experience.

- **Political capacity**

The political capacity of Technology District implementers played a key role in constructing the intertemporal agreements necessary for implementation of this PDP. These agreements were the result of a consensus-building process rather than conflict management. This process, in turn, was fostered by the fact that the Technology District did not meet with strong opposition or affect the interests of previously existing interest groups with veto capacity in the CABA.

In terms of the public policymaking process for the Technology District, the aim here in particular is to answer a series of key questions: What were the factors that made the origin and implementation of the PDP possible? What were the characteristics of the *reformist group* and how were they linked to the modalities adopted by the reform? Was there a *reform champion* in the CABA? What were the reasons why the PDP could be put into practice? Was there an entrepreneur from the public sector?

According to the analytical approach described in Section 6.1, the public actors in the Technology District case are the following: (1) PDA officials directly involved in implementation of the Technology District (the MDE's SSI and the MDU); (2) the other four Buenos Aires ministries involved in the provision of specific public goods in the promoted area (Undersecretary of Transportation, and the Ministries of Education, Environment and Public Space, and Security); (3) Banco Ciudad, which offers mortgage loans at favorable rates for real estate developments in the Technology District area; and (4) the CABA legislature, which intervened in the processing and passage of the Technology District law, and has the power to request performance reports and control implementation of the law.

The private actors of the Technology District include five main groups: (1) companies and sectoral chambers of the promoted sector (such as the Chamber of Software and Computer Service Companies [CESSI] and the Association of Technology District Companies); (2) real estate developers; (3) productive and commercial establishments of Parque de los Patricios that do not receive the Technology District tax benefits but provide inputs and services to ICT firms; (4) educational institutions working in the Technology District; and (5) the neighborhood organizations of Parque de los Patricios.

Before the Technology District was set up, the promoted area had deteriorated infrastructure with abandoned public spaces and idle real estate and commercial premises. In this situation, the area was not sufficiently attractive for entrepreneurs from the ICT sector or for private universities, and the residents had accumulated years of mistrust of a public sector they felt had abandoned them. In turn, the failed experience of forming a technology hub reinforced private sector distrust of the state's capacity to create a PDP with these characteristics.

It should be noted that the gestation of the Technology District took place in the first year of government by a political party (PRO) that assumed executive power for the first time. But a characteristic of this reform is that previously there had not been a political economy equilibrium determined by strong sectoral or local interest groups, but rather something of a vacuum in terms of productive and urban development policy.

In this context, as described in Section 6.3.1, the gestation of the Technology District was the result of a reform: the change of focus of investment promotion policy in the CABA. The reformist leader was Carlos Pirovano, the SSI Undersecretary, who devised and led the technical design of the PDP. He was helped by a reformist ally, Damián Specter, Director General of Investment Promotion (DGPI) and of the CAI, in the role of vendor of the PDP to the private sector.

The group also had a reform champion at the highest political level, Minister of Economic Development Francisco Cabrera, who in turn obtained the endorsement from then CABA Head of Government Mauricio Macri. The minister headed the internal presentation in the CABA Cabinet of Ministers and formed alliances at the ministerial level with the other portfolios mentioned, thus opening spaces for the reform group headed by Pirovano to link production of inputs for the Technology District with CABA areas of education, security, and transport, among others. From this interaction at the highest political level emerged the strategic alliance with the Minister of Urban Development, Daniel Chain, who joined the reformist group providing technical expertise in his area.

The political capacity of the reformist group and its alliances, as well as the technical characteristics of the PDP itself (cross-cutting and in conjunction with different areas of intervention), meant that the debates in the CABA became virtuous collaborations. Each area of the CABA involved, besides the MDE, had the opportunity to be part of a project that was becoming a real symbol for the actions of the CABA.

Opposing this reformist group was a series of actors interested in vetoing implementation of the Technology District. First, in the CABA, the portfolio whose interests were most affected was the Government Public Revenue

Agency (AGIP), which would lose local tax revenue because of the tax exemption promoted by the Technology District. However, although the AGIP initially questioned the potential fiscal impact of the Technology District, the political support of the head of Government neutralized any veto action on the project.

A second point of opposition came from the CABA legislature, where those opposed to the project raised some specific questions about the Technology District bill related to the definition of promoted sectors; the risk of gentrification and appreciation of the properties in Parque de los Patricios; the length of the horizon of the tax exemption guaranteed by the Technology District to ICT companies; and the low quality of the employment generated by one of the activities (contact centers) promoted by the Technology District.

To address the opposition legislators, the reformist group implemented a strategy of negotiation and agreements within the legislative framework that succeeded in reducing the veto group to a minimum. The biggest buy-in measure used to reach an agreement for approval of the Technology District law included elimination of the contact centers from the bill. Finally, Law 2.972 was passed with 41 votes in favor, 11 against, and eight abstentions. Of the 60 legislators present at the vote, 27 belonged to the ruling party.

All the CABA government officials interviewed emphasized that the veto positions in the legislature were weak, and that in general the conflict was of low intensity. On the one side, the PDP was presented as part of a development policy of the southern area of the city, and there was consensus on this area's economic backwardness compared to the rest of the city. Given this argument, any opposition position lost strength and public legitimacy. On the other side, the low visibility of the Parque de los Patricios area and the low expectation of success of the PDP contributed to relatively simple parliamentary approval. As suggested by an MDE official who participated in the discussions in the Buenos Aires legislature: "No one thought it would be a successful bill that could bring political returns for Macri. The Technology District flew under the radar."

From the point of view of political capacity, one limitation of the MDE was its inability to reach a sustainable agreement with the CABA Ministry of Education. Although this ministry participated in the drafting of the Technology District bill, its involvement in implementation of the district was practically nil. For example, primary and tertiary schools promoted in the Technology District area have yet to incorporate related content into their study programs. Nor has the PDA succeeded in promoting study and employment programs in the ICT companies favored by the Technology District.

These linkage issues with the CABA Ministry of Education are particularly important for the ICT sector based in the Technology District. According to the interviews, the ICT companies, although they applaud the establishment

of universities in the Metropolitan Technology Center, emphasize that the Technology District should have a more fluid dialogue and more linkage with CABA in terms of education.

Outside the CABA executive and legislature, the reform group was able to identify the private sector interest groups related to the Technology District, including ICT and non-ICT companies, developers, and residents of the area. They were all stakeholders who would benefit directly and indirectly from the PDP. Initially, none showed great interest in the Technology District. In particular, the local community was very distrustful of CABA officials due to a history of abandonment of the area by public policy. For their part, ICT companies saw the promoted area as backward, very nearly inaccessible, unsafe, and with no services or amenities to make it attractive for their employees. In these cases, the buy-in strategies of the CABA were aimed at building confidence in the PDP, achieving involvement, and creating community among the stakeholders.

With the residents of Parque de los Patricios, the MDE aimed to build trust based on personal dialogue by Specter and Pirovano with local institutions, explaining the potential positive impact of the Technology District for the neighborhood. The dialogue included meetings with neighborhood associations, the fire service, the Hurricane Club (the main neighborhood sports center), and even the local parish priest. In turn, the officials tried to create a demonstration effect by refurbishing a symbolic public milestone: the neighborhood's central plaza. Partly as a result of these actions, the neighborhood associations operated as Technology District allies, even in the dialogue with the legislature.

In relation to the ICT companies, part of this gradual discovery of policies was precisely the result of the need to build trust to achieve involvement of the sector in the new PDP. According to one of the MDE officials interviewed, establishment of the leading Indian ICT company (Tata Consultancy Services) in the Technology District was the result of a direct action by the CABA head of government and marked the “watershed after which the Technology District became credible for companies.”

This strategy to seduce the private sector was also applied to universities and real estate developers. The SSI undersecretary and the CAI director personally visited leading university institutions and real estate development companies in CABA and organized working breakfasts with them.

A key issue of political capacity applied to the design and implementation of the Technology District was the institutionalization of this PDP through a law passed by the CABA legislature. A first objective of the MDE, by means of parliamentary approval, was to formulate a long-term policy based on the consensus of the majority of the political forces in CABA. A second objective

was to reduce the reversibility of the PDP by making changes in the characteristics and the sustainability of the Technology District, possible only through an amendment to the law creating the district.

However, analysis of the public policymaking process, which was the framework for approval of the Technology District and the Audiovisual District law, caused some alarm about the implications that the institutional framework might have on the results of this PDP, and in general on CABA public policies. The CABA executive branch succeeded in passing both initiatives in a fast-track process, without too much discussion in the committees and by a large number of votes in the local legislature. The drawback of this fast-track passage is a legislative process in which legislators cannot introduce substantial changes or evaluate the estimated costs of the measures and/or propose alternative forms of intervention of the policy they are voting on. In addition, the interviews suggest the permeability of some legislators to lobbying by large economic agents, particularly in the Audiovisual District case.

This low level of capacity of the legislators to intervene in the public policymaking process is due to two main factors: the weakness and volatility of the opposition parties and the high turnover of legislators. First, the degree of rotation in Argentine democracy is one of the highest in the world: only 20 percent of deputies manage to stay in office for a second term (Acuña 2001). In the CABA case, for example, none of the opposition legislators who participated in the debates on the Technology and Audiovisual Districts are still in the legislature. Second, the weakness of the opposition blocs allows the executive branch to pass laws based on special interests, as a fragmented legislature is fertile ground for *project exchanges*.

These features of the party system and the Buenos Aires legislature mean that party blocs do not pay very high costs for inconsistencies in legislative behavior, and legislators do not see the legislature as a space for building a political career, but rather as a step toward other public positions, usually in the national or local executive branch, and this does not justify an investment in specialized technical capacity.

The lower levels of technical capacity and cohesion of the legislature result in poor legislative control and rigidity of the PDPs implemented by the CABA. First, there seem to have been only two requests for reports from the legislature to the executive on the performance of the districts during the entire period analyzed in this study. Second, the same incentives that allowed lawmakers to support initiatives they had questioned seem to serve to freeze the status quo by preventing evaluation, review, and possible abandonment of PDPs if they have not delivered the expected outcomes.

In the Audiovisual District case, the particular characteristics of the public policymaking process of the CABA were accentuated by the presence

of the leading TV and film producers in Argentina. In part due to pressure from these companies during discussion of the law, the Audiovisual District ended up including the Palermo neighborhood, where most of the leading audiovisual firms are based. As a result, the Audiovisual District includes a larger number of neighborhoods than those originally proposed by the MDE, with different levels of development and demands for public investment, and it lacks geographically differentiated promotion instruments.

Another characteristic of the Audiovisual District, possibly linked to the particular configuration adopted by the district, is the low level of capacity of the implementing PDA to install this PDP in the CABA. These shortcomings in the MDE's political capacity are evident in the difficulties in linking investments and actions to improve urban space, security, and financing in the promoted area.

6.3.2. *Export.AR Foundation*

The Export.AR Foundation is the official export promotion agency of Argentina. Founded in 1993 as a mixed public-private body, the agency is composed of the national government and a set of business associations, operating in the orbit of the Ministry of Foreign Affairs (MREC). The foundation's mission is to promote the increase and diversification of Argentine exports by providing assistance to the business community to access international markets and market its competitive products.

