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Using Strategic Assessments for Environmental Mainstreaming in the Water and Sanitation Sector

The Cases of Argentina and Colombia



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By:
Ernesto Sánchez-Triana
Santiago Enríquez

The World Bank
Latin America and Caribbean Region
Environmentally and Socially Sustainable Development Department (LCSES)

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Ernesto Sánchez-Triana is Senior Environmental Engineer in the Environmentally and Socially Sustainable Development Department (LCSES) of the World Bank's Latin America and Caribbean Regional Office. Mr. Sánchez-Triana has led the preparation of policy-based loans that aim to incorporate environmental considerations into economic and sectoral policies, as well as the conduction of comprehensive assessments that aim to identify and correct the institutional weaknesses that contribute to environmental degradation. Mr. Sánchez-Triana is the author of numerous publications on environmental and energy policy, political economy, and the use of economic instruments for environmental protection. He holds a Ph.D from Stanford University.

Santiago Enríquez is a Consultant in the Environment Department (ENV) of the World Bank. He supports the policy strategic environmental assessment (SEA) work in the Environmental Institutions and Governance Team, analyzing mechanisms to better integrate the linkages between environmental protection, poverty reduction, and economic growth. His professional experience includes collaborating in international efforts to address transboundary and global environmental challenges. Mr. Enríquez holds a Master's Degree in Public Policies from Harvard University

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Additional copies may be obtained from Ernesto Sánchez-Triana (esancheztriana@worldbank.org or tel. 202-473-6952).

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Acronyms

BOD	Biochemical Oxygen Demand
CAR	Corporaciones Autónomas Regionales (Regional Autonomous Corporations) [Colombia]
DAMA	Departamento Técnico Administrativo del Medio Ambiente para Bogotá (Bogotá's environmental agency)
DPL	Development Policy Loan
DRI	Fondo de Desarrollo Rural Integrado (Fund for Rural Investment) [Colombia]
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EL	Environmental License
EMS	Environmental Management System
ENHOS	Ente Nacional de Obras Hídricas y Saneamiento (National Entity of Water and Sanitation Works) [Argentina]
FINDETER	Financiera de Desarrollo Territorial (Fund for Urban Infrastructure Development) [Colombia]
FIS	Fondo de Cofinanciación para la Inversión Social (Fund for Social Investment) [Colombia]
FNR	Fondo Nacional de Regalías National Royalties Fund) [Colombia]
GDP	Gross Domestic Product
GOA	Government of Argentina
GOC	Government of Colombia
MINDESARROLLO	Ministerio de Desarrollo Económico (Ministry of Economic Development) [Colombia]
MMA	Ministerio del Medio Ambiente (Ministry of Environment) [Colombia]
NGO	Nongovernmental Organization
OP	Operational Policy
PPP	Policy, Program, or Plan
PPS	Planes de Provisión de Servicios (Service Provision Plans)
SEA	Strategic Environmental Assessment
SGRH	Subsecretaría de Recursos Hídricos (Undersecretariat of Water Resource Management) [Argentina]
SRNyDS	Secretaría de Recursos Naturales y Desarrollo Sustentable (Secretariat of Natural Resources and Sustainable Development [Argentina]
TOR	Terms of Reference
TSS	Total Suspended Solids
WSS	Water and Sanitation Sector

Foreword

Environmental sustainability is increasingly seen as a strategic source of productivity and economic growth. Incorporating environmental considerations in policies and programs has been one of the challenges for the Bank. Environmental mainstreaming has led the Bank to adopt innovative approaches to advance its core mission of reducing poverty while keeping attuned to the region's social and economic demands. In this context, the use of policy strategic environmental assessments (SEAs) has gained increased recognition as an instrument with the potential to add value during the preparation of Bank-supported policies and programs, by helping to identify the windows of opportunity to enhance the positive impacts of policies through open and transparent decision-making processes that incorporate the perspectives of multiple stakeholders and address the trade-offs between environmental protection and other socially desirable goals.

During the preparation of Water and Sanitation Sector Reform Programs in Argentina and Colombia, SEAs went beyond their use as instruments to ensure compliance with the Bank's environmental safeguards and to qualitatively transform the programs that were implemented. In particular, the approach that was adopted in both cases introduced a methodology through which environmental considerations were systematically incorporated into sectoral policies. This methodology combined sound analytical work with the establishment of instances where the voices of multiple stakeholders could be heard. This working paper reviews these experiences and aims to provide insights about how a policy SEA might be conducted and the benefits that the use of such instruments may bring.

John Redwood
Director
Sector Management Unit
Environmentally and Socially Sustainable Development
Latin America and the Caribbean Region
The World Bank

1. Introduction

This paper reviews the Strategic Environmental Assessments (SEAs) that were prepared to incorporate environmental considerations in Water and Sanitation Sector (WSS) reforms in Argentina and Colombia.^{1 2} In both cases, the SEAs adopted an innovative approach that aimed to overcome the challenges faced by traditional SEAs, while providing an assessment that was methodologically rigorous and responsive to the needs of the governments.

This paper argues that typical SEA methodologies, consisting mainly of an extension of Environmental Impact Assessment (EIA) methodologies, are not adequate for effectively influencing the policy-making process. The unique characteristics of the policy process require a different approach that takes into account the decision-making context and that fully understands the constraints and opportunities for environmental mainstreaming.

The cases presented in this paper offer such an approach. The paper further argues that, in order to effectively influence high level decision making associated with policies and sectoral reforms, SEA advocates will need to tailor the assessment to fit policy design, address political economy considerations, and

¹ A Strategic Environmental Assessment is “the formalized, systematic, and comprehensive process of evaluating the environmental effects of a policy, plan, or program and its alternatives, including the preparation of a written report on the findings of that evaluation, and using the findings in a publicly accountable decision making,” Therivel et al. 1992. This is not a universally accepted definition of SEA, but one that is widely cited.

² Environmental mainstreaming aims at integrating “environmental concerns into broader operational and analytical activities. At the project level, this entails moving beyond ‘safeguarding’ the environment through compliance with ‘do-no-harm’ policies to ‘doing good’ for the environment.” Andrés Liebenthal, *Promoting Environmental Sustainability in Development: An Evaluation of the World Bank’s Performance*, World Bank Operations Evaluation Department (2002).

continue to support the implementation of SEA recommendations through a broader dialogue among different stakeholders.

The paper consists of five sections. **Section 2** provides a brief overview of SEAs and their limitations in assessing the environmental effects of policies. **Section 3** describes the reform project in Argentina and the way in which the SEA was conducted to support the project’s objectives, while **Section 4** offers a similar description for the case of Colombia. **Section 5** presents the paper’s conclusions.

2. Strategic Environmental Assessment (SEA)

The SEA practice was initially based on an extension of EIA methodologies conducted to address the environmental impacts of groups of investment projects clustered in programs, as well as of land-use zoning and regional plans (Dalal-Clayton and Sadler 2004).³ Good practice SEAs have been described as consisting of:

- (i) Definition of the environmental objectives of the policy, program, or plan (PPP) and identification of the best PPP alternative to meet those objectives;⁴
- (ii) Identification of key environmental considerations that would influence decision making and how they would be appraised (*scoping*);

³ Barry Dalal-Clayton and Barry Sandler, *Strategic Environmental Assessment: A sourcebook and reference guide to international experience* (IIED), 2004, available at: <http://www.iied.org/spa/sea.html>.

⁴ This paper uses the following definitions: “a policy may be considered as the inspiration and guidance for action, a plan as a set of coordinated and timed objectives for the implementation of the policy, and a program as a set of projects in a particular area.” Wood and Djedour (1992) in Therivel and Partidario (1996).

