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## Regional Plan for **Investment** in the Environment and Health



Pan American Health Organization  
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**Methodological Guidelines for Sectoral  
Analysis in Water Supply  
and Sanitation**  
**Preliminary Version**  
*Technical Report No. 1*

Agency for International Development / AID  
Inter-American Development Bank / IDB  
Pan American Health Organization / PAHO  
World Bank / BIRF

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Regional Plan for  
**Investment**  
in the Environment and Health

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## ACRONYMS

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<b>AID</b>	Agency for International Development (USA)
<b>GDP</b>	Gross Domestic Product
<b>IBRD</b>	International Bank for Reconstruction and Development
<b>IDB</b>	Inter-American Development Bank
<b>IMF</b>	International Monetary Fund
<b>NGO</b>	Non Governmental Organizations
<b>PAHO</b>	Pan American Health Organization
<b>PIAS</b>	Regional Plan for Investment in the Environment and Health

## **INTRODUCTION**

The Latin American and Caribbean region is currently faced with an enormous deficit in infrastructure and health and water supply and sanitation services, in terms of both the percentage of the population served and the quality of services. These deficiencies are reflected in the urban, periurban, and rural populations.

The evaluation of regional efforts and achievements--which have been significant, considering the crisis that these countries have experienced--is a faithful expression of the current situation, and the resurgence of cholera associated with these service deficits today demands sensitivity and responsibility on the part of the entire population and governments of the region.

Recognizing this situation, fulfilling the XVII Resolution of the XXXV Meeting of the Directing Council of the Pan American Health Organization (PAHO), and responding to the mandate expressed at the First Ibero-American Summit of Chiefs of State and Governments, the Pan American Health Organization developed the Regional Plan for Investment in the Environment and Health (PIAS) whose purpose is to incite a reform process of the environment and health sectors in the countries of the region. The reform will allow the mobilization of national and international investments necessary to overcome the delays in the developments of the mentioned sectors for the next 12 years.

In terms of technical and financial assistance, the response should undoubtedly be to increase and optimize the necessary investments and resources at the country and international level.

An in-depth, comprehensive knowledge of the sector situation in each of the countries by each and every participant in the sector is basic to adequate decision-making and to taking the action that the region needs today.

The tool that provides this knowledge is the sector analysis, which reveals the visible and invisible demand for coverage and services and the deficits in this area, the strengths and weaknesses of sector institutions, operational limitations, and the total resources--not just financial-- needed in both the public and private sector of every country.



# **1. OBJECTIVES AND SCOPE OF THE METHODOLOGICAL GUIDELINES**

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Sector studies or analyses are not unknown in the region. However, past studies have responded more to the demands or needs of some of the interested parties, be they national or international, for specific projects than to a comprehensive knowledge of the sector situation that is accepted and used by all parties.

The result has been sector studies that differ in their scope, content, and characterization of the countries and sectors, depending on the approach required by the agency or institution promoting the study--in short, a duplication of efforts and costs and the lack of a tool to enable the countries to develop strategies and take action to reach their objectives in the sector.

## **1.1 Objectives**

The Pan American Health Organization (PAHO/WHO), the Inter-American Development Bank (IDB), the International Bank for Reconstruction and Development (IBRD) and the United States Agency for International Development (AID) have jointly developed these guidelines with the purpose of constituting a framework for the realization and actualization of sector studies on water supply and sanitation. The studies will be conducted at the country level, with national participation.

The guidelines will make it possible to analyze the various areas within a country using similar criteria and presentation in the general sections while permitting specificity in other aspects that are peculiar to the country. This will facilitate data and information exchange among the various agencies and institutions and complement the activities and the analyses of the countries examined.

The guidelines should promote participation by national institutions and permit the realization of multiple-use sector studies, since it is essential that these entities possess an in-depth knowledge of the sector's true overall situation.

## **1.2 Definition and Scope of the Sector**

The present guidelines are limited to the services of environmental protection and control exclusively related to the water supply and sanitation sectors.

In the future, guidelines may be developed for other aspects that affect the environment such as solid waste and hazardous waste.

### **1.3 Sector Definition**

We shall define water supply and sanitation as the existing institutions and resources of a country that relate to the supply of drinking water (catchment, treatment, distribution, and storage) and sewerage services (purification of effluents and excreta disposal) in urban, periurban, and rural areas (concentrated and scattered population).