The analytical approach presented in Section 6.1 shows that the Export.AR Foundation produces three main outputs: (1) coordination of the participation of Argentine companies in foreign business fairs by offering subsidized rates and logistics organization; (2) provision of trade intelligence services by preparing market reports and distributing lists of importers in the destination markets to potential Argentine exporting companies; and (3) organization of trade missions to put Argentine exporters in contact with potential importers abroad, and of *Argentine Week* events to promote Argentine products from segments with higher added value in the main European department stores.

In terms of structure, the Export.AR Foundation is headed by an executive director and a board of directors made up of representatives of the public and private sectors. Table 6A1.5 lists the institutions represented on the board of directors. The board approves the annual plans and appoints the executive director of the foundation, among other tasks. The foundation also has three councils—academic, agro-exporter, and SME—that link initiatives to these sectors.

Although the foundation has a public-private institutional structure, financing depends mainly on the MREC budget. The private sector only partially

subsidizes participation of companies in activities organized by the foundation abroad, such as international fairs and business missions.

These operating characteristics of the Export.AR Foundation are part of a complex map of organizations dedicated to promoting Argentine exports. A summary of the recent history of the institutional framework and formulation process of Argentine trade promotion policies is given below.

6.3.2.1. Public Policymaking Process for Export Promotion¹⁰

In Argentina, the government agencies in charge of export promotion correspond to two ministries: the Ministry of Production, historically responsible for designing and executing foreign trade policy, and the MREC, traditionally in charge of developing and coordinating international trade negotiations and export promotion activities (Bouzas and Avogadro 2002).

However, there used to be no clear limits defining the competencies between the two ministries. It was not until 1992 that Ministries Law No. 24.190 put forth a hierarchy for the competencies in foreign trade, which up until then had been, in practical terms, in the hands of the Ministry of Foreign Affairs. The Economic and Foreign Trade Service of the Ministry of Economy was transferred to the MREC, which was renamed the Ministry of Foreign Affairs, International Trade and Religion (MRECIC).

However, the renewed competencies of the MRECIC soon began to coexist with a set of new programs and organizations that developed similar actions to promote foreign trade. Each of these organizations responds to a complex individual framework, which has changed the map of national trade promotion.

According to Giovannucci (2000, 2), the export promotion agencies are “facilitative agencies whose sole function is to promote and stimulate trade by disseminating information, contacts and networks, and provide technical advice and marketing.” Under this definition, it is possible to identify four dependencies of the national state that assume the functions of trade promotion in Argentina: the Export.AR Foundation and the Undersecretariat of International Trade (SURCI), through the General Direction of Export Promotion (DGPEX), both under the MRECIC; the ProArgentina Program (Ministry of Economy); and the ProArgex Program (Ministry of Agriculture, Livestock and Fisheries).

The SURCI coordinates promotion activities with the commercial attachés or economic sections of the MREC overseas, along with other intelligence and marketing actions. Its main asset is precisely the coordination

¹⁰ This section is based on Castro and Saslavsky (2009).

services it offers based on its hierarchical structure, which includes trade representations abroad.

ProArgex and ProArgentina, like the Export.AR Foundation, undertake trade marketing tasks by participating in international fairs, disseminating trade information, and providing support to exporting companies. This national institutional network is accompanied by provincial export promotion agencies. At the provincial level of government, the situation is just as complex, with the coexistence of autonomous agencies in the style of the Export.AR Foundation and provincial export promotion agencies.

As a result, export promotion policy in Argentina has been characterized by dispersion and overlapping of efforts and by the absence of formal coordination arrangements. There is also a great heterogeneity of resources and capacity between the national agencies and between those agencies and those of the provinces.

6.3.2.2. Revealing Episode: Removal of the Export.AR Foundation Executive Director

To analyze the institutional capacity of the Export.AR Foundation, this chapter examines as a revealing episode the removal of the executive director from the agency in February 2010. The executive director at the time, Marcelo Elizondo, had taken over in 2002 from the then Secretary of Commerce and International Economic Relations, Martín Redrado.

With the arrival of Elizondo, the Export.AR Foundation had had for the first time in its history an executive director who was not a diplomat and did not come from the MRECIC. In fact, since the creation of the foundation in 1992, the position of executive director had always been held by the head of the SURCI. Under Elizondo's management, the foundation adopted a public profile independent of the MREC. He also adopted a management style close to that of private sector companies, focused on provision of services with a technical and professional imprint.

The Export.AR Foundation under Elizondo was characterized by marked growth, as demonstrated by several indicators:

- Incorporation of new human resources, with a workforce that grew from 36 to 100 employees between 2002 and 2010.
- Creation of a new service delivery unit, the Trade Intelligence Area (AIC), in response to the deficiencies shown by market studies and other reports provided by the MRECIC representations.
- Expansion of trade promotion activities, dissemination of information, and assistance to companies in the interior of the country by opening

foundation offices or representations in practically all the provinces with linkages to provincial export promotion agencies.

- Inclusion of a higher proportion of resources from the private sector in the foundation's budget. While in 2002 only 10 percent of the budget came from private contributions, by 2010 this proportion had reached 40 percent.
- Creation of the three advisory councils (academic, agro-exporter, and SME), with the aim of opening spaces for dialogue with the private sector and civil society as an instrument for channeling demands and generating inputs for design of Export.AR Foundation PDPs.
- Introduction of innovative tools for trade promotion, such as Argentine Weeks and reverse business missions and new knowledge products produced by the Trade Intelligence Area.

Despite this growth, the Export.AR Foundation coexisted with the export promotion programs of other national ministries, such as ProArgex and ProArgentina. Although these programs implemented vertical PDPs targeted at specific sectors or specific segments of companies (agrifoods in the case of ProArgex, and industrial SMEs in the case of ProArgentina), there was a significant overlap of functions among the PDAs involved in trade promotion, including the SURCI and the Export.AR Foundation itself. This functional overlap between the SURCI and the foundation, along with the foundation's positive results, gave rise to a dynamic of competition between the two PDAs.

Three stages can be identified in this competitive dynamic. First was a cooperation phase marked by the appointment of Elizondo as executive director of the Export.AR Foundation and the work of Martín Redrado as head of the SURCI. Elizondo was appointed executive director of the foundation on Redrado's recommendation, and was considered someone in whom the secretary had confidence. The second stage was marked by administrative tensions as a result of the appointment of a new secretary of the SURCI in 2004, and an informal agreement to delimit competencies between the SURCI and the foundation.

Finally, a third stage saw growing tensions and conflict, expressed in a gradual process of cutting the Export.AR Foundation's budget and infrastructure. This last stage culminated in January 2010 with the dismissal of Elizondo's political patron, Redrado, from his post at that time as president of the Central Bank of the Argentine Republic. This in turn triggered the request by the MREC for Elizondo's resignation.

The outcome of the revealing episode was the appointment of a new executive director of the Export.AR Foundation, until then in charge of ProArgex in the Ministry of Agriculture. After a brief interregnum, the new

executive director was replaced by a foundation official who until then had been responsible for coordination of trade fairs and missions. Figure 6A1.5 presents schematically this revealing episode and the immediately preceding and subsequent stages described above.

6.3.2.3. Counterfactual Case: ProCórdoba

As part of the process of forming Argentina's export promotion policies described in the previous section, the Province of Córdoba set up PróCórdoba, a provincial export promotion agency, in 2001. ProCórdoba has three key objectives: (1) promote provincial export offerings, prioritizing diversification and incorporation of added value in exports; (2) facilitate the process of internationalization of local companies, particularly SMEs; and (3) strengthen the province's export culture.

Since its inception, ProCórdoba has been a public-private agency. Its board is made up of representatives of the provincial government, municipal governments, and business associations of the main sectors and productive regions of the province. ProCórdoba's management is headed by a general manager nominated by the business associations of the board, but with the approval of the provincial Minister of Industry.

Like the Export.AR Foundation, ProCórdoba experienced an episode of organizational stress or change: the removal of the agency vice president. In June 2010, the then vice president, Omar Seoane, was removed at the request of one of the business associations of the board. It should be noted that, in practice, Seoane did the work of general manager, running the daily and strategic management of the agency.

According to the interviews, the motive behind the vice president's removal was the defeat of the group of companies that had originally nominated Seoane in the internal elections of their business association. The new leadership of the chamber said they did not feel represented by Seoane's leadership and requested his removal from the agency.

However, unlike what happened in the Export.AR Foundation, this episode did not result in changes in ProCórdoba's organization or the institution's outputs. In fact, ProCórdoba increased the number of promotional actions,¹¹ and continued to be recognized as one of the leading provincial promotion

¹¹ In 2011, ProCórdoba coordinated 28 percent more events (64) than the year before Seoane's removal, with 17 percent more companies participating than in 2010 (637 companies). The agency organized 16 fairs at which 91 companies from Córdoba exhibited, and carried out 33 trade missions composed of 241 SMEs and eight reverse missions with international business rounds attended by 70 international operators and 225 businesspersons from Córdoba.

agencies in Argentina.¹² An interesting aspect is that, after Seoane's removal, ProCórdoba gave up the tradition of selecting a representative of the member business associations as the agency's manager. Instead, the business chambers chose as manager a career officer of the agency, with the approval of the provincial government.

6.3.2.4. Technical, Organizational, and Political Capacity

This section analyzes the TOP capacity highlighted by the revealing episode in the Export.AR Foundation case. Counter examples provided by the counterfactual case of ProCórdoba are used to illustrate the importance of institutional capacity.

- **Technical capacity**

Beginning in 2002, the Export.AR Foundation designed a process of technical capacity development by incorporating qualified professionals and creating new areas of knowledge generation and new programs to promote exports. This capacity-building process was interrupted by the removal of the executive director, Marcelo Elizondo, in 2010, described in the previous section.

The interviewees agreed in characterizing the MREC diplomatic staff as a professional body lacking specific capacity for implementation of trade promotion policies and production of up-to-date information on destination markets for exporting companies. In response to these shortcomings of the MREC, Elizondo began a technical capacity-building process in the Export.AR Foundation with six main measures.

A first step was to bring professionals with training in foreign trade, business administration, and marketing onto the foundation staff. A second measure was to create the Trade Intelligence Area, with the objective of producing in the Export.AR Foundation the information that the MREC was not providing to exporting companies on destination markets, detecting market and product opportunities, and preparing annual strategic plans and sectoral promotion plans. A third measure was creation of the Academic Council. A fourth was to establish alliances with prestigious specialized institutions, such

¹² In 2011, ProCórdoba was again honored with the Export.AR Foundation Award, giving it a record of awards that surpasses other provincial agencies. ProCórdoba received the 2007 and 2011 Export.AR Foundation Prizes, and holds standard certifications ISO 9001:2008 and the IQNET Certification (the International Certification Network). The agency is also a founding member of the International Network for Regional Trade Promotion Organizations (RTPO), and it held the presidency of that organization in 2009.

as the Fundación Standard Bank (now the Fundación ICBC) to provide some Export.AR Foundation services, mainly foreign trade training to companies. A fifth measure was adoption of mechanisms for training the foundation's human resources through cooperation schemes with international agencies. An example is the agreement for an exchange of experts with the Japan International Cooperation Agency (JICA), through which JICA officials worked for one or two years in the Export.AR Foundation on technical transfer programs, and officials from the foundation, and particularly the Trade Intelligence Area, participated in training activities at JICA in Japan.