- (iii) Establishment of environmental indicators to describe baseline environmental conditions and predicted impacts, compare alternatives, and monitor implementation;
- (iv) Description of the baseline environment and future scenarios in the absence of the PPP;
- (v) Prediction of PPP impacts on the baseline environment;
- (vi) Evaluation of impacts and comparison of PPP alternatives;
- (vii) Identification of mitigation measures aimed at minimizing negative impacts and enhancing positive impacts of selected PPP; and
- (viii) Monitoring to assess PPP progress in meeting its goals, identification of negative impacts that require remediation, and provision of feedback for future SEAs.⁵

However, the application of such methodologies faces significant limitations when applied in the policy context, because it is “based on the assumption that the provision of better information on the environmental impacts of plans or policies will result in decision makers taking environmental aspects more seriously than would be the case without SEA, and that this will lead to decisions that will turn out to be better for the environment.” (Kornov Lone and Wil A.H. Thissen 2000:197). Nevertheless, policy making is characterized by uncertainties and interactions among multiple stakeholders in which information plays a limited role.

Kingdon (1995) argues that a specific policy only becomes feasible when three “streams” converge to create a window of opportunity:

⁵ While some publications, such as Therivel and Partidario (1996) and Therivel (2004), continue to embrace similar methodologies, others, including Dalal-Clayton and Sandler (2004), argue that SEAs have evolved so rapidly and in so many directions that it is no longer possible to embrace only one methodology.

problem, policy, and politics.⁶ Government agencies tend to modify their policies incrementally and it is only in response to a crisis or a larger focusing event that they are able to introduce policy reforms. Several policies may be available to respond to the focusing event, but the alternative that will be implemented will be one that is technically sound, adheres to the values or political views of the administration, and perhaps more importantly, has a “champion” who is willing to invest resources to build consensus around it. The “stream of politics” refers to changes in the political landscape, such as changes in public opinion, administrations, or congressional composition that may result in certain types of policies being perceived more favorably.

Thus, whether a specific policy is actually selected for implementation does not depend solely on its technical soundness, but on its compatibility with decision makers’ political or normative views, and the nature of the event that causes public opinion to focus on the policy issue. In this context, scientific knowledge is but one of many considerations that policy design must incorporate, and SEA practitioners become policy champions who advocate for specific policies and whose interests compete with those of other groups.⁷

Moreover, policies are usually implemented in a gradual manner, interact with existing market or institutional⁸ failures, and elicit behavioral responses that are difficult to foresee. As a result, even if a policy is designed and im-

⁶ John W. Kingdon, *Agendas, Alternatives, and Public Policies*, Harper Collins, 1995 (2nd Edition). The importance of crisis and leadership in the adoption of policy reforms has been repeatedly analyzed in the literature of political economy of economic reforms. See Dani Rodrik, “Understanding Economic Policy Reform,” *Journal of Economic Literature*, Vol. 34, No. 1 (Mar. 1996), 9–41.

⁷ Kornov and Thissen (2000).

⁸ Institutions are defined as “formal and informal rules and their enforcement mechanisms that shape the behavior of individuals and organizations in society.” Douglass C. North, *Institutional Change: A Framework of Analysis*, 1994, available at: <http://econwpa.wustl.edu/eps/eh/papers/9412/9412001.pdf>

plemented based on the best available information, the direction and magnitude of the associated environmental impacts will often depend on case-specific factors, such as geographic or institutional conditions. Georghiouva and Bolt (2003) review the literature on the environmental impacts of World Bank structural adjustment loans and find that the implementation of the exact same policy was often associated with opposite environmental effects even within the same country. For instance, the application of a homogeneous subsidy in Tunisia was associated with reduced environmental pressures in the country's northern region, but with intensified deforestation in the south (Georghiouva et al. 2003).

The inability to predict the environmental impacts of policies and the limited role that information may play in the policy context imply that a traditional EIA methodology would be difficult to carry out and that, even if completed, it might not succeed in incorporating environmental decisions into the policy-making process. Thus, SEAs should follow a flexible, adaptive, and learning approach to deal with the dynamics and unpredictability of decision processes, and must broaden their scope to include an analysis of the positions, interests, and interrelations for decision makers and other relevant actors that may provide insights for the development of feasible solutions (Kornov and Thissen 2000).

The cases reviewed in this paper illustrate how the Government of Argentina (GOA), the Bank, and other stakeholders who worked together to prepare the SEA for a policy reform project in Argentina found that a traditional EIA methodology could be applied only to the temporary impacts associated with WSS civil works, but could not address the more serious environmental impacts associated with the sector's institutional weaknesses. To move forward, various stakeholders engaged in a social learning⁹ process that led to the devel-

opment of a new approach adapted to the specific policy context. This methodology was later refined and applied to a similar program in Colombia. In both cases, the SEAs succeeded in shifting policy makers' attention from the environmental impacts of civil works that could be addressed through technical specifications to the more significant economic externalities¹⁰ that could only be addressed through the environmental mainstreaming of institutional reforms. Although the SEAs addressed different types of externalities, this paper focuses predominantly on those associated with policy failures and stresses how an extension of the EIA methodology would have been inadequate to address the sector's most significant environmental priorities.

3. An SEA for the Argentina Water Sector Reform Project

Public management of water utilities in Argentina during the 1980s was characterized by low technical and managerial capacity, overstaffing, and numerous other inefficiencies. Macroeconomic problems and adjustment programs resulted in the reduction of investment and operational budgets, contributing to the sector's further deterioration.¹¹ By the early 1990s the sector faced serious challenges including extremely low water supply and sewerage rates of 70.6 percent and 34.3 percent, respectively; insufficient investment to finance the operation, maintenance, and expansion of water and sewerage systems; and inefficient utility operation, as evidenced by

Learning and the State: The Case of Economic Policymaking in Britain," *Comparative Politics*, Vol. 25, No. 3 (Apr. 1993), p. 278.

¹⁰ A negative externality is a cost that one economic agent imposes on another but does not take into account when making production or consumption decisions. OECD, *Environmentally Related Taxes in OECD Countries: Issues and Strategies*, 2001

¹¹ The World Bank, *Argentina Water Sector Reform PID*, April 15, 1997.

⁹ Social learning can be defined as "a deliberate attempt to adjust the goals or techniques of policy in response to past experience and new information." Peter A. Hall, "Policy Paradigms, Social

inadequate revenues, low productivity, and substantial water losses.¹²

Unable to provide the necessary investment to address the sector's problems, and in accordance with the efforts that Argentina had initiated to limit the State's participation in the provision of goods and services that could be more efficiently provided by the private sector, in 1990 the Government launched an ambitious privatization program that initially focused on the country's larger cities. However, by the mid-1990s, the sector's privatization program was under considerable stress because water utilities were unattractive relative to other recently privatized sectors such as telecommunications and energy. Regulatory failures generated legal uncertainty, and improvements in the coverage and quality of services had not met the population's expectations. In order to move forward with its program, the Government of Argentina requested World Bank assistance to expand sectoral reforms to medium-size cities (with 50,000–500,000 people) and address the emerging issues of earlier reform efforts in larger cities.

While preparing the program, the Undersecretariat of Water Resource Management (SGRH) determined that the project's potential environmental impacts called for an Environmental Assessment (EA),¹³ which, based on

¹² The World Bank, *Argentina Water Sector Reform PAD*, May 1999.