The sector study will include a description and assessment of all the sector's components, as well as its management and performance, mainly in the following areas:

- The quantity, quality, continuity, coverage and accessibility of the services and systems that comprise the sector.
- Factors that influence the performance and functions of the institutions.
- The physical infrastructure and management of the services provided by the institutions of the sector.
- Economics, finances, and, generally speaking, all that pertains to other fields, such as: infrastructure, policies, resources available and those that are needed, etc.
- Institutional capability and the availability of human resources.
- The social conditions of the communities served, their relationship to the sector, and their expectations from it.
- Health aspects related to the sector.
- Legal framework (aspects) of the sector and associated laws.

### **1.4 Users of the Methodological Guidelines**

The principal users of the methodological guidelines and the sector studies based on them will be the countries themselves and multilateral and bilateral agencies.

#### 1.4.1 *Countries*

Since the countries are the origin and the end of the sector studies, they will also be their principal users. The analyses provided by such studies will enable them to formulate plans, goals, and programs, as well as strategies and activities consistent with their investment and management capabilities. They can also devise activities to improve or optimize these areas to the degree demanded by the magnitude of the investments and actions necessary to serve the needs of the sector.

#### 1.4.2 *Multilateral and Bilateral Agencies*

The multilateral and bilateral agencies need to be aware of the historical behavior of the sector in the country analyzed, as well as its prospects for the future, in terms of investment capacity and certain opportunities for management and performance. This knowledge enables them to make just and appropriate decisions about granting the assistance and technical and financial cooperation that the country has requested or for which a need has been identified.

As a working tool, the principal users of the methodological guidelines will be the members of the work team that is to carry out the sector study.



## 2. HOW TO USE THE GUIDELINES

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The sector assessment of water supply and sanitation proposed in these guidelines includes the evaluation of the sector, the general strategy for organizing the sector assessment, and the procedures for carrying it out.

This chapter describes the field application of the guidelines, covering team composition, general strategy for organizing the sector assessment, and procedures for carrying out the sector assessment.

In general terms, Chapter 3 presents a series of indicators to identify the fundamental performance aspects of the sector. These indicators, when available and reliable, are mentioned throughout the sector assessment report when relevant. Chapter 4 defines the components of the sector assessment and in Chapters 5 and 6 a series of questions to facilitate research of mentioned components are suggested. Chapter 7 proposes a scheme of structure and order for the final presentation of the sector assessment report.

A team conducting a sector assessment will be operating in a previously defined context that is shaped largely by the objectives of the agency or agencies, internal or external, that have caused the team to be assembled in the first place. Understanding and balancing the interests and concerns of the numerous interested parties is an underlying theme for the sector assessment team.

### 2.1 Team Composition

The size of the sector assessment team may vary depending on the depth and the range of issues intended to be covered. The specific purposes of the sponsoring agency, whether a host country institution or an external donor agency, will to a great extent shape the size and composition of the assessment team. A smaller team and a shorter field activity may be appropriate where the assessment is a follow up to a detailed sector assessment conducted only a few years previously. A larger team, in the field for a longer period, will be necessary when the assessment is intended to be exhaustive and there is no recent, extensive work on the sector to rely on.

In either case, expertise necessary for the team includes:

- *Institutional.* Familiarity with how water supply and sanitation services are organized across the sector, with individual water supply and sanitation institutions and their operations, and with general policy issues common to the sector; education and/or direct experience in institutional development, human resource development, and sector management.

- ***Technical.*** Familiarity with the technical aspects of water supply and sanitation, with engineering issues, technology in the sector, technical problems related to construction, operation and maintenance, and with the organizational and skills/capabilities issues related to technical issues; education and/or direct experience in water and sanitation operations and maintenance, design and construction.
- ***Finance and Economics.*** Familiarity with capital facilities planning and budgeting, infrastructure finance, recurrent budgeting, cost recovery and tariff design; technical training and/or experience in public finance or budgeting and/or urban economics.
- ***Community Participation.*** Familiarity with the roles of community participation in water supply and sanitation design, operations and maintenance and financing, with the roles of non-governmental organizations and health and hygiene education; education and/or experience in community development, anthropology, sociology or related disciplines.
- ***Legislation.*** Familiarity with international rights law and comparative law; analysis of the legal structure of environment and health sectors; analysis of legislative and political processes which affect the mentioned sectors.

Depending on the needs of the sponsors and the availability of appropriate expertise and experienced individuals in the country, the team may consist of a mix of expatriate and host country consultants (individuals or firms). Host country team members may be contracted consultants or staff from one or more related water and sanitation sector institutions who are designated to work full time with the assessment sponsors for the duration of the assessment effort.

A typical team balanced between host country and expatriate consultants would number seven or eight people, with most of the above described four areas of expertise represented both in the host country individuals and in external sector experts.