Members of the Trade Intelligence Area also participated in a program of visits to government agencies involved in export promotion and productive development, customs and logistics solutions providers, and companies from various productive sectors in Japan. The program resulted in an action plan to apply the knowledge acquired and take advantage of the network of contacts established in the Export.AR Foundation.

The sixth and final measure resulting from the process of building technical capacity in the Export.AR Foundation was implementation of new PDPs, such as the Argentine Weeks and Argentine Menus. Argentine Weeks aimed to position premium Argentine exports in the world's leading department stores by associating wines and other typical products with prestigious Argentine brands such as the tango and others. Argentine Menus worked by positioning local products in prestigious hotels and restaurants abroad.

In addition to the technical capacity acquired by Export.AR Foundation staff, implementation of these new PDPs was fostered by the continuity of the agency's actions over time. For example, an agreement with El Corte Inglés, Spain's leading department store, took the foundation about three years to negotiate.

It should be noted that implementation of new PDPs was part of a positioning strategy of the Export.AR Foundation in relation to exporting companies such as the national PDA specializing in more efficient and innovative export promotion. This strategy used the market to solve the problem of competition among multiple trade promotion agencies with the idea that the best quality of services would make the exporting companies choose the foundation, as one former foundation official put it.

Since the revealing episode of the departure of Executive Director Elizondo in 2010, the Export.AR Foundation has lost much of the technical capacity acquired during his tenure. The PDP offering was practically limited to trade fairs. While in 2010 the foundation organized seven Argentine Weeks and 14 Argentine Menus in prestigious stores, hotels, and restaurants abroad, in 2015 it only planned to hold two of these events. Likewise, the tasks of the Trade Intelligence Area were limited to preparation of directories of importers

and simple analysis of foreign trade trends. Half of the Trade Intelligence Area technical team left the foundation, and the rest of the staff was relocated to other areas of the foundation.

This process of institutional deterioration is due, at least in part, to a new division of labor in Argentine export promotion policy in which the Export.AR Foundation responds directly to MREC directives. Although in principle this new trend would seem to be an improvement from the standpoint of coordination of the PDP in the national government, the institutional capacity developed during Elizondo's term was lost, instead of being relocated or transferred to the new entity.

In contrast, in the ProCórdoba case, the greater institutionality of the decisions taken in the Academic Council—with private sector representation and participation—resulted in a solution that strengthens and prioritizes the agency's technical capacity by promoting whoever is the organization's director of economic studies.

- **Organizational capacity**

The organizational capacity of the Export.AR Foundation is characterized by a permanent mismatch between the degree of linkage with the public sector and collaboration with the private sector, and complexities created by the general framework of coordination of trade promotion policy at the national level. Between 2002 and 2010, public-private collaboration, one of the dimensions of organizational capacity, developed positively in the foundation. The export companies' demands were channeled through the formal academic, agro-exporter and SME councils and through more informal modes interaction such as routine work with the foundation technical staff.

This process of dialogue with the private sector was the basis for the design and implementation of the foundation's PDPs. According to one of the interviewees, at that time in the foundation "there was active interrelation with the private sector: the Board of Administration participated significantly in the design of the plans, and regular meetings were held. [Similarly], the companies also participated very actively in the trade and services action plan offered by the foundation through the demands transmitted to us."

The greater involvement of the private sector had its parallel in the financing structure of the Export.AR Foundation. Toward the end of Elizondo's term, around 40 percent of the foundation's resources came from contributions from private companies, which is the largest proportion of private funds in the history of this PDA, according to the interviews. At the same time, the weight of subsidies in the cost of company participation in the foundation's trade promotion actions abroad reached a historical minimum of 25 percent of the total cost.

The public-private linkage was based, to a large extent, on the high level of confidence that the private sector had in the executive director's technical capacity. In this respect, Elizondo was successful in positioning the Export.AR Foundation, helped by the significant level of knowledge and recognition by the *user companies* of foundation services. In fact, the foundation was perceived by the companies at that time as a PDA at the service of the private sector.

In contrast, the capacity for public-public linkage was determined by the political economy of Argentina's foreign trade promotion policy. In this context of organizational fragmentation and lack of formal coordination arrangements among the agencies, the linkage capacity of the Export.AR Foundation with the rest of the public sector went through times of greater and lesser coordination. In general, the cooperative stages were marked by informal agreements through direct negotiation between the officials responsible for the PDAs involved.

In this respect, the revealing episode represented a turning point in these dynamics of informal cooperation and linkage between the Export.AR Foundation and the public and private sectors. The formal and informal linkages with the private sector lost relative weight in the design and implementation of the foundation's PDPs.

The similar episode experienced by the ProCórdoba Foundation did not affect the involvement of private entrepreneurs. In fact, a significant aspect of this counterfactual episode is that the business chambers that made up the agency's governance, and which appointed the executive director, were the same ones that requested his removal. These chambers, through their representatives on the Advisory Board, then chose a general manager from the technical staff of the agency. Consequently, the revealing episode reflects ProCórdoba's solid public-private linkage, which led to strengthening technical capacity by choosing a career technician as manager. Thus, this cooperation helped to cement the stability of ProCórdoba's PDPs, in contrast to the Export.AR Foundation case.

Another aspect of public-public linkage relates to implementation of the Export Increase and Diversification Program (PADEX) by the Export.AR Foundation. PADEX establishes a set of target markets and priority products for the country's trade promotion policy. The Head of the Cabinet of Ministers of the Presidency of the Nation designed the PADEX after Elizondo's removal from the foundation, designating the MREC as responsible for its implementation and linkage with other state agencies. In this way, the foundation acts only as an executor of a PDP designed by the Head of Ministers and led by the MREC.

PADEX functions with a new management model, characterized by increasing public-public coordination between the Export.AR Foundation,

the MREC, and other ministries and export promotion programs, and adoption of top-down mechanisms of public-private collaboration, through which the foundation implements PDPs designed in other governmental agencies without direct inputs from the private sector.

In addition, creation of PADEX facilitated establishment of a scheme for delimiting competencies of trade promotion policy between the specialized national government agencies: the MREC organizes trade missions, the Export.AR Foundation handles participation in international fairs, and the Commerce Secretary of the Ministry of Industry is responsible for business rounds. This scheme also led to unification of the calendar of trade actions of the foundation and the MREC.

In turn, this cooperative scheme within the national government made possible implementation of a new procedure for participation of private companies in international fairs organized by the Export.AR Foundation. The system of generalized subsidies of 25 percent of the cost of participation was replaced by a scheme of subsidies inversely proportional to the size of the company, which raised the benefit to 50 percent of the cost for medium-sized companies, and only required payment of US\$200 by small and micro enterprises. Apart from the new subsidy scheme based on size, however, private company participation in the foundation budget was gradually cut to only 10 percent.

In summary, before the revealing episode, the Export.AR Foundation operated in a context of public-public disconnection and lack of collaboration, but it had a virtuous linkage with the private sector that enabled it to identify demands and test response tools with a top-down focus and also move toward a desirable characteristic of PDPs: orientation to a representative process of public policymaking (Stein and Tommasi 2008; Pomares et al. 2014). The foundation now operates in a framework that seems to have somewhat more linkage to the public sector at the national level, but is more disconnected from private sector demands, a framework in which it applies a top-down approach to PDP implementation. This loses the representative nature of the PDP definition process (Stein and Tommasi 2008; Pomares et al. 2014).

- **Political capacity**

Political capacity is understood as the ability to produce reliability, build consensus, and avoid possible capture by the private sector (Cornick 2013). In the Export.AR Foundation case it is determined by the process of formulating national trade promotion policy. First, as described in Section 6.3.2, the public actors of the policymaking process are characterized by coexistence in traditional national public bodies marked by a higher level of institutionality,

such as the SURCI and the Export.AR Foundation, with recently created PDAs linked to external financing, such as ProArgex and ProArgentina. Lastly, provincial export promotion agencies and, to a lesser extent, municipal promotion agencies have been appearing.

The private actors include the user companies of the Export.AR Foundation PDAs, the business chambers that carry out activities with the foundation, and the representatives of the private sector that sit on its board of directors. In the stage prior to the revealing episode, the arenas of exchange between these actors were characterized by a low level of institutionalization, as described in Section 6.2.1.

The proliferation of promotion bodies, and the resulting overlapping of functions and actions, is the result of the absence of a formal coordination mechanism between government agencies and ministries involved in export promotion. Although there had been experiences that were intended to contribute to better planning and coordination of promotion activities, these initiatives depended to a large extent on interpersonal contact and the efforts of the officials responsible for the agencies involved.

In this context, Elizondo, the executive director of the Export.AR Foundation starting in 2002, faced growing demand from companies interested in exporting, and the limitation on virtuous cooperation with other public bodies. He undertook a process of strengthening the foundation with the objective of establishing it as Argentina's leading export promotion agency.

This enterprising public official had the backing of the secretary responsible for the SURCI (Redrado), who had in fact proposed him for the post of foundation executive director. With this endorsement, Elizondo was able to introduce a series of initiatives to equip the foundation with technical capacity, isolating it from the pressures of the private and public sectors.

Two years later, the SURCI secretary was named as president of the Central Bank of the Argentine Republic. While this role raised Redrado's position in the national government, for the Export.AR Foundation it meant establishing new alliances with the new SURCI secretary. By doing this, the reformist leader succeeded in maintaining the work achieved on the basis of informal agreements between the foundation and the SURCI.

As part of this equilibrium based on informal agreements, the Export.AR Foundation gradually became Argentina's main export promotion agency. In this respect, innovation and technical capacity functioned as a support for political capacity in managing conflicts for the foundation executive director. In Elizondo's own words: "since we cannot be the only ones, let's be the best." In a certain sense, the political capacity that made possible the informal agreements on the division of tasks, and the backing of the private sector, remained until budgetary and political restrictions became too pronounced.

From the private sector, the interviews suggest that the conflict between the Export.AR Foundation and SURCI was visible, and it was not clear who to turn to in each case. This situation raised the transaction costs of companies, while exposing the most vulnerable PDPs to negotiations with the private sector. In some way, the foundation competed to have its share and at the same time receive its contributions, given the growing budgetary adjustment from the MREC.

In this fragile context, Elizondo received the backing of the companies and some strategic partners, such as some provincial export promotion agencies. Elizondo had developed the necessary political capacity to be able to count on the consensus and cooperation of the private sector, embodied in the president of the foundation's Academic Council. On the other hand, the MREC did not welcome the independent profile that the foundation had achieved among the companies.