¹³ The World Bank, *Argentina Water Sector Reform, Identification Mission Aide-Mémoire*, October 14–26, 1996. The project was classified as Category B, based on the Bank's categorization system where a proposed project is classified as Category A if "it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented," Category B if "its potential adverse environmental impacts on human populations or environmentally important areas—including wetlands, forests, grasslands, and other natural habitats—are less adverse than those of Category A projects," and Category C if "it is likely to have minimal or no adverse environmental impacts." Of the above categories, only C requires no further environmental assessments. The World Bank, *Operational Policy 4.01-Environmental Assessment*, January 1999, revised August 2004.

the Bank's Operational Policy (OP) 4.01, would need to examine the project's potential negative and positive environmental impacts, compare them with those of feasible alternatives (including the "without project" situation), and recommend any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.¹⁴ As part of its efforts to assist the SGRH, the Bank considered the complexity of the challenge because: (i) the project would finance civil works with widely different characteristics and therefore with widely different environmental impacts; (ii) dissimilar and dispersed environmental regulations at various government levels meant that each subproject would be subject to different environmental standards; (iii) institutional weaknesses impaired environmental management generally and in the sector; (iv) there were no sectoral criteria and methodology for project environmental analysis and assessment; and (v) private sector participation required a clear definition of environmental requirements and responsibilities.¹⁵

The government officers and Bank specialists working on the project realized that an approach other than a project-specific EIA was needed and that conducting an SEA at that stage of the project opened the opportunity to focus on more significant environmental problems resulting from policy and regulatory distortions (Quintero 2004). A Sectoral Environmental Assessment was thus proposed as a methodology that could: (i) define the sector's requirements for environmental assessment; (ii) cost-effectively implement mitigation and environmental management measures and monitoring programs; (iii) define the capacities of the sectoral entities to undertake environmental activities; and (iv) define needs for training, capacity building, environmental

¹⁴ The World Bank, *Operational Policy 4.0-Environmental Assessment*, January 1999, revised August 2004.

¹⁵ Juan David Quintero, *Aspectos Ambientales*, Annex 1 to the Argentina Water Sector Reform, Identification Mission Aide-Mémoire, October 14–26, 1996.

guidelines, and other components of institutional strengthening.¹⁶

As the leading WSS authority, the Ministry of Economy had not even considered that the sector could be associated with environmental problems beyond those associated with the construction of infrastructure works. For this reason, the Ministry was initially reluctant to accept the Bank's proposal but later acceded when it was assured that the SEA would not delay project preparation and implementation. However, as the SEA gathered evidence about the linkages between the environment and the water and sanitation sectors, the Ministry championed the conduction of the assessment and the inclusion of its recommendations in the project's design (Quintero 2005).

The SGRH contracted a group of consultants to prepare an SEA. The team consisted of a lawyer and two engineers with expertise in the sector and in economics. The SEA is described below (Alcaraz, Sánchez-Triana, and Calcagno).¹⁷

Compilation of environmental information

The SEA was prepared on the basis of two types of information. The first consisted of

¹⁶ A Sectoral Environmental Assessment is defined as "an instrument that examines environmental issues and impacts associated with a particular strategy, policy, plan, or program, or with a series of projects for a specific sector (e.g., power, transport, or agriculture); evaluates and compares the impacts against those of alternative options; assesses legal and institutional aspects relevant to the issues and impacts; and recommends broad measures to strengthen environmental management in the sector. Sectoral EA pays particular attention to potential cumulative impacts of multiple activities." The World Bank, *Operational Policy 4.01, Annex A*, January, 1999. Sectoral environmental assessments are usually considered SEAs. Kjørven and Lindhjem (2002).

¹⁷ Silvia Alcaraz, Ernesto Sánchez-Triana, and Alberto T. Calcagno, *Análisis Ambiental Sectorial, Informe Final* (Buenos Aires, Argentina: June 1997).

data from the relevant authorities. The second was collected during field visits to some of the areas that could benefit from the WSS reforms. The government officers, Bank task team members, and consultants visited the localities of La Campana, Comodoro Rivadavia, and Catamarca and requested the input of local authorities, water operators, and other stakeholders on their perceptions of the sector's principal challenges. These field visits were crucial in determining the main regulatory issues that hindered service expansion and private sector involvement in the sector, as well as in providing an accurate description of the WSS situation.

Nevertheless, gaps in data and inconsistencies in available information constrained the preparation of the SEA. Argentina lacked a systematic database that would allow for the quantification of water quality and pollutant discharges from point and nonpoint sources. Most of the existing information had been produced for specific projects, with samples taken infrequently from a limited number of sites, and for short time periods.

Identification of sectoral priorities

The SEA was initially conceived as an extension of the EIA methodology to comply with the Bank's safeguards. However, this methodology posed significant problems. Given the project's early stage, it was clear that the project would finance civil works to expand water and sewerage coverage, but the specifications and locations of the infrastructure to be developed were still unknown. Furthermore, the SEA needed to establish baseline indicators to assess the impacts of different alternatives, but this task could not be completed because of the lack of reliable baseline information. Finally, the assessment would have provided measures to mitigate environmental impacts. However, the institutional capacity of the country's environment and water and sanitation sectors needed to be strengthened to ensure that they could effectively undertake such measures.

In response to these challenges, and following the terms of reference, the SEA began by identifying three types of negative externalities that were closely linked to the sectors' priorities and that the consultants needed to assess: inefficient use of water resources, deterioration of water quality, and effects stemming from the construction and operation of water and sewerage systems. These externalities were selected because they were quantifiable and because the SGRH anticipated that they would be significant.

Inefficient water use constituted the most severe problem because water losses at the national level were estimated at 53 percent of water production. Losses were caused by leakages in plants, distribution systems, and homes, as well as by extensive use of water for municipal and emergency services. In addition, residential water, which represented around 70 percent of water consumption in cities, was also plagued by inefficiencies stemming from wasteful end technologies, lack of maintenance of water systems, and unsustainable consumption habits. Wasteful water consumption was largely caused by imprecision or lack of water measurement, which was as low as 0.39 percent of total water consumption in Santa Cruz, 1 percent in Salta, and 2 percent in San Juan. In addition, nonpayment of water consumption was a common practice that authorities typically ignored. As a result, the amount that utilities collected annually represented 29 percent of the invoiced amount at the national level, and less than 5 percent in localities such as Santa Cruz.

Inefficient water use was found to have profound implications for the WSS. From an economic standpoint, it implied a waste of scarce resources that could be used to satisfy other needs, including meeting water demands from communities without access to safe water or producing goods that use water as an input. For utilities, water losses implied a constraint on their income streams, which reduced their profit margins and created a dependence on public funds and subsidies to cover operational deficits and investments. From an envi-

ronmental perspective, the fundamental problem was that water providers relied on transporting the resource from increasingly distant sources to increase water supply, instead of attempting to reduce losses or manage demand to avoid the overexploitation of water bodies. Such practices aggravated the water deficit that affected two-thirds of the country. In fact, ample evidence in watersheds such as the Bermejo and Salí-Dulce Rivers highlighted how resource scarcity resulted in intense competition and ongoing conflicts among water users. Conflicts over water use in the Atuel River between the Provinces of Mendoza and La Pampa were only resolved through Supreme Court intervention. This underscored the need for institutional conflict resolution mechanisms.

Lack of sewerage, untreated wastewater discharges from sewerage, and inadequate disposal of solid waste were closely correlated with water quality deterioration. Communities without sewerage engaged in practices that were associated with aquifer contamination and nonpoint pollutant discharges into surface waters. Sewerage expansion without wastewater treatment posed significant environmental challenges, because the system collected pollutants from dispersed sources and conducted them to a particular body of water in which pollutant concentrations generated serious environmental risks, including soil and water contamination.