The duration of the team effort designated to carry out the sector assessment will be a function of the geographic expanse of the country, the complexity of the sector and the availability of previous reports. An average of five weeks is estimated for the attainment of the assessment and the corresponding report. In certain cases an additional week of work by one of the team members may be needed for the final revision of the report.

## **2.2 Stages in Conducting the Sector Assessment**

The sector assessment will require a preliminary planning stage. This phase will commence with an identification mission in the country in question and will be undertaken by interested national or international agencies. The aim of this mission is to define the objectives of the assessment, to define the sponsors and participants of the study, to define the contributions of the consultants to the work team and the contributions in logistical support (offices, administrative support, internal displacements, etc). Once the mission is carried out the assessment team is formed and, subsequently, the study is initiated.

The work team responsible for preparing the assessment can follow a process of nine steps described in the following scheme.

### ***Major Steps of Sector Assessment***

1. Determine the specific purposes or objectives of the assessment.
2. Analyze the specific country setting and background.
3. Establish coordination with and between the agencies and institutions of the participating country in the sector assessment and identify the primary country sponsor.
4. Conduct short workshops for major agencies and institutions involved in the sector to explain the purposes, procedures and expected results of the assessment.
5. Develop a detailed work plan and schedule with the sponsor.
6. Compile data and carry out interviews at the sector and at the utility company level.
7. Perform the analysis and synthesis of findings and recommendations.
8. Prepare and present the assessment report.
9. Conduct a final revision and approve the report.

### **2.2.1 Step 1: Specific Purposes or Objectives for Assessment**

The sponsoring institutions, which typically include both one or more host country institutions and an external donor (but may be only host country institutions), will have established some reason(s) for the sector assessment. However, the assessment team will clarify with the sponsors the specific antecedents that have led to the present assessment, the reasons for conducting an assessment now, and the outcomes the sponsors are expecting. The team should be sensitive to possible contradictions in stated purposes, possibly due to differences among host country institutions involved in the sector or differences between host country institutions and one or more external donors.

### **2.2.2 Step 2: Country Specific Setting and Background**

The sector assessment team should identify and review previous sector work, including older comprehensive sector studies, studies and reviews conducted on specific sector issues, and current and previous loan and technical assistance agreements with external donors. Key individuals from the sponsoring institution(s) can likely help evaluate the accuracy and degree of confidence in these documents, and can help the team determine what impact these previous efforts may have had on the sector.

Section 5.1 of the sector level protocols describes the general country characteristics that should eventually be discussed in the sector assessment report. Many of these general characteristics will likely be found in previous sector studies and related documents. Culling these characteristics from background documents will save important interviewing time later, avoiding asking questions when the answers are already contained in documentary material.

Whatever details on the sector readily available should be compiled as background information. It will also be necessary to compile information that will help determine the general macroeconomic situation and the broad policy affecting the sector. Any major policy shifts involving such issues as decentralization of responsibility for sector services and private sector participation in sector services should also be observed. A major focus of the background examination should include important changes that are or may be occurring in the country as a whole and especially in the sector. Of importance are such changes as decentralizing responsibility toward lower levels of government, encouraging the participation of the private sector in providing services, clarifying and harmonizing the respective roles and responsibilities of the public and private sectors, and redefining the extent of governmental responsibility to provide subsidized services.

### **2.2.3 Step 3: Establishing the Coordination with and between Participating Agencies and Institutions of the Country and Identification of the Primary National Coordinator**

Although the host country sponsors will have been identified before the sector assessment team is selected and begins work, the team will need to establish a basis for collaborating with the country sponsors who are the ultimate "users" of the sector assessment.

Moreover, the participating national and international agencies will correspond with the assessment team the results obtained from the analysis. In this way



the results are not limited by the conclusions and recommendations provided by the sector assessment but by the effects of the actual analysis, the short, middle and long term effects of the sector conclusions and recommendations. In other words, the results consist of posterior measures or actions taken once the analysis is concluded.

The identification of critical aspects and bottlenecks, the development of recommended strategies and actions and the proposal of priority project profiles may be mentioned as work team results. It can be expected that the work team results will determine modifications in terms of intermediate results of the sector, among which can be mentioned as examples the changes in policies, the reinforcement of the capacity, the development of human resources, and sector self-financing.