In 2010, when the national government requested the resignation of Elizondo's political patron, Redrado, the central bank president, the informal agreements for delimitation of spaces between the MREC and the Export.AR Foundation quickly lost validity. As a result, within a few weeks of that event, the MREC requested that Elizondo step aside.

The private sector representative on the Export.AR Foundation's Advisory Board also speeded up Elizondo's departure from the institution. Other members of the Advisory Board were replaced by businesspersons and officials more ideologically aligned with the government. These changes dismantled any attempt to veto the change in the institution's leadership by the private sector involved in the Export.AR Foundation. Most of the firms that use the promotion services provided by the Export.AR Foundation and other specialized agencies are SMEs. This segment is characterized by a high level of heterogeneity and fragmentation, which makes it difficult to aggregate preferences and coordinate collective action in relation to the public sector (e.g., Elizondo's removal).

In this context it is possible to identify one dimension of political capacity as the ability to build private sector confidence in the foundation. The creation of spaces for public-private participation helped companies get involved in the design of the foundation's agenda, developing a brand associated with innovative export promotion PDPs for the Export.AR Foundation in the business world. However, the foundation's *original sin*—its dependence on the MREC budget agency—reduced the private sector's capacity to be effectively involved in the management of the organization in a context of a low level of institutionalization.

In the case of ProCórdoba, the presence of more institutionalized mechanisms of public-public and public-private linkages resulted in other political economy equilibria during a similar episode of organizational stress. Private companies are more involved in managing the agency, which balances the

state role. In addition, the agency's institutional scaffolding facilitated management of the conflict created by removal of the director with no negative effects on the offering and quality of services and the agency's technical and organizational capacity.

6.3.3. *Ministry of Science, Technology and Productive Innovation*

The Ministry of Science, Technology and Productive Innovation (MINCyT) was created in December 2007 to stimulate technological and scientific innovation and to incorporate value-added knowledge into Argentine companies.

The National Agency for Scientific and Technological Promotion (ANPCyT) is a national agency under the MINCyT, created in 1996 by PEN Decree No. 1660/96. The ANPCyT promotes the financing of projects related to scientific and technological innovation through four funds: (1) Argentine Technology Fund (FONTAR); (2) Fund for Scientific and Technology Research (FONCyT); (3) Trust Fund for Promotion of the Software Industry (FONSOFT); and (4) Argentine Sectoral Fund (FONARSEC) (Figure 6A1.6).

FONTAR supports projects aimed at improving private sector productivity by means of technological innovation, while FONCyT promotes research projects that generate new scientific and technological knowledge. FONSOFT was set up to support completion of university studies, generate new ventures, and strengthen SMEs that produce goods and services in the ICT sector. Finally, FONARSEC was established in 2009 to design and manage associative tools by forming public-private consortiums to improve competitiveness in the sector and respond to social demands.

According to the classification in Section 6.1, the MINCyT implements horizontal PDPs that stimulate innovation and technological development in the economy as a whole (Crespi, Fernández-Arias, and Stein 2014). However, ANPCyT funds are also used to implement vertical policies targeted at specific sectors. The ANPCyT also carries out market interventions, granting subsidies, financing research projects, and executing innovation projects.

With respect to the inputs of the production function described in Section 6.1.3, the MINCyT's current budget is close to 0.65 percent of GDP. According to interviews with ANPCyT officials, the budget is financed in equal parts by the National Treasury and multilateral organizations. The public funds are granted to the ANPCyT under Technological Innovation Promotion and Development Law No. 23.877 and Software Industry Promotion Law No. 25,922/04. The funds from multilateral organizations come mainly from the Inter-American Development Bank (IDB) and the World Bank.

Another important input of the MINCyT is the Scientific and Technology Park (PCyT). The PCyT is a group of buildings constructed in 2011 where

MINCyT and ANPCyT are currently located. In a second stage, the MINCyT has plans for the PCyT to include the National Council of Scientific and Technical Research (Conicet).

The ANPCyT generates four main outputs: (1) subsidies, scholarships, and credits for scientists and companies for the incorporation of technological innovation; (2) advice and technical assistance for project formulation; (3) management and evaluation of financed projects; and (4) linkage of the capacity of the knowledge production centers with the business sector. Figure 6A1.7 presents the output function of ANPCyT in stylized form.

In relation to the outcomes of the MINCyT from 2005 to 2010, FONCyT supported more than 40,000 research projects presented by the country's leading academic centers. From 2006 to 2010, FONTAR financed more than 1,500 innovation projects for SMEs. According to a study by the University of Quilmes, between 50 and 70 percent of the companies supported by MINCyT funds achieved innovations and improvements in their productivity. In 2013, ANPCyT financed 2,300 projects for about ARS 1.600 billion and awarded 1,023 scholarships. The agency also provided 1,450 technological services and processed 43 patent applications from Conicet.

According to Albornoz and Gordon (2011), MINCyT's activity since it was established in 2007 has been characterized by the absence of major conflicts in the public sector and in relation to the private sector, partly as a result of good performance of Conicet and the ministry's results achieved in biotechnology, nanotechnology, and ICT. The ministry's continuity and stability are atypical in Argentina and could possibly lay the foundation for a long-term science and technology policy for the country.

6.3.3.1. The Public Policymaking Process for Science and Technology

Before the creation of the MINCyT, the ANPCyT reported to the Secretariat of Science and Technology (SECyT) of the Ministry of Education. The PDPs created to promote productivity and research linked to innovation, science, and technology of the MINCyT come from the call for applications for ANPCyT funds. According to interviews with ANPCyT officials, about 40 percent of the projects submitted obtain financing.

Each fund defines the criteria for selecting projects. Before establishment of the MINCyT, the projects selected by the ANPCyT were extremely heterogeneous. With the creation of the MINCyT, each fund's selection criteria were linked to the ministry's priority policies and long-term objectives, defined by the Federal Science and Technology Council, the Inter-institutional Science and Technology Council, and the Secretariat of Planning and Policies in Science, Technology, and Productive Innovation. As a result, creation of the

ministry has improved coordination between programs that were previously dispersed, and created a joint long-term strategic view that minimizes the volatility of the policies that support innovation.

In this context, the MINCyT prepared the 2020 Innovative Argentina Plan (PIA 2020) in 2013 to set policy guidelines on innovation, science, and technology in Argentina until 2020. Development of the PIA was coordinated by the MINCyT Secretariat of Planning and Policies in Science and Technology, with the participation of representatives of the productive sector and non-governmental organizations, scientists, members of the MINCyT, and related sectoral ministries.

6.3.3.2. Revealing Episode: Creation of the MINCyT

The revealing episode selected to analyze the institutional capacity of the MINCyT, and in particular of the ANPCyT, is the creation of the MINCyT in December 2007 and the appointment of Lino Barañao as minister.

Prior to the creation of the MINCyT, the institution responsible for co-ordinating science and technology policy in Argentina was the Science and Technology Secretariat (SECyT). Historically, the SECyT depended on different hierarchical bodies, mainly the Presidency of the Nation and the Ministry of Education. However, the secretariat did not possess the planning and co-ordination capacity of the science and technology institutions of Argentina's public sector (Chudnovsky 1999).

At the end of the 1990s, a series of institutional changes took place that energized Argentina's innovation and science policy. In July 1996, the SECyT became part of the Ministry of Education. At the same time, the government's Scientific and Technological Cabinet (GACTEC) was set up, which gave the secretariat's coordination and planning functions higher ranking. In parallel, the Federal Science and Technology Council and the ANPCyT were founded, exclusively involved in financing research projects in the public and private sectors, and promoting technological innovation (Chudnovsky 1999).

Although the creation of GACTEC under the purview of the Head of the Cabinet of Ministers by Decree No. 1.273/96 was an institutional innovation, the cabinet has only been convened on rare occasions over the years. The initiative was reduced to an innovation in the institutional organization chart rather than in a mechanism for linkage and coordination with a strong impact (Albornoz and Gordon 2011).

These institutional changes led to the creation of the 1998-2000 National Multi-Year Science and Technology Plan, the first national plan for science and technology in Argentine history. Although these changes were auspicious because they tried for the first time to reverse the crisis affecting the

main institutions involved in science and technology, they came with their shortcomings in tow, according to Chudnovsky (1999). First, the interaction of the education sector with the scientific-technological sectors and the productive sector remained limited. In addition, public sector agencies were still without priorities, and management deficiencies continued, along with a lack of coordination and evaluation mechanisms, and a serious imbalance in budget allocations. Lastly, there were no precise objectives.

In 2001, new public bodies related to the national science and technology policy were set up: the Inter-institutional Science and Technology Council and the National Committee for Ethics in Science and Technology. This web of organizations joined Conicet, an academic body created in 1958 to promote scientific and technological research and established as an autarchic organism under the Presidency of the Nation. These institutions and agencies related to science and technology policy were dispersed under various state bodies, with different objectives and organizational capacity.

With the creation of the MINCyT, all of these organizations involved in promoting science and technology came under its purview. This signified the establishment of a formal coordination mechanism for science and technology policies. The transfer to a single body with ministerial rank was a clear signal of the prioritization and higher status of science, technology, and productive innovation policies, with a representative in the national cabinet and a closer relationship with the highest level of political power.

The PDP that emerged from this process brings together several desirable characteristics from the standpoint of public policies (Stein and Tommasi 2008; Pomares et al. 2014). In particular, the emergence of the MINCyT made it possible to develop a stable, effective, coherent, and coordinated science and technology policy for all areas of the national government.

6.3.3.3. Technical, Organizational, and Political Capacity

This section describes the technical, organizational, and political capacity that has made possible the renewal of Argentina's science and technology PDP since establishment of the MINCyT in 2007.

- **Technical capacity**

Prior to establishment of the MINCyT in 2007, the technical capacity to implement innovation and technology policies was spread over various national public sector bodies. With the creation of the ministry, three measures were implemented to reinforce the technical capacity of national scientific-technological efforts: (1) granting a more leading role to the country's

scientific community; (2) improving salaries and implementing a repatriation plan for scientists; and (3) developing new policy instruments for scientific promotion. These initiatives are described below.

First, it should be noted that as of 2003 there had already been a trend toward better planning and coordination of national science and technology policies. After several comings and goings between the SECyT and the Conicet, a new team took over leadership of the SECyT in 2003 headed by Túlio del Bono. The team had an open and dialogue-oriented attitude and the capacity to prepare strategic plans for the medium and long terms. These were the first signs of a policy aimed at increasing linkages and unification.

Second, the president appointed Lino Barañao, a professional with considerable technical capacity, to head the MINCyT. Barañao has a PhD in chemistry from the University of Buenos Aires and a long career as a scientific researcher in Argentina, the United States, and Germany. As president of the ANPCyT from 2003 to 2007, he understood the institution and the characteristics of national scientific policy. Together with his secretaries, Barañao succeeded in linking scientific research to the productive sector in the actions of the MINCyT.

Third, Barañao worked to reinforce the role of the national scientific community in the implementation, management, and evaluation of PDPs. It should be mentioned that the MINCyT is the only national ministry that publishes a complete list of employees and its human resources policy and holds public bidding processes.