Only an estimated 5 percent of the total volume of sewage effluents received treatment at the national level. Treatment capacity was constrained by lack of resources and planning. Existing treatment plants often lacked adequate resources for their operation and maintenance, and their capacity was regularly exceeded, leading to inefficient functioning and spillages that affected bodies of water. Lack of adequate planning for industrial development meant that industrial wastewater was often mixed in the sewerage with residential wastewaters. Industrial wastes affected the functioning of pumping systems, and could even nullify treatment systems. The utility Aguas Argentinas conducted an inspection

from May to September 1994 and found that only 15 percent of industrial effluents complied with legal discharge limits.

Inadequate disposal of industrial and urban solid wastes was identified as another major source of water contamination, particularly in urban areas. Dumping and use of informal landfills was associated with the presence of leachates in aquifers. The severity of the problem was illustrated by the open-air dumps of the Río Matanza Riachuelo Watershed, where the total volume of solid wastes was in the order of 900,000 m³. Moreover, practices such as dumping of sludge and other by-products generated by wastewater treatment plants were widespread and created significant environmental health risks.

The degradation of bodies of water had negative consequences for economic activities, ecosystems, and most significantly, for public health. An assessment conducted several years earlier by the World Bank found that the occurrence of diarrhea, in addition to causing pain and suffering, was linked to health care costs and premature deaths, with an associated cost of some US\$7–65 million per year.¹⁸

The third type of externality, the construction and maintenance of water and sanitation infrastructure, was associated with impacts that included noises and odors, and non-aesthetic impacts for the surrounding neighborhoods. These impacts were moderate and temporary, and therefore did not require as much attention as those associated with water quality and quantity. However, it is likely that a traditional EIA methodology would have only focused on this type of impacts.

¹⁸ The World Bank, *Argentina, Managing Environmental Pollution: Issues and Options*, 1995. Based on an estimated 970,000 cases during 1993 and a cost of US\$90 per case, with US\$30 spent on treatment and the remaining US\$60 representing foregone wages. The methodology used was “Human Capital” which does not consider pain, suffering, and emotional distress, and thus provides more conservative estimates than the Willingness To Pay methodology.

Incorporation of the perspectives of multiple stakeholders, including the most vulnerable groups

The project constituted an opportunity to develop a strategy to provide basic urban services to the poor—a strategy that was missing in Argentina. Thus, the SEA made it possible to conduct an assessment of how the sector’s challenges affected poor households. The analytical work conducted as part of the SEA identified how poor households without access to water and sanitation were affected by the environmental impacts associated with the sector and contributed to environmental degradation. However, the high incidence of waterborne diseases was not explained entirely by this lack of access to basic services, but by its interaction with other socioeconomic characteristics such as low income levels, lack of education, and inappropriate hygiene. Children under the age of five faced particularly severe risks because they could not wash their own hands and depended on the practices of other family members to interrupt the transfer of pathogens between their hands and mouths.

The SEA also looked at the factors that limited the expansion of coverage to poor communities. Despite the inclusion of coverage expansion goals in concession contracts awarded during the first phase of the privatization program, water and sanitation services did not reach poor areas. Poor households faced high connection costs that had to be covered in a lump payment they could not afford. In addition, concession contracts set tariff schemes through which the costs of new connections could not be recovered. As a result, utilities tended to postpone investment until the end of the concession period. In addition, the concession’s limited duration and the absence of clauses that ensured the purchase of new installations by municipalities meant that concessionaires had no incentives to expand coverage beyond contractual goals. Finally, nonpayment for water meant that, while poor households lacked access to water, more affluent households received the service almost for free.

Even poor households with access to water services were affected by a regressive tariff system. Due to the absence of metering systems, the tariffs were based on the area where users resided, rather than on actual consumption. As a result, many low-income households had to pay similar or higher tariffs than high-income households, even though actual water consumption was likely to be lower. In fact, it was estimated that an investment of US\$55–120 by poor households to install a metering system could be recovered in the short term, because payment for actual consumption would significantly reduce their monthly water fees.

Identification and assessment of institutional weaknesses and failures that hinder effective environmental management

The aim of the institutional assessment was to evaluate the regulatory and organizational factors that contributed to inefficient water use, degradation of water resources, and the impacts associated with the sector's civil works. The assessment found several disturbing characteristics, including: (i) a fragmented legal framework that did not regulate many of the activities causing the deterioration of water quality; (ii) weak environmental organizations at the national and provincial levels that could not develop, apply, or enforce environmental protection laws; (iii) jurisdictional overlaps, coordination problems, and scattered responsibilities that resulted in conflicts among water users; and (iv) negligence of environmental considerations by WSS authorities and utility operators.

The Salí-Dulce provided the prototypical example of how institutional weaknesses resulted in a loss of social welfare. The river crossed two jurisdictions and its water was allocated to multiple uses such as industry, agriculture, drinking water supply, electricity generation, fishing, tourism, and conservation of a provincial reserve. Problems with the environmental sector resulted in water pollution from industrial and agricultural sources in

the upper basin which affected the rest of the activities downstream. Irrigation activities in the lower basin were also constrained by water shortages, but competition, overlapping, and coordination problems hindered the definition and enforcement of property rights.

For water utilities, the general implication stemming from institutional weaknesses was that, although they were undoubtedly affected by the absence of clearly defined property rights (both for water quality and quantity), the lack of binding regulations to minimize their environmental impacts and the inability to include the costs of sound environmental management as part of the tariffs left them with no incentives to internalize the environmental externalities generated by their activities.

Institutional weaknesses were partly explained by the structural changes that Argentina was undergoing. Simultaneous reforms resulted in the privatization of most of the state-owned infrastructure, as in the case of water and sanitation, and in a greater decentralization that transferred substantial responsibilities to the provincial governments. In the environmental sector, the new framework embedded in the 1994 Constitution assigned to provincial governments property rights and management responsibilities for natural resources and the environment. The national government's role was limited to developing environmental standards that the provincial governments could apply and serving as a coordination mechanism across jurisdictions.

However, the Secretariat of Natural Resources and Sustainable Development (SRNyDS), Argentina's national environmental authority, was still in the process of integrating the national environmental and natural resources policy and lacked the capacity to develop most of the necessary environmental standards. Furthermore, numerous environmental responsibilities remained dispersed among six other national agencies and the lack of a consolidated environmental authority hindered inter-institutional coordination. Environmental policies were also scattered in instruments such as

the National Sanitation Plan, but most of them focused on technical standards at the project level, rather than the integration of environmental considerations at decision-making levels.

On the other hand, the provinces' increased responsibilities were not matched with additional budgetary resources, and their capacity to develop and apply their own environmental standards varied greatly throughout the country. As a result, regulations to control water pollution were missing or were not operational in many parts of the country, environmental responsibilities varied from one jurisdiction to another, mechanisms for watershed management were lacking and user conflicts arose constantly, and the regulated communities had no certainty about what environmental standards were in place or the obligations that new regulations would impose on them.

In the WSS, organizations struggled to transform the sector and seldom included environmental considerations in their activities. The SGRH developed a National Sanitation Plan, which laid out a policy of transforming utilities into entities working under business principles and involving the private sector in the provision of services. Under this policy, the National Entity of Water and Sanitation Works (ENHOS) managed resources to provide technical assistance, conduct EIA for sectoral projects, and evaluate privatization or concession projects. ENHOS had a unit in charge of addressing the environmental impacts of the entity's activities, but its limited staff of two professionals could do little to incorporate environmental considerations at high decision-making levels. The Government also developed Service Provision Plans (PPS), which conditioned transfers from the national government to the provinces on the involvement of the private sector in the provision of public services. Although the PPS were adequate to identify investment needs, establish the responsibilities of regulators and service providers, and protect consumer rights, they paid little attention to the need for sound environmental management.

Development of public policies that mainstream environmental considerations

The SEA developed a set of recommendations that distinguished between the temporary and moderate impacts associated with the construction of civil works (which could have been identified by a traditional EIA approach) and the more significant impacts on water quality and quantity that stemmed from institutional failures (for which a policy SEA was needed). The SEA primarily targeted water utilities and WSS authorities with the aim of strengthening environmental management capacity *within* the sector.

The incorporation of environmental clauses in concession contracts was proposed as the most effective mechanism to ensure the minimization of environmental impacts by water utilities while the appropriate regulatory instruments and organizational capacity were developed. The clauses included technical specifications to address environmental impacts associated with infrastructure location, design, construction, and maintenance.

In addition, the SEA provided recommendations to address the institutional weaknesses identified by the policy SEA. These included additional measures to be included in the concession contracts, as well as recommendations to strengthen the organizational capacity of utility operators and WSS authorities.

In terms of clauses, the SEA sought the establishment of economic incentives to increase service coverage and rationalize water consumption and pollution. In particular, the SEA advocated the development of financial schemes that poor households could use to pay their connection costs in monthly installments. It further proposed that water tariffs include the cost of environmentally sound practices—such as adequate sludge disposal—and water use charges. Water use charges would aim to reflect the resource's opportunity cost and would increase during daily peaks or dry seasons to reflect resource scarcity.

In order to ensure that water utilities had the organizational strength to comply with the environmental clauses, the SEA outlined an organizational strengthening program for water utilities based on the adoption of Environmental Management Systems (EMS). One of the main components of the EMS was the preparation of an environmental audit to determine the utility's environmental liabilities and the costs associated with environmental compliance. The establishment of EMS would allow the extrapolation of successful experiences to other municipalities. An annual award that recognized the quality of the supplied water and efforts to reduce environmental impacts would constitute an additional incentive for the adoption of sound environmental management practices. Sectoral authorities could also disclose through newspapers the relative ranking of water utilities in terms of their environmental performance.

In terms of strengthening WSS authorities, one of the key recommendations was to consolidate the environmental unit in ENHOS and turn it into an intersectoral coordination mechanism for environmental mainstreaming. The unit would also be responsible for the development of an environmental policy for the sector that would include specific—preferably quantitative—objectives with clear deadlines for: improvement of coverage and quality of drinking water; sewerage and treatment services; preservation of water sources; efficient management of water resources; and quality of continental and marine waters. The unit was envisioned as having a hierarchical status that would allow it to hold discussions with decision makers at the highest levels to ensure the compatibility of the sector's programs and projects with its environmental policy and objectives.

Mechanisms that promote social learning for continuous policy improvement

The SEA itself highlighted the importance of social learning.¹⁹ The methodology that was

¹⁹ Michael J. Zarkin, "Telecommunications policy learning: the case of the FCC's computer inquir-

finally used differed significantly from the one that was initially contemplated for the environmental assessment. The participation of different government officials, the World Bank, and other stakeholders contributed to the development of a different approach that, while analytically rigorous, was flexible enough to overcome the limitations faced by the traditional EIA methodology. In addition, the SEA succeeded in identifying the limited set of environmental priorities that were relevant for decision makers and that were more closely associated with economic development and poverty reduction. The Ministry of Economy was initially reluctant to conduct an SEA, yet its involvement in the process helped to identify how the Ministry could both contribute to and benefit from the assessment.

The importance of the SEA for social learning also pointed to the need to establish permanent social learning mechanisms. To this end, the SEA provided specific guidelines for the implementation of an environmental sector information system that would constitute the basis for policy development and progress evaluation. The system would aim to overcome the absence, insufficiency, and inconsistency of information on the quality of water resources, point and nonpoint pollution sources, and environmental indicators pertaining to natural, social, economic, and culturally relevant aspects. The system would have the dual purpose of providing information about environmental trends that would support the development of future sectoral policies and of enhancing accountability by informing stakeholders about the impacts of existing policies. Hence, the system would help to assess whether the sectoral priorities identified by the SEA were being appropriately addressed or whether further policy improvements are needed.

In addition, the institutional reforms and the environmental clauses advocated by the SEA

ies," *Telecommunications Policy* 27, (2003); George J. Busenberg, "Learning in Organizations and Public Policy," *Journal of Public Policy* 21, 2, (2001).

aimed to clearly define the environmental obligations of authorities and utility operators. This definition was an initial step to identify the stakeholders responsible for environmental degradation so that sectoral policies could be refined to address their harmful practices.

Epilogue

The elaboration of the SEA during the earliest stages of project preparation allowed the incorporation of environmental considerations in the final project design, one of whose main objectives was the strengthening of the environmental regulatory framework. The loan approved by the Bank included an environmental institution building component that represented around two percent of the total project cost. The environmental component would finance the updating of crucial environmental standards, the preparation of guidelines for EIA, the environmental auditing of subprojects, and a prototype water quality management diagnostic project for the Salí-Dulce River, which would help to develop the institutional capacity to manage watersheds and avoid conflicts among users.²⁰

The conduction of an SEA did not impose any more constraints on project preparation than any other type of assessment that would have complied with the Bank's safeguard policies. On the other hand, it added value by demonstrating how problems with water quality and quantity were at the very core of the sector's challenges. The SEA was effective in influencing project design because it had a sound methodology, its recommendations were consistent with the Ministry's views, and it contributed to addressing the situation of the WSS in Argentina.

Nevertheless, the incorporation of the recommendations in the project design was not sufficient to trigger the necessary institutional reforms. Finally, the World Bank loan sets the framework for making further efforts to ad-

²⁰ The World Bank, *Argentina Water Sector Reform Project PAD, Annex 2*.

vance in the implementation of the SEA recommendations.

4. An SEA for the Colombia Water Sector Reform Project

Colombia's WSS benefited from a stable investment flow since the 1980s that led to relatively high water and sanitation coverage rates at the national level. Investment in infrastructure for the 1980–1995 period was in the order of 2–3 percent of the Gross Domestic Product (GDP), a figure matched only by Chile in the Latin American region. As a result, Colombia's water and sanitation coverage rates in 2000 were around 90 percent and 85 percent respectively, exceeding the rates of similar and higher income countries such as Brazil and Mexico.²¹ These high coverage rates concealed the sector's serious challenges. These included intermittent and poor quality services resulting from political interferences in utility operation and management; coverage rates well below the national average in medium and small cities, as well as in rural areas; significant environmental impacts; and failures in the existing pricing schemes to address the needs of poor consumers.²²

In 1994, the Government of Colombia (GOC) launched a reform program aimed at restructuring water utilities and incorporating the private sector in their operation and management. By 2000, private sector involvement in the sector's activities in large and some medium-sized cities was associated with an expansion of coverage, increases in service continuity, and more efficient utility management.²³ The reform program brought encour-

²¹ The World Bank, *Colombia: Recent Economic Developments in Infrastructure (REDI), Balancing Social and Productive Needs for Infrastructure, Vol. II.*, November 2004.

²² The World Bank, *Colombia: Water Sector Reform Assistance Project PAD*, September 2001.

²³ Menahem Libhaber and Viivien Foster, "Urban Water and Sanitation Sector" in Marcelo M. Giugale, Olivier Lafourcade and Connie Luff

aging results in cities such as Cartagena and Barranquilla, but failed to reach smaller cities and rural areas. Furthermore, the sector's regulatory framework remained inadequate, often constituted an obstacle to further investment, and neglected the sector's social and environmental considerations.