Fourth, a pillar of MINCyT policy since its inception has been the training of qualified and specialized human resources for scientific and technological research. Along these lines, MINCyT implemented a policy to improve salaries and pensions for scientists and researchers.

The ministry also put in place a strategy to repatriate Argentine researchers and relocate researchers between provinces, thus strengthening technical capacity in the interior of the country. According to information provided by the IDB, the policy achieved significant results: 118 researchers were repatriated to the country, 51 were relocated between different provinces, and more than 300 are doing doctorate studies. The MINCyT also relaunched the Conicet and moderately expanded the budget, but with the incorporation of researchers and grant holders.

As a result, although there was some dispersed technical capacity among the different organizations involved in scientific promotion prior to establishment of the ministry, creation of the MINCyT gave a more prominent role to technicians specialized in science and technology. In addition, the explicit objective of the MINCyT to repatriate and train scientists demonstrates a commitment to a permanent policy of having scientists in charge of the productive development of science and technology. In this respect, this policy

was also possible due to the presence of bureaucratic capacity at the national level of government that improved policy implementation through a process of reorganization and institutional creation (Scartascini and Tommasi 2013; Franco Chuaire and Scartascini 2014).

Lastly, the new team in charge of the MINCyT developed and implemented new policy instruments, such as the sectoral funds, starting in 2009. In this respect, the team emulated the experience of other countries in the region, specifically Brazil, moving from a horizontal policy design to one of more targeted policies adapted to each sector's idiosyncrasies (Albornoz and Gordon 2011). These initiatives were taken thanks to the entry of technical staff into the MINCyT with knowledge and experience in working with productive sectors, and to the creation of links with other specialized agencies, such as INVAP.¹³

- **Organizational capacity**

With respect to public-private collaboration, the National Multi-Year Plan for Science and Technology 1998-2000 stated: "The efforts of the business sector are, in general, short-term, do not include systematic research and development activities and are not linked to public science and technology institutions or developed in networks in which suppliers, users and customers actively participate. So they are far from having the scale required to meet the challenges of building a knowledge-based society" (Albornoz and Gordon 2011). Private demand was weak, and there was no promising interaction with knowledge generators.

This deficient dialogue between the public and private sectors was combined with low levels of public-public collaboration. According to Albornoz and Gordon (2011), there was a disconnected group of mechanisms targeted at different areas of the work with the private sector. This demonstrated the GACTEC's ineffectiveness in meeting its objectives of avoiding overlap and facilitating coordination of the actions of the various public entities.

Creation of the MINCyT failed to completely solve the difficulties in public-private collaboration. In relation to technical capacity, a possible consequence of the scientific centrism of current ministerial actions is that innovation is not thought of so much as stimulating innovative behavior among entrepreneurs but rather as the spillover "from the groups of excellence into certain productive sectors naturally closer to the more sophisticated technologies" (Albornoz and Gordon 2011, 41).

¹³ INVAP is a state company dedicated to the design and construction of complex technological systems, mainly in the following areas: nuclear, aerospace, government, defense, and industrial and medical systems. It was set up in the 1970s under an agreement between the National Atomic Energy Commission of Argentina (CNEA) and the Río Negro Provincial Government.

In any event, one of the ministry's explicit objectives is to link the capacity of the knowledge production centers with the private sector. For this, Conicet, the universities, and other institutions of the system act as liaisons with private companies through their Technology Linkage and Transfer Offices. As shown in the previous section, the ministry supports the strengthening of these offices by training human resources. At the same time, FONARSEC took on the task of designing and managing associative tools through the formation of public-private consortia. By means of these measures, the MINCyT succeeded in improving the representativeness of national science and technology PDPs.

With respect to public-public collaboration, creation of the MINCyT led to significant improvements in linkage and cooperation and, above all, to the establishment and prioritization of clear roles in science, technology, and innovation policy. In the words of an official of the Undersecretariat for Science, Technology and Productive Innovation Policies, "creation of the ministry coordinated previously dispersed programs by giving them a long-term vision and strategy, ending competition between agencies and minimizing volatility of policies supporting innovation."

As a result, creation of the ministry was a turning point in the dynamics of coordination in the public sector and introduced a scheme for delimiting the competencies and objectives of each agency related to innovation. However, political capacity was indispensable for ensuring that these long-term plans, which had existed in the past, did not turn out to be useless in achieving a level of linkage and efficiency of PDPs.

- **Political capacity**

Technical capacity and the agencies involved in designing and managing PDPs for science and technology preceded creation of the MINCyT. However, the mechanisms of coordination and technical prioritization could not have been achieved without underlying political capacity and support at the highest political level.

Creation of the MINCyT was achieved in part thanks to the presence of a reformist leader, Lino Barañao. As minister, Barañao used his position in the national government to advance the status of science and technology policy. His objectives were aligned with those of then-President Néstor Kirchner and of the scientific community, which wanted more involvement in defining and implementing national scientific-technological policies. As a result, with the support of the political community and the highest political level, the MINCyT was instituted in December 2007 without serious opposition, since it did not affect the interests of previously existing interest groups.

As a result, Barañao became the first Minister of Science and Technology in Argentine history. His knowledge of the scientific field and the support of the President of the Nation gave him credibility and the ability to build consensus, not only in the public sector but in the private sector as well. In the words of a FONCyT official, “the fact that they put Lino in as minister created a different dynamic. Lino not only comes from a scientific environment but in the past he had also tried to link up with entrepreneurs.” According to the same official, “creation of the MINCyT raised the status of science and technology policy in the country. There was an improvement in organizational aspects, [and] the political support resulted in an explicit exposition of the objectives of the ministry and its component bodies.”

As a result, creation of the MINCyT sent a clear signal of the prioritization and higher status of national science, technology, and productive innovation policies, with a representative in the national cabinet and a closer relationship with the highest level of political power. In particular, the MINCyT acted as a formal and institutionalized coordination mechanism between public agencies, and between knowledge generators and the private sector.

6.4. Conclusions

The case studies analyzed in this chapter illustrate the complexities of implementing PDPs in Argentina and, more generally, in developing countries with weak institutional capacity. These types of policies, particularly PDPs that involve market interventions (such as the Technology District or the MINCyT funds), run the risks of capture by private sector beneficiaries. Likewise, the design and implementation of PDPs requires considerable technical capacity in the state bureaucracy, and sometimes in the legislative branch as well. Finally, execution of efficient PDPs requires the political capacity to isolate the PDA from pressures from the private sector and the political system.

The three case studies presented show that governments can deal with these challenges in different ways. For example, the CABA implemented the Technology District through a spontaneous coordination scheme that aligned different policy areas in the CABA. In contrast, creation of the MINCyT was a centralized scheme to link the PDPs by implementing a formal institutional structure at the ministerial level.

Which is the best of these PDP institutional design alternatives? Both the informal coordination schemes and creation of a formal centralized institution are possible responses that led to successful PDPs, at least so far. A related question is how to ensure the sustainability of these policy responses for implementation of PDPs. The Technology District case suggests that informal coordination schemes can work and lead to positive outcomes of

PDPs under particular political and sectoral conditions. In particular, political capacity, linked to support at the highest level of government and the technical capacity of the reformist team (the SSI economists and the MDU urban planners), combined with the presence of a specialized bureaucracy (the CAI), all played a key role in the success of this PDP. However, this coordination scheme produced very different results in the Audiovisual District case given the absence of similar institutional conditions, the presence of a private sector with lobbying capacity, and a weak local legislature with little control.

The MINCyT case can be seen as a counterpoint to the Technology District. Creation of the MINCyT is an episode of centralized building of institutional capacity through the absorption of a set of PDPs previously dispersed among different public bodies and the strengthening of the national science, technology, and innovation policy agenda crystallized in a public body with ministerial rank.

Aside from their particular characteristics, the three cases analyzed have some common features. First is the presence of a *public sector entrepreneur* that develops technical, political, and even organizational capacity in the PDAs and establishes public-private and public-public linkage mechanisms that generate changes in the PDPs. As a result, public entrepreneurs promote the building of institutional capacity, giving rise to innovations in the PDPs.

Second, notwithstanding the previous point, the case studies also suggest that the presence of a public entrepreneur is not sufficient to ensure the sustainability of institutional capacity-building processes in the PDAs. The key element is the capacity to institutionalize public policy innovations in the framework of the public policymaking process. From the cases studied, it is important to note that one of the necessary conditions is support at the highest level of political power, either to isolate the technical team from possible pressures of capture, to build internal and external trust and alignment, or to achieve linkage with other areas and have the necessary resources available.

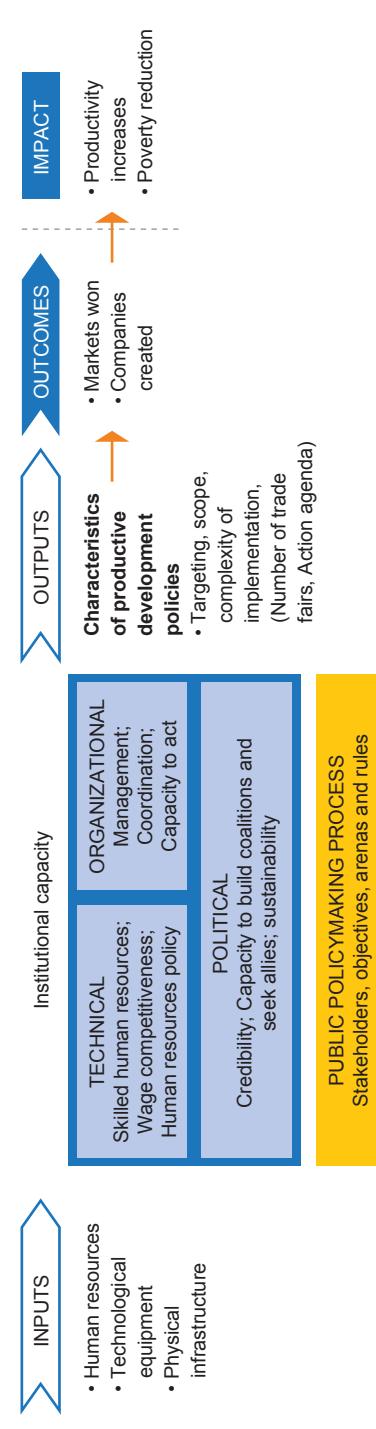
Third, temporary policy innovations resulting from exceptionally positive political circumstances make it possible to build technical and organizational capacity as an output of political capacity.

A fourth aspect common to the cases studied is the volatility of the public policies characteristic of the Argentine policymaking process, influenced by the absence of a permanent merit-based bureaucracy. In turn, the volatility of Argentine public policies increases the risk of capture of the PDAs by the private sector.