In this context, the GOC worked with the World Bank to develop a project that would: (i) support private service involvement in water and sanitation services in 3 medium cities with around 300,000 inhabitants, and 25 municipalities with populations of up to 12,000; and (ii) provide assistance to ensure the financial sustainability of utilities where the private sector had already been incorporated. The project would focus predominantly on the Caribbean coastal region, which suffered from the country's lowest water and sewerage coverage rates.

During project preparation, the GOC evaluated the environmental issues and requirements associated with the project. The Bank's environmental specialist who was assisting the GOC was familiar with the results of the Argentina SEA and proposed that the same methodology be used. Based on the Bank's advice, the GOC prepared the TORs and hired a group of consultants with backgrounds in engineering, economics, and law to complete the SEA in a three-month period.

Identification of sectoral priorities

The SEA focused on two types of negative externalities associated with policy distortions—deterioration of water quality and inefficient water use—and on the impacts that would be associated with the works financed by the Bank's project. The SEA focused on these externalities because they were quantifiable and government information indicated that they were likely to be highly significant.

Deterioration of water resources and its significant negative impacts on human health were closely linked to the lack of access to water and sanitation services. Poor households with no access to basic services engaged in practices that included the use of electric or manual pumps to obtain water, excrement disposal in latrines and septic tanks, and solid waste dumping, all of which contributed to the deterioration of groundwater quality.²⁴ Some of these communities had settled in floodplains where inundations combined with inadequate waste disposal to transport materials into surface waters, which were also affected by untreated sewage effluents. In the Bogotá Savanna alone an estimated half million people discharged their wastewater in septic tanks and latrines, or directly to bodies of water. Untreated discharges generated sanitary risks particularly for communities located in the floodplains of cities such as Cartagena, Buenaventura, Cali, and Bogotá.

Wastewater treatment capacity was extremely limited, as only an estimated 0.21 percent of urban residential effluents were treated. Among the country's large cities, only Bucaramanga had an adequate treatment plant. Other plants had been built to service Bogotá and Medellín, but they treated only a fraction of the city's wastewater and had no effect on the improvement of water quality. The operation of wastewater plants was also affected by inadequate design, insufficient operation and maintenance budgets, and the discharge of industrial waste into sewers, which nullified treatment systems. After conducting an inspection, Bogotá's environmental agency, DAMA, found that only about 20 percent of industrial establishments met the legal discharge limits.

Inadequate disposal of waste, including sludge and other residues generated by the operation of wastewater treatment plants, further contributed to the degradation of water quality. The available data indicated that only 43 per-

(eds.), *Colombia: The Economic Foundation of Peace*, The World Bank, 2003.

²⁴ Water pumping contributes to water quality deterioration when aquifers are overexploited, leading to salinization.

cent of the municipalities had solid waste collection systems and only 32 percent of the waste was disposed appropriately.

Deterioration of water quality sources was associated with negative impacts, particularly on human health. Data from the Ministry of Health for 1991–99 showed that, although the occurrence of illnesses had decreased over the years, it was still significant. Incidences of diarrhea had remained relatively constant at around 111 cases/1,000 inhabitants, but fell to a rate of 87.8 cases/1000 inhabitants in 1997. Based on these figures and an estimated cost of US\$90/case, the costs of diarrheal illnesses were estimated at US\$315–400 million per year. The high incidence of waterborne diseases indicated that while coverage rates had expanded continuously during the 1990s, a large share of the population still lacked access to safe water and sanitation. In fact, the Ministry of Health estimated that only 42.25 percent of the urban population and 8.1 percent of the rural population had access to potable water.

Inefficient water use was another source of environmental impacts. Data provided by water utilities suggested that water losses represented an average of 41 percent of the water produced. In cities with populations under 50,000, the figure rose to around 60 percent. Water losses in the country's 16 largest municipalities were on the order of 600 million m³, with a value of about US\$370 million which represented over 85 percent of the profits of the utilities that serviced those municipalities. Water losses were caused mainly by leaks and lack of measurement.

Finally, the SEA observed the program's potential environmental impacts stemming from the construction and maintenance of water and sewerage systems, which included high noise levels, air pollution, and generation of solid waste. As in the case of Argentina, these impacts were not as significant as those associated with water quality and quantity problems, but represented the only type that an extension of the EIA methodology would have identified.

Incorporation of the perspectives of multiple stakeholders, including the most vulnerable groups

The Ministry of Economic Development (MINDESARROLLO) had previously ignored the implications of environmental regulations for investment in the WSS, but was willing to undertake an SEA as an input to the design of the WSS reform. Because the SEA's preliminary findings proved that environmental regulations were among the main reasons for the private sector's lack of participation in the WSS, MINDESARROLLO advocated the preparation of the assessment and the inclusion of its recommendations in the project's design. On the other hand, the Ministry of Environment (MMA) was less enthusiastic because it considered environmental assessments to fall within its mandate and perceived MINDESARROLLO's efforts as an intrusion on its turf.

In the end, both ministries decided to collaborate in the preparation of the SEA. MINDESARROLLO realized that it would need MMA's cooperation to modify regulatory bottlenecks to private involvement in the sector. On the other hand, MMA acknowledged that it was better to participate in the SEA than to remain a passive observer. Inter-agency coordination went as far as to agree on the formation of a committee that would discuss the sector's priorities, oversee the implementation of agreed solutions, build consensus on environmental aspects, and address emerging issues.

The SEA requested input from various additional stakeholders. Two nationwide workshops were organized: first, to collect stakeholder perspectives on the scope of the assessment, and second, to present an advanced draft of the report and solicit additional comments. In addition, MINDESARROLLO and MMA held consultations with government agencies, private utility operators, academics, professional associations, nongovernmental organizations (NGOs), and public defense

groups to build consensus around the SEA report.

The SEA attempted to incorporate the perspectives of vulnerable groups by identifying the sector's environmental impacts that clearly affected them. Similar to the case of Argentina, lack of access to water and sanitation services was correlated with income levels, and as a consequence poor communities were exposed to higher environmental risks. Expansion of coverage to service these communities was urgently needed, but many regulatory instruments limited investment in these areas, as described below.

Identification and assessment of institutional weaknesses and failures that hinder effective environmental management

The identification of sectoral priorities highlighted the need to expand water and sanitation coverage to reduce the mortality burden associated with the sector. Thus, the institutional assessment sought to evaluate the effect of environmental regulations on the expansion of basic services. The assessment found that, despite Colombia's efforts since the late 1960s to develop a legal framework for environmental protection, regulatory gaps abounded, enforcement was low, and environmental agencies remained weak at the national and regional levels with a few exceptions. Three regulatory instruments were identified as obstacles for the expansion of coverage: the environmental licenses (EL), environmental charges for wastewater discharges (known as *tasas retributivas*), and the inefficient command and control regulations of Decree 1594.

Law 99 of 1993 established the EL as a requisite for infrastructure works, the establishment of industries, or the development of any economic activity with potentially significant environmental impacts. The preparation of an EIA was one of the requirements for an EL request. Since EIA regulations were inadequate, ELs had become a hurdle for project development while adding little value to the

environmental agencies' decision-making process. Main problems with EIA regulations included:

- (i) Lack of a screening procedure²⁵ meant that an EIA was needed for any project, regardless of the magnitude of its impacts, its location, the sensitivity of the surrounding ecosystems, or public opinion regarding the project;
- (ii) Absence of public participation in the EIA scoping resulted in discretionary requirements for the preparation and evaluation of environmental impact studies;
- (iii) Responsibility for the EIA's preparation fell on the project's proponent, thus generating conflicts of interest;
- (iv) The need for vast numbers of EIA coupled with an absence of primary environmental data resulted in "mass" production of EIAs of poor quality and little value;
- (v) Limited public participation and lack of provisions to encourage it made EIAs pro forma exercises; and
- (vi) The absence of regulations guiding the roles of different government agencies in the preparation of EIAs exempted sectoral agencies from participating in environmental decision-making processes.