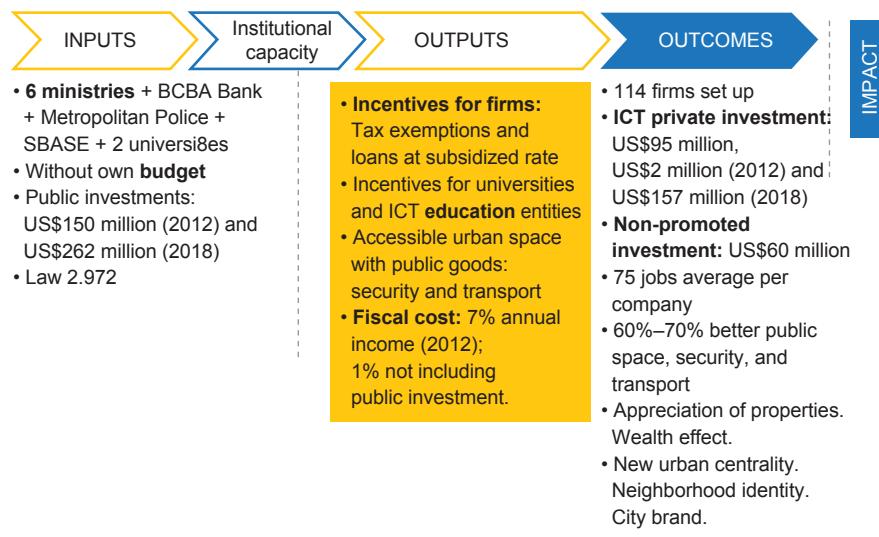
Finally, aside from formal coordination mechanisms (e.g., the MINCyT) or informal ones (the Technology District), the absence of a permanent, high-quality bureaucracy leads to volatile policies and to the unsustainability of institutional capacity-building processes.

Annex 6.1. Maps, Figures, and Tables

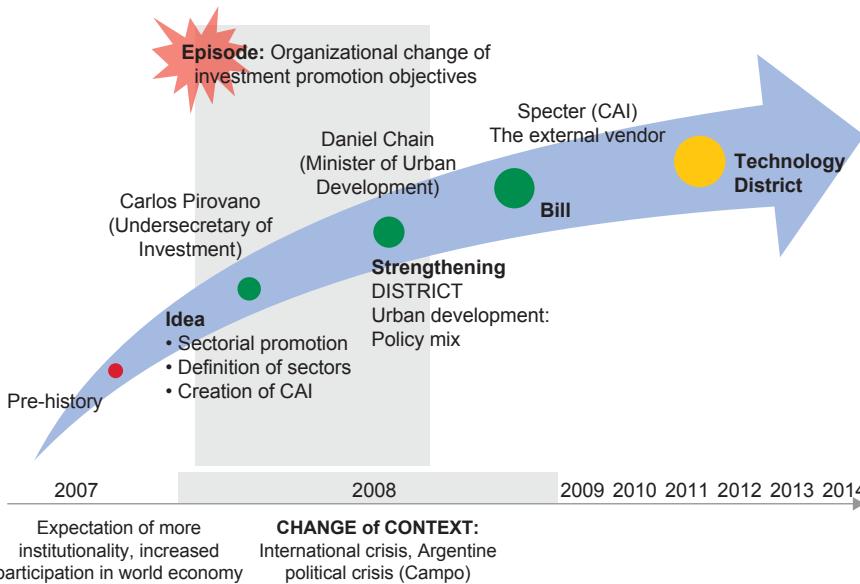
Figure 6A1.1 Schematic Representation of the Productive Development Policy Output Process



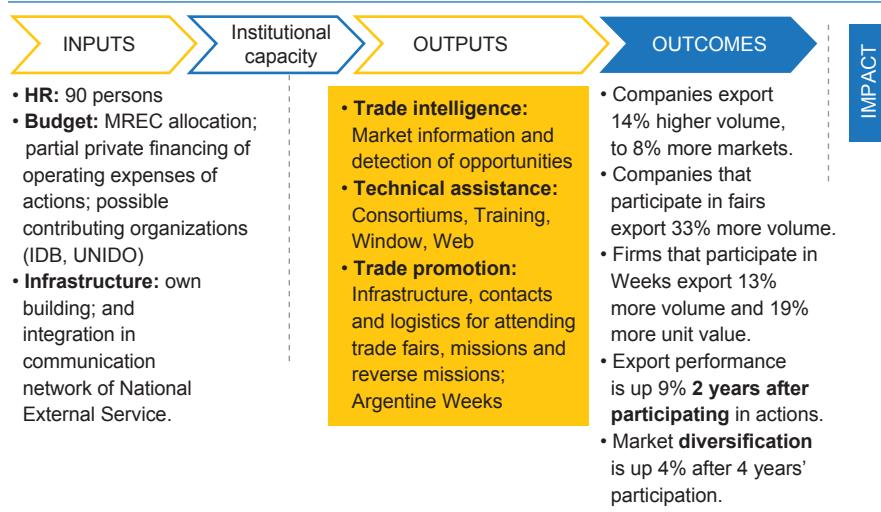
Source: Prepared by the authors.

Figure 6A1.2 Output Process of the Technology District

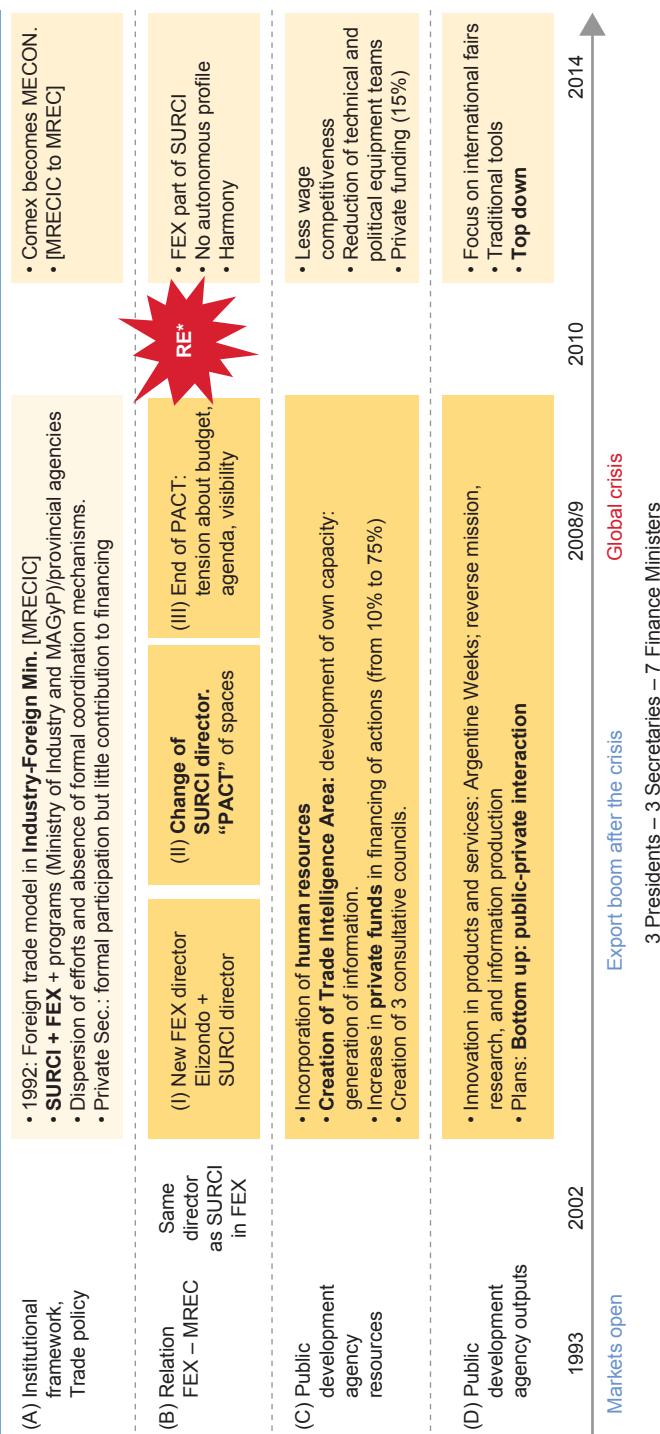
Source: Prepared by the authors.

Figure 6A1.3 Evolution and Revealing Episode of the Technology District

Source: Prepared by the authors.

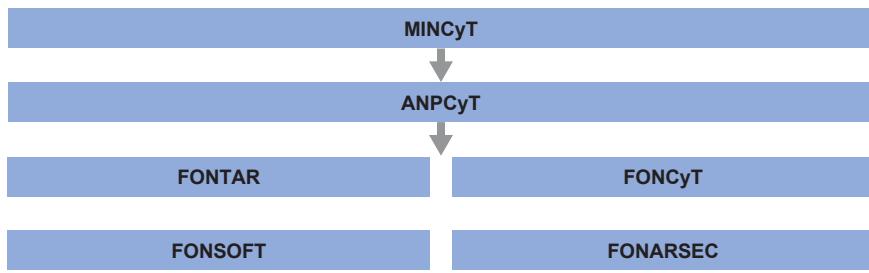
Figure 6A1.4 The Output Process of the Export.AR Foundation

Source: Prepared by the authors.

Figure 6A1.5 Evolution of the Export.AR Foundation and Its Revealing Episode

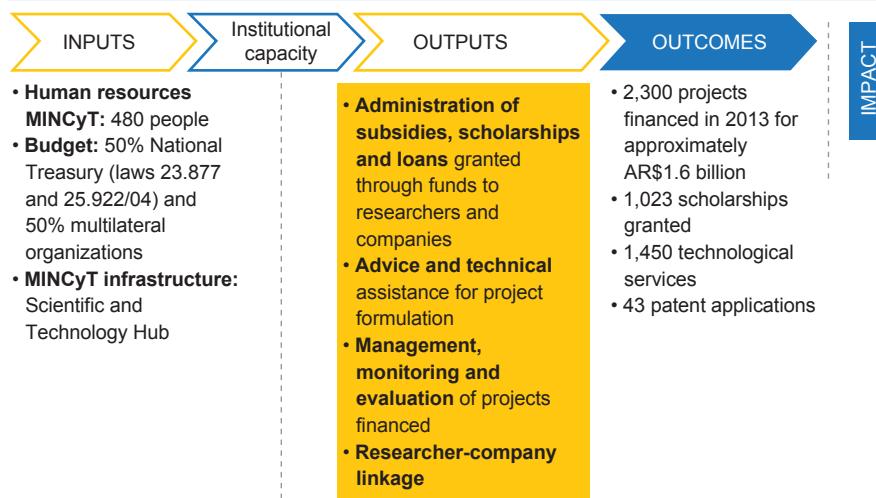
Source: Prepared by the authors.
 Note: FEX: Export.AR Foundation.

* Episode: Organizational change of leadership: removal of Executive Director.

Figure 6A1.6 Structure of the MINCyT

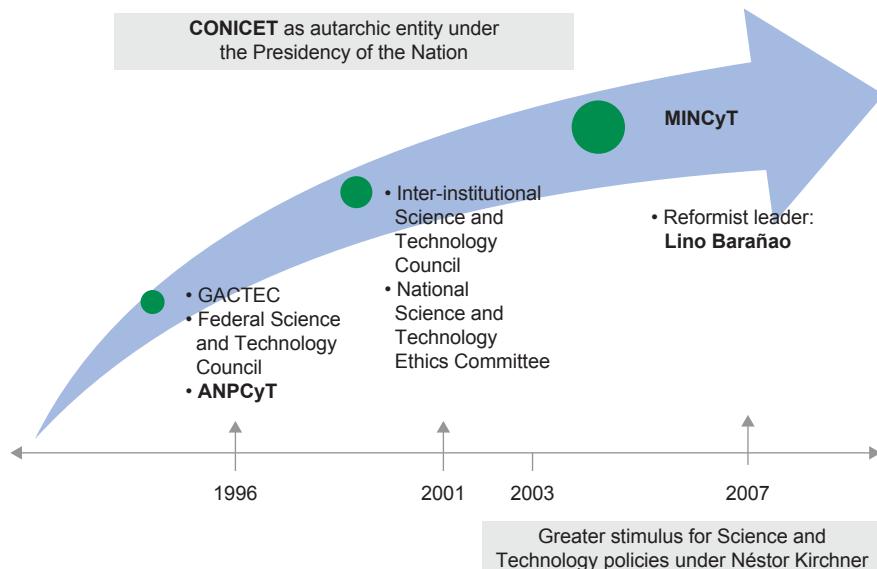
Source: Prepared by the authors.

Note: ANPCyT: National Agency for Scientific and Technological Promotion; FONARSEC: Argentine Sectoral Fund; FONCyT: Fund for Scientific and Technology Research; FONSOFT: Trust Fund for Promotion of the Software Industry; FONTAR: Argentine Technology Fund; MINCyT: Ministry of Science, Technology and Productive Innovation.

Figure 6A1.7 Output Process of the National Agency for Scientific and Technological Promotion (ANPCyT)

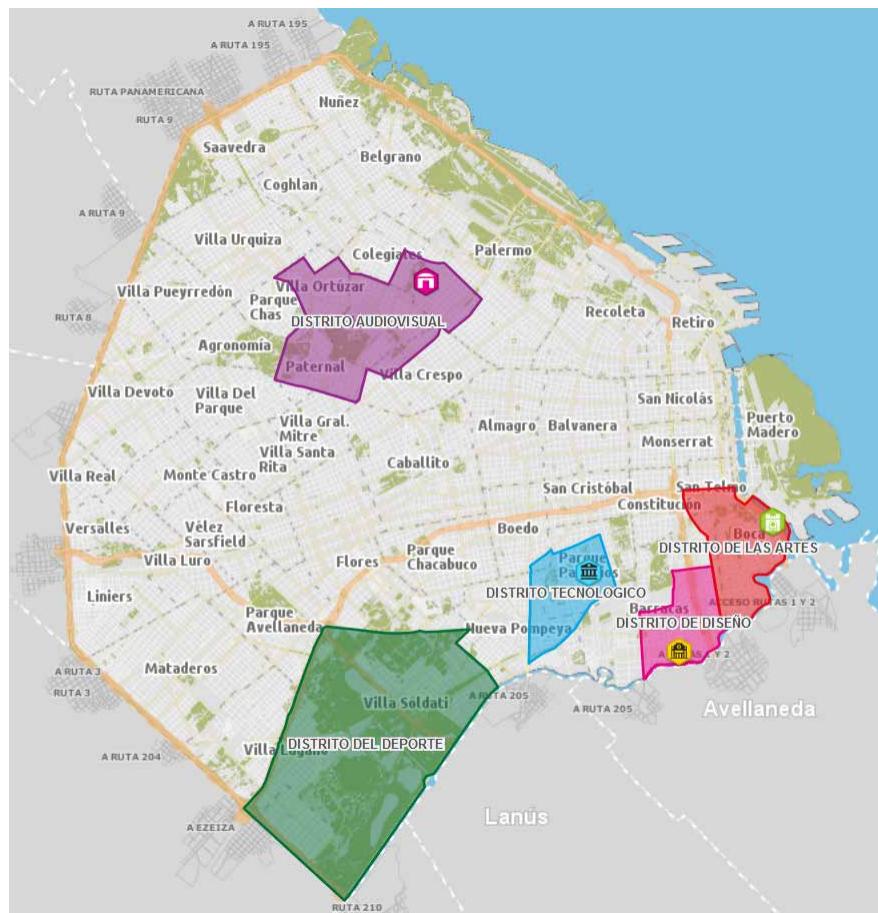
Source: Prepared by the authors.

Figure 6A1.8 Evolution of the National Agency for Scientific and Technological Promotion (ANPCyT) and Its Revealing Episode



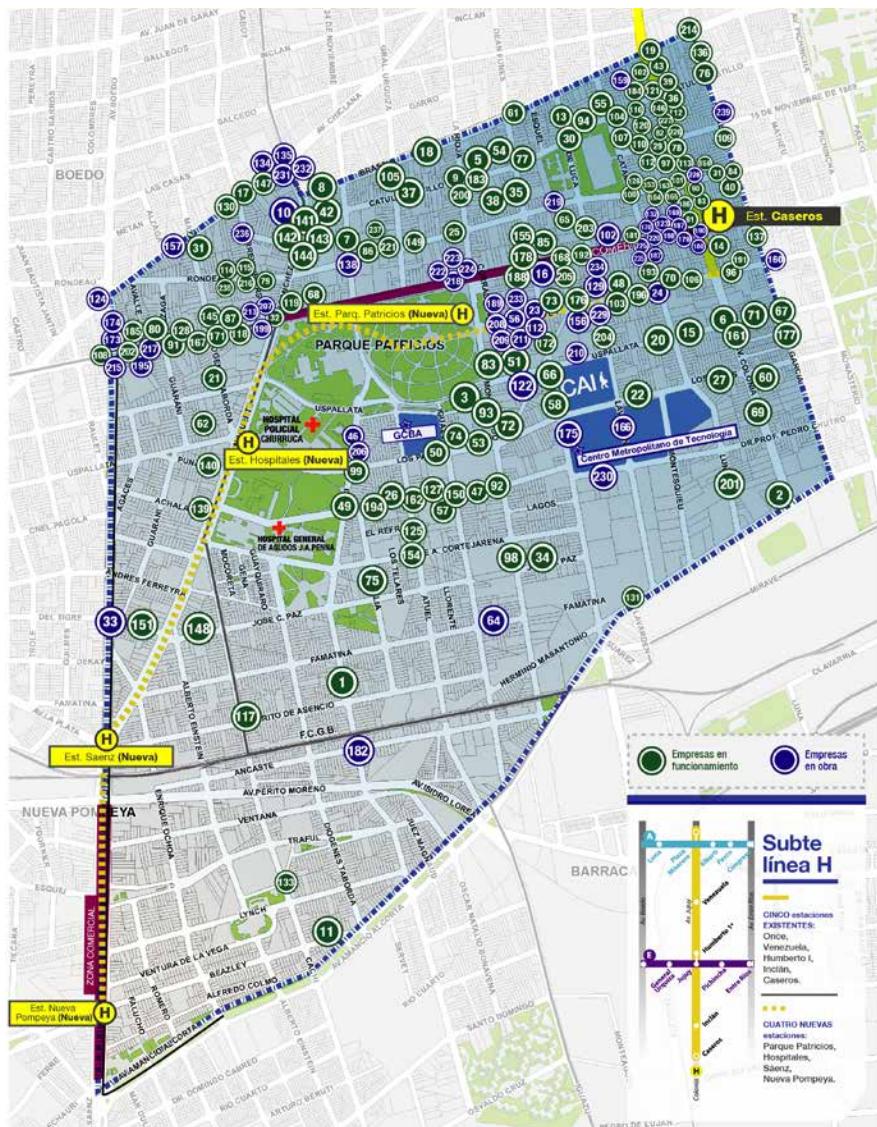
Source: Prepared by the authors.

Map 6A1.1 Location of the Five Buenos Aires City Government Districts



Source: Buenos Aires City Government (2014).

Map 6A1.2 Map of the Technology District



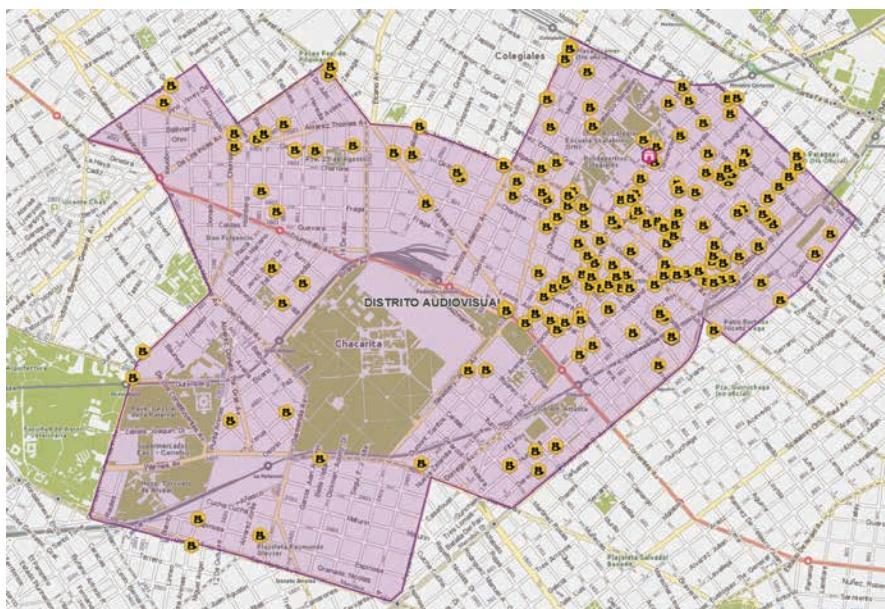
Source: Buenos Aires City Government (2014).

Map 6A1.3 Buenos Aires City Government Audiovisual District: Neighborhoods



Source: Buenos Aires City Government (2014).

Map 6A1.4 Companies Located in the Audiovisual District



Source: Buenos Aires City Government (2014).

Table 6A1.1 Activities Benefiting from the Technology District

- a. Development and testing of software products.
- b. Implementation and testing for third parties of own or third-party software products.
- c. Total or partial development of systems, modules, routines, procedures, documentation, and similar aspects for own use or provision to third parties.
- d. Development of custom software.
- e. Provision of computer services to improve equipment and network security.
- f. Computer services linked to business processes.
- g. Development of products and services applied to activities such as e-learning, marketing, e-commerce, etc.
- h. Coding, programming, maintenance, remote support services, etc.
- i. Development and testing of embedded software.
- j. Hardware production (parts, pieces, or components of computer equipment).
- k. Upgrading, improvement, and training of teachers or students in the education system.

Source: Prepared by the authors based on Buenos Aires City Government (2014).