In fact, ELs often became "contracts" between environmental authorities and project proponents, where both agreed on pro forma obligations and compensation schemes to which the project had to adhere and which were not established in any law. These highly discretionary procedures generated legal uncertainty, because project proponents could not adequately assess the resources and time that would be necessary to obtain the EL.

²⁵ Screening refers to the procedure used to define whether the potential environmental impacts of the project under consideration are significant and thus trigger the preparation and define the scope of an EIA.

Water pollution charges were used in Colombia at least since the late 1970s, when they were introduced to control water pollution in the Cauca Valley. National legislation included provisions for the use of similar charges at least since 1984, but it was not until the enactment of Decree 901 in 1997 that the charges began to be applied in other regions besides the Cauca Valley. Application and enforcement of environmental regulations were the responsibility of Regional Autonomous Corporations (CARs). Thus, based on the methodology defined by Decree 901, CARs would:

- (i) Update their discharge records and define a baseline for two parameters: Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS);
- (ii) Negotiate with stakeholders a five-year discharge reduction goal for each section of a watershed;
- (iii) Charge a fee for each kilogram of the selected parameters that registered point sources discharged into surface waters within the legal standards; and
- (iv) Increase the fee semiannually until the reduction goal was reached.

CARs were entitled to charge-generated revenues. In order to provide incentives for the application of the charges, the national government determined that many of the agencies' operational expenses, including staff compensation, could only be financed by charge revenues and several other instruments.

The charge design contained serious flaws, including:

- (i) The selection of BOD and TSS as charge parameters, because these were associated with water bodies' aesthetic characteristics and not with the most significant environmental impacts, such as impacts to human health;
- (ii) Reliance on voluntary declarations to determine discharges of pollutants, without the existence of a sys-

tem to verify the accuracy of the declarations and penalize false reporting;

- (iii) The possibility of revising environmental goals once they had been met, which reduced the incentives to invest in pollution abatement technologies. Experiences in other countries showed that polluters would not attempt to meet environmental goals because this would invite the setting of more stringent goals. Instead, polluters would tend to adopt a strategy of reluctant compliance to increase the probability of more lenient goals in subsequent periods. In addition, this feature meant that private investors had no way of knowing how the charge would ultimately affect the utility's finances; and
- (iv) The absence of a quality assurance mechanism to ensure the precision, sensitivity, and accuracy of environmental monitoring, and therefore the lack of a reliable system to assess progress toward meeting the goal.

The charges were also troubling because of the incentives they created for environmental agencies. SCAR's directors could be reelected and thus they tended to hire and award contracts in exchange for support to their administrations, so as to increase their probabilities of remaining in office. In some cases the charges opened the opportunity to hire additional staff, and revenues ended up being used for these expenses rather than for actions that would result in improved water quality as the law intended. These political economy considerations provided insights about the stakeholders who were likely to oppose institutional reforms.

Decree 1594 of 1984 set the standards for environmental quality and discharges into bodies of water, and required an 80 percent efficiency removal for BOD and TSS. Meeting this standard required municipal investments in secondary wastewater treatment plants that could only be financed with tariff increases of

over 100 percent, while not necessarily reducing environmental health risks. The Decree also became a bottleneck for private investment in the sector as compliance with it represented extremely high costs. To complicate matters further, the decree was incompatible with the design of pollution charges, thus generating uncertainty about the environmental responsibilities of water users.

Financing for the expansion of water and sanitation coverage, which was mainly a municipal responsibility, constituted an additional problem. Municipalities lacked the financial resources to invest in water and sanitation infrastructure, although they were provided with revenue generating mechanisms such as taxes, tariffs, prices, and charges or resources for project cofinancing from several central funds.²⁶ Most municipal authorities were reluctant to use these mechanisms because they were politically costly, and instead relied simply on transfers from the national government.

Municipalities could also access funds from the National Royalties Fund (FNR), constituted by a share of the royalties generated from mineral exports. However, the FNR would provide financial resources to the departments and municipalities based on criteria that were subject to various distortions.

Environmental authorities also had mandates to develop and manage water and sanitation infrastructure, considered by law as “environmental investment.” However, CARs had given priority to reforestation, forest conservation programs, and wastewater treatment systems, instead of investing in drinking water and sewerage.

Development of public policies that mainstream environmental considerations

The SEA developed an action program that identified the necessary steps to address the sector’s environmental impacts and their causes. Expanding water and sanitation coverage and increasing its reliability were necessary to reduce the incidence of waterborne diseases. Thus, the SEA recommended focusing on policy reforms that included modifications to the water pollution charges and the water discharge standards of Decree 1594 with the aim of reducing the legal uncertainty generated by environmental regulations and attracting private investment.

The SEA also provided a proposal to correct the deficiencies associated with EIA regulations. The proposal included mechanisms to categorize projects based on the importance and magnitude of the environmental impacts, guarantee adequate public participation, appraise environmental liabilities, and define methodologies for the preparation of EIAs and the definition of the scope of environmental management plans.

Public consultations and information on WSS project characteristics would be distributed to obtain community endorsement. Additionally, public consultation would be divided into two stages. The first stage would target the population and organizations in the area of influence and obtain their input in developing the terms of reference for the EIA. The second stage would target specific groups to share project information, discuss and design measures to be included in the management and environmental monitoring plans, agree on mechanisms to ensure compliance with these measures, and incorporate community participation in the preparation of the compensation and relocation plans.

Organizational strengthening was also necessary to increase the reliability of water and sanitation services. Hence, the program first targeted MINDESARROLLO and the municipalities, and water utility operators in a second

²⁶ The funds included the Co-finance Fund for Social Investment (FIS), Co-finance Fund for Rural Investment (DRI), and the Co-finance Fund for Urban Infrastructure.

phase. Efforts at the Ministry, as the sector's leading authority, would be devoted to building an environmental unit that could mainstream environmental considerations at the sector's highest decision-making levels. In the case of the municipalities, assistance would be provided so they could incorporate and enforce the appropriate environmental clauses in water and sanitation concession contracts. Support for water utility operators would help them adopt integrated EMS.

Mechanisms that promote social learning for continuous policy improvement

As in the case of Argentina, the SEA generated value by establishing the basis for a social learning process. MINDESARROLLO did not realize the effects of environmental regulations such as the water pollution charges and the EL on sectoral reform when it requested the Bank's assistance. But as the SEA proved, sectoral reforms were likely to fail if they were not accompanied by measures to address the distortions generated by these regulations. Moreover, the SEA's quantification of externalities demonstrated that the sectoral investment should concentrate on the provision of potable water and the construction of sewerage, leaving the construction of wastewater treatment plants and reforestation activities for areas with local and particularly significant problems. The multidisciplinary background of the consulting team was crucial to understand the intricate legal framework that governed the WSS, quantify the externalities associated with the sector, incorporate political economy considerations, and understand the sector's priorities. The SEA itself became a benchmark for the environmental sector when it described its situation at the end of 2000 and proposed institutional reforms that, if implemented, would help to gauge progress in the sector's strengthening. These contributions underscored the need for permanent social learning mechanisms, particularly as the SEA's explicit treatment of political economy considerations suggested that status quo beneficiaries would resist policy reforms, and thus

continuous policy improvements would be necessary.

Incorporation of SEA recommendations into project design

The SEA process served as a vehicle to reach agreement between MINDESARROLLO and MMA. Both ministries would work jointly to implement the SEA action plan, harmonize existing legislation—particularly Decrees 901 and 1594—, streamline EL processes for water projects, evaluate and mitigate environmental risks in operational contracts, and involve the relevant authorities in developing new tariff schemes that would incorporate well-defined environmental charges.