Table 6A1.2 Technology District Tax Incentives

- a. **Gross income:** Exemption from payment of the gross income tax for 10 years derived from operation in the Technology District. The benefited companies must register in a Registry of ICT Companies (RET) and maintain the number of workers declared at the time of registration to maintain the exemption. However, it is possible to request a deferral of the tax for two years in exchange for a commitment to set up in the same period.
- b. **Stamp tax:** Exemption only for companies with properties in the Technology District for activities covered by Law 2.972.^a
- c. **ABL charge (public lighting, sweeping, and cleaning tax) and delineation and building rights:** Like the stamp tax, this incentive benefits companies with properties in the Technology District used for the promoted activities. This benefit also applies to properties in the area owned or rented by employees of companies registered under the law.
- d. **Subsidies and preferential credit lines:** The law grants subsidies to companies registered in the ICT company register to finance up to 50 percent of the cost of obtaining quality certificates, and of preferential credit lines from Banco Ciudad for purchase of real estate, construction, removals, recycling, and refurbishment of buildings and equipment.
- e. **Benefits apply to educational, academic, and training institutions based in the Technology District.**

Source: Prepared by the authors based on Buenos Aires City Government (2014).

^a The stamp tax is eliminated if the instrument is granted within the first three years dating from the effective date of the law; it is 75 percent if granted between the third and seventh year; and 50 percent if granted between the seventh and 10th year.

Table 6A1.3 Activities Benefiting from the Audiovisual District

- a. Production of all kinds of audiovisual content.
- b. Provision of audiovisual production services.
- c. Processing of material resulting from filming.
- d. Recording of images and sound.
- e. Post-production of material resulting from filming, recording of images, or sound.
- f. Provision of specific services for audiovisual activity, creative, artistic and interpretative activities directly linked to an audiovisual production.
- g. Rental of recording or film studios or technical equipment and distribution of national cinematographic works.
- h. Cinematographic exhibition complexes with a maximum of eight screens located in the Audiovisual District.
- i. University institutions and research and development centers related to the sector.

Source: Prepared by the authors based on Buenos Aires City Government (2014).

Table 6A1.4 Audiovisual District Tax Incentives

- a. Exemption from payment of the ABL charge (public lighting, sweeping, and cleaning tax) and the stamp tax for 10 years.
- b. Preferential credits lines from Banco Ciudad for investment or removal projects: financing of investment projects for civil works, purchase of buildings, construction, recycling, and conditioning of buildings up to 80 percent of total amount and up to 70 percent of removal projects and short-term working capital by means of a line of discount of deferred payment checks from sales to clients or a line of amortizable loans.
- c. Exemption from payment of delineation and construction rights.
- d. Exemption from tax on gross income for 10 years (15 years if national): 100 percent if setup took place since September 2011 and 50 percent if already set up in the first year and 100 percent after the second year.

Source: Prepared by the authors based on Buenos Aires City Government (2014).

Table 6A1.5 Composition of the Export.AR Foundation Board of Directors

Public Sector	Private Sector
1. Secretariat of International Economic Relations of the Ministry of Foreign Affairs	1. Argentine Industrial Union
2. Undersecretariat of Investment Development and Trade Promotion of the Ministry of Foreign Affairs	2. General Economic Confederation
3. Foreign Trade Secretariat of the Ministry of Economy and Finance	3. Argentine Chamber of Commerce
4. SME and Regional Development Secretariat of the Ministry of Industry	4. Association of Importers and Exporters of the Argentine Republic
5. Undersecretariat of Political Coordination of the Ministry of Agriculture, Livestock and Fisheries	5. Sociedad Rural Argentina
6. Ministry of Tourism	6. Buenos Aires Stock Exchange
7. Banco de la Nación Argentina	7. Association of Banks of Argentina
8. Investment and Foreign Trade Bank	8. Chamber of Foreign Trade of Córdoba
	9. Chamber of Exporters of the Argentine Republic
	10. Chamber of Importers
	11. Argentine Council of Industry
	12. General Confederation of Industry
	13. Mercosur Business Forum
	14. 14–18. Five adherent members (Dr. Manuel Sadosky Foundation, the Coordinator of the Food Product Industries, and three individuals)

Source: Prepared by the authors.

Table 6A1.6 Structure of the Ministry of Science and Technology (MINCyT)

Entity	Objective/Function
Scientific Technological Cabinet	Implement policies, priorities, and allocations of budgetary resources for science and technology. Inter-ministerial scope, where long-term policies are agreed upon. Founded in 1996 under the Head of Cabinet of Ministers, direction and coordination were vested in MINCyT after its creation in 2007.
Federal Science and Technology Council	MINCyT advisory body. Its objective is to coordinate national policies and priorities. Chaired by the Minister of Science and Technology and coordinated by the General Secretary.
Inter-institutional Science and Technology Council	Created in 2001 by Law 25.467, the council is a space for linkage of the institutions belonging to the National System of Science, Technology and Innovation. It meets periodically with representatives of the member institutions to take decisions.
Advisory Commission on Cell Therapies and Regenerative Medicine	Through this commission, the MINCyT advises through areas of the State and the public on issues related to regulation, promotion, and dissemination of research and therapies involving the use of stem cells.
Advisory Commission on Biodiversity and Sustainability	Assists MINCyT in matters related to conservation and use of the components of biological diversity.
National Committee of Ethics in Science and Technology	Independent space for analysis of issues related to the ethics of research. Created in April 2001 by Resolution 004/2001 of the Secretariat of Science, Technology and Productive Innovation. Since 2007 it has operated under the MINCyT.
Secretariat of Planning and Policies in Science, Technology and Productive Innovation	Promotes the policies defined by the MINCyT. Designs programs and institutions to address sectoral and social problems.
Secretariat of Technological Scientific Linkage	Performs executive tasks to link areas related to scientific development. Coordinates the Inter-institutional Science and Technology Council.
Undersecretariat of Administrative Coordination	Assists the MINCyT with design of budget policy and evaluation of compliance.
National Department of International Relations	Responsible for cooperation with foreign countries and international organizations. Its objective is to strengthen and integrate local research and development capacity with foreign counterparts.

Source: Prepared by the authors.

Table 6A1.7 Entities Dependent on the Ministry of Science and Technology (MINCyT)

Entity	Objective/Function
National Agency for Scientific and Technological Promotion	Finances projects to improve social, economic, and cultural conditions in Argentina.
National Genetic Data Bank	Autonomous self-governing body set up in 1987 by Law 23,511. In 2009, it became operational under the jurisdiction of the Ministry of Science, Technology and Productive Innovation, after passage of Law 26,548. Its objective is to guarantee the obtaining, storage, and analysis of genetic information needed as evidence for clarification of crimes against humanity that occurred under the national State until December 10, 1983.
National Scientific and Technical Research Council	Promotes and finances scientific and technological research and supports activities aimed at scientific and technological progress in the country.
Argentine Nanotechnology Foundation	Private nonprofit entity with the objective of developing human and technical infrastructure in the country in the field of nanotechnology and microtechnology.
Dr. Manuel Sadosky Foundation	Public-private nonprofit institution with the objective of promoting scientific and technological development involving research and productive application of information and communication technologies in Argentina.

Source: Prepared by the authors.

Annex 6.2. Interviews Conducted

Table 6A2.1 Interviews Conducted for the Technology District

Name	Position and Institution
Patricia Pinella	Producer, Argentine Chamber of Audiovisual SME Producers (CAPPA)
Ralph Haiek	President of the Audiovisual District Consortium
Rocío Sánchez Andía	Former Deputy for Civic Coalition
Carlos Pirovano	Undersecretary of Investments of the Ministry of Economic Development
Damián Specter	General Director of Investment Promotion (CAI)
Daniel Chain	Minister of Urban Development
Diana Maffía	Member of the Academic Council of the Judicial Training Center of the Council of the Judiciary of the City of Buenos Aires
Diego Kravetz	Former Deputy of the City of Buenos Aires
Eduardo Epszteyn	Auditor General of the City of Buenos Aires
Eugenio Burzaco	Former Chief of the Metropolitan Police (2009–2011)
Felix Memelsdorff	Partner in Suaya, Bilbao, Memelsdorff & Asociados; drafter of the Audiovisual District Law
Fernando Álvarez de Celis	Director of Planning of the City of Buenos Aires
Francisco Cabrera	Minister of Economic Development
Guillermo Dietrich	Undersecretary of Transport of the City of Buenos Aires
Ignacio Pérez Riba	Head of Cabinet of the Ministry of Economic Development of the City of Buenos Aires
Marcos Peña	General Secretary of the City of Buenos Aires
Néstor Grindetti	Minister of Finance
Andrés López	Director of the Research Center for Transformation (CENIT), Buenos Aires
Enrique Avogadro	Undersecretary of Creative Economy of the Buenos Aires City Government; former Coordinator of the Academic Council of the Export.AR Foundation
José María Louzao Andrade	President of the Chamber of Software and Computer Service Companies
Marisa Bircher	Coordinator of the Audiovisual District; former Training Manager of the Export.AR Foundation (until 2009)

Table 6A2.2 Interviews Conducted for the Export.AR Foundation

Name	Position and Institution
Marisa Bircher	Coordinator of Audiovisual District; former Training Manager of Export.AR Foundation (until 2009)
Enrique Avogadro	Undersecretary of Creative Economy of the Buenos Aires City Government; former Coordinator of the Academic Council of Export.AR Foundation
Marcelo Elizondo	Executive Director of the Export.AR Foundation (2002–2010)
Leonardo Boto	Executive Director of the Export.AR Foundation (scheduled)
Ricardo Farías	Coordinator, Export Development Program in Brazil in the Pro-Córdoba Agency
Javier Dufourquet	Former Executive Director of the Export.AR Foundation. (2011–2014)
Felix Peña	Director of the International Trade Institute of the ICBC Foundation
Diego Nelli	Former General Manager of Export.AR Foundation (2002–2010) (scheduled)
Andrés López	Director of the Research Center for Transformation (CENIT), Buenos Aires University
Roberto Rossotto	General Manager of the ProCórdoba Agency
CESSI	Chamber of Software Companies and Computer Services
José María Louzao Andrade	President of CESSI

Table 6A2.3 Interviews Conducted for the Ministry of Science and Technology

Name	Position and Institution
Fernando Peirano	Undersecretary of Policies in Science, Technology and Innovation
Rodrigo Gonçalves	Director General, FONSOFT
Ruth Ladenheim	Secretary of Planning and Policies in Science, Technology and Productive Innovation
Carlos Cassanello	Director General, FONCYT
Facundo Lagunas	Director General, FONTAR

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Productive development policies (PDPs) are notoriously hard. They involve a daunting level of technical detail, require public-private collaboration, are in constant danger of capture, and demand time consistency hard to achieve in a politically volatile region. Nevertheless, the potential of PDPs to revitalize the region's economic performance and spur productivity growth cannot be ignored. This book takes an in-depth look at 17 cases involving productive development agencies from Argentina, Brazil, Costa Rica and Uruguay, identifying key features of institutional design and agency-level practices that make success more likely in this difficult policy arena. Careful study of these experiences might help successful productive development policies gain currency across the region. The cases in this book should not be seen as the exceptions that prove the rule of lackluster PDP performance, but rather as examples that demonstrate the rule can be broken.