The final project included an environmental component that contained most of the SEA's recommendations. The component had a budget of US\$0.8 million (although the SEA estimated the necessary budget at US\$1.2 million), which represented about 1.1 percent of the project's total costs.

Epilogue

The SEA provided key contributions to the project's design, demonstrating that the sector's most significant effects were associated with human health and that some environmental regulations constituted obstacles to expanding the basic services needed to address them. The SEA's contributions, which were critical to increase the probabilities of the reform's success, could only be incorporated into project design because the SEA was completed during project preparation.

The implementation of the water sector reform project in Colombia helped to implement some of the SEA's recommendations. Regulatory modifications faced obstacles, as the beneficiaries of the status quo that the SEA identified resisted the far-reaching reforms that would have been necessary to reduce barriers to private investment in the sector. For instance, Decree 3100 was enacted in 2003 to

replace Decree 901 and address the distortions of the water pollution charges. The modifications introduced by the new Decree were only related to issues such as the way in which the charges were adjusted when the abatement goal was not met and allowing water utilities to charge their customers for the payment of the fee. Other, more relevant aspects, including the selection of the charged pollutants or the methodology for setting abatement goals, were left for future reforms.

The SEA's diagnosis and recommendations were promoted by MINDESARROLLO because they constituted technically sound policy proposals that were consistent with the Ministry's regulatory views and targeted some of the WSS's most serious problems. On the other hand, strong policy resistance from stakeholders within the environmental sector limited the scope of the proposed reforms and resulted in a gradual modification of existing policies. However, efforts to advance the pending reforms are ongoing as the Bank and the Government of Colombia incorporated the SEA's recommendations as a central part of their dialogue. The SEA's recommendations were echoed in the Bank's Policy Note on the "Urban Water and Sanitation Sector" (Libhaber and Foster 2003).²⁷ The SEA also constituted the basis for the assessment conducted in preparation of a second loan: the Colombia Water and Sanitation Sector Support Project.²⁸

Finally, a Programmatic Development Policy Loan (DPL) for Sustainable Development has been approved by the Bank, and the conditions that Colombia is expected to meet as part of the loan include several of the outputs (such as the amendment of the EL system) that were

included in the environmental component to be financed by the WSS reform loan of 2001 (World Bank 2005).

5. Conclusions

The cases reviewed in this paper describe the use of a methodology that emerged in response to the limitations of traditional EIA methodologies in addressing the policy-related environmental and social aspects of the WSS reform project in Argentina. This methodology was later refined and applied to a similar WSS reform in Colombia. The new methodology significantly enhanced project design in both cases and has the potential to make similar contributions to WSS reform projects in other Latin American countries. Based on the Argentine and Colombian experiences, an SEA methodology for WSS policy reforms may be conceptualized as follows:

- (i) *Identification of sectoral priorities.* The assessments identified the set of key issues that are relevant for decision makers, focusing on quantifiable and significant externalities that call for governmental interventions. This requires shifting the assessment's focus from the temporary and moderate impacts of civil works to the more urgent environmental and social problems associated with the WSS sector.
- (ii) *Incorporation of the perspectives of multiple stakeholders, including the most vulnerable groups.* As the reviewed cases indicate, the sector's main challenges will often extend beyond the sectoral authorities' jurisdiction. Thus, support from various actors will be necessary to develop an adequate diagnosis, design appropriate policies, and increase the probabilities of their implementation. However, interagency coordination rarely takes place and the experience in the region indicates that a third party is often necessary to set it in motion. The World Bank is particularly well posi-

²⁷ Menahem Libhaber and Vivien Foster, "Urban Water and Sanitation Sector," in Marcelo M. Giugale, Olivier Lafourcade, and Connie Luff (eds.), *Colombia: The Economic Foundation of Peace*, The World Bank, 2003. The policy notes consist of a diagnosis of a country's development issues and policy recommendations that the World Bank provides as advice to incoming administrations.

²⁸ The World Bank, *Colombia Water and Sanitation Sector Support Project PAD*, February 2005.

tioned to play that role.²⁹ In addition, the incorporation of the perspectives of vulnerable groups is critical, as these groups tend to be most severely affected by environmental impacts. Assigning utmost priority to the concerns of vulnerable groups is not only justified on ethical terms, but also because greater equality in access to services and in influence has been associated with lower poverty levels and improved conditions for economic development.³⁰ However, vulnerable groups lack the power and authority to influence the policy process and thus the Bank has a responsibility to ensure that the “voice of the poor” is heard.

(iii) *Identification and assessment of institutional weaknesses and failures that hinder effective environmental management.* Strong institutions have increasingly been recognized as critical contributors to sustainable development, particularly because they perform the three fundamental functions of picking up signals about needs and problems, balancing interests, and implementing solutions.³¹ The cases of Argentina and Colombia illustrate how weak institutions failed to pick up signals (or identify the sector’s true priorities), balance the interests of different water users and sectoral agencies, and implement sustainable solutions. In fact, some of the institutions analyzed by the SEA were generating distortions that inhibited solutions to the sector’s challenges.

²⁹ This opinion was expressed in presentations by Francisco Giner from SEMARNAT (Mexico), Claudio Lagone from MMA (Brazil), and Juan Pablo Bonilla, formerly from MAVDT (Colombia) in the workshop “Environmental Policy in the Latin America and Caribbean Region,” April 1, 2005, Washington, D.C.

³⁰ David de Ferranti et al., *Inequality in Latin America and the Caribbean: Breaking with History?* The World Bank, 2003.

³¹ The World Bank, World Development Report 2003.

Thus, SEAs need to provide recommendations for institutional strengthening to ensure that: a) the actions triggered by a specific policy are bound by rules that protect the environment; b) the appropriate organizations are able to identify the occurrence of policy-related environmental externalities; and c) authorities have the mechanisms to balance the interests of policy beneficiaries with those of stakeholders affected by reforms to craft appropriate responses. The assessment must also consider the barriers to the development of adequate institutions, particularly political economy considerations.

(iv) *Development of public policies that incorporate environmental considerations.* This paper demonstrated how the absence of environmental considerations in the WSS was tightly linked with the sector’s main challenges. Additional empirical evidence has shown the linkages between environmental degradation and other problems such as poverty, widespread illnesses, and economic growth. Addressing these linkages has increasingly been recognized as a necessary condition for sustainable economic growth.³² Hence, the SEA must aim to incorporate environmental considerations at the highest decision-making level to avoid environmental impacts, and capitalize on synergies—or address tradeoffs—between environmental protection and other development objectives.

(v) *Mechanisms that promote social learning for continuous policy improvement.* As the reviewed cases exemplified, institutional reforms will rarely succeed in meeting all of their stated objectives due to uncertainties, incomplete information,

³² UN Millennium Project Task Force on Environmental Sustainability, *Environment and human wellbeing: a practical strategy*, Earthscan, 2005.

opposing interests, and other characteristics of the policy process.

Thus, policies will require continuous improvements to address these problems, as well as exogenous changes in the context where the policy is applied or in the problem that it aims to solve. In this context, learning allows policy makers to continue improving policy design and the SEA opens an opportunity to promote organizational structures, dialogue among stakeholders, and the formation and consolidation of information systems that will promote social learning.³³ The Bank could use lending and technical assistance to foster social learning processes and to implement the relevant reforms to alleviate poverty.

³³ Daniel J. Fiorino, "Environmental Policy as Learning: A New View of an Old Landscape," *Public Administration Review* Vol. 61, No. 3, May/June 2001.

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