The team must be sensitive to the possibility that expected outcomes vary among the sponsors and other institutions involved in the sector, and must be prepared to negotiate and adapt the work to very specific outcomes. Unless it is impossible to negotiate, the sector assessment team should carry out and report on as comprehensive an assessment of water and sanitation issues as possible. It is possible, even likely in some circumstances, that the sponsor(s) may eventually only use elements of the comprehensive sector assessment findings, and the recommendations of the team may be curtailed only to a subset of recommendations that the sponsor is prepared to follow up on. The team should bear in mind that although they provide recommendations, the sponsors are the ultimate "users" of these findings and recommendations.

With the assistance, if necessary, of the sector assessment team, the country sponsor(s) should establish a Sector Assessment Steering Committee. The Committee will comprise of a group of individuals at a high level of authority within their agencies who will be the primary reviewers of the team's findings and recommendations and who could facilitate setting up the team's interviews and authorize the access to documents and other materials. The Committee need not only be comprised of individuals from the sponsoring agencies, it would be convenient to have a broad representation of the major institutions involved in the sector. At least one leader of an organized community group, or a community based representative of a non-governmental organization involved in the sector, should be on the steering committee. Institutions that are responsible for actual delivery of water and sanitation services should be represented on the steering committee so that it is not limited to planning and financing agencies.

The Steering Committee, or the primary country sponsor should appoint a Coordinator to closely work with the assessment team. The Coordinator will

assist in arranging appointments and other logistics, will advise team members on any sensitivities or protocol issues, and will otherwise represent the Steering Committee on a day-to-day basis. The Coordinator will need to work full time on the assessment during the field activity. His/her counterpart on the assessment team is the Team Leader.

#### **2.2.4 *Step 4: Initial Workshop for the Assessment Team and Participating Institutions of the Sector***

The sector assessment team, under the official sponsorship of the primary country sponsor (perhaps the agency which chairs the steering committee), will hold a workshop for all institutions involved in the sector. These institutions will typically be members of the Steering Committee but there may also be institutions or groups who are not formally on the steering committee who may also participate. These groups should be invited to the workshop and it is important that attempts be made to identify and invite participation from individuals who can fairly represent the perspectives of consumers and/or beneficiaries.

The purpose of the workshop is to brief participants on the purposes of the sector assessment, the methodologies the team will be using, and the products or outputs the sector assessment team itself will produce. Ideally, the country sponsor(s) should express the outcomes they expect to see and acted on after the sector assessment team has completed its work.

The assessment team can make use of the workshop to secure names of individuals and institutions that should be contacted by the team during the assessment. Much of the subsequent cooperation from institutions and groups involved in the sector can directly be a result of the workshop. The workshop is also a good opportunity to identify three or four direct service providing agencies, such as city or independent water authorities that workshop participants feel are representative of the sector. The institutions selected should represent both urban and rural areas.

#### **2.2.5 *Step 5: Detailed Work Plan***

Once the workshop is concluded the assessment team will need to examine the present document to develop, in collaboration with the primary country sponsor, a work plan and logistics for the duration of the sector analysis. A detailed revision of Chapters 4, 5, 6, and 7 (specially the protocols of Chapters 5 and 6) will permit division of the labor of interviews and data gathering between the members of the team. Schedules should be set as closely as possible at this time. It is likely that the sponsor(s) will designate operational

staff to assist the assessment team at this stage as members of the steering committee are unlikely to be involved in the day to day implementation issues of carrying out the data/information gathering parts of the assessment.

The team members who conduct interviews should not only be aware of the responsibility to obtain information and opinions about their own areas of expertise but also of information the respondent to an interview has on other areas. Many interviews will only focus on a few components of the protocols, but some individuals interviewed will be knowledgeable of many components in the assessment in which case all relevant dimensions should be covered.

#### **2.2.6 Step 6: Data Gathering and Realization of Interviews at the Sector and the Service Providing Companies Level**

The objective of the protocols is to guide the data gathering and the interviews, and the analysis of the obtained information. The protocols include two types of questions or instructions: a) questions or instructions for the assessment team for data or information gathering, and b) questions to guide the analyses which the report needs to include.

*a) Data and Information Gathering.* These questions or instructions are rarely literal, on the contrary, it will be necessary to paraphrase the questions during the interview when appropriate. In practice, the interviewer will need to examine those components most applicable to the respondent before the interview and also explain the general purpose(s) of the sector assessment to the respondent. Frequently a question will urge an respondent to provide information or concepts that answer several protocol questions. The assessment team should consider the protocols as guides and should not feel obligated to answer each and every question.

The length of the protocols may imply to the assessment team that voluminous and accurate quantitative data are readily available for all assessment dimensions. Experience shows that this is often not the case. The assessment team should consider that the absence of information often betrays underlying weaknesses in the system. For example, the lack of information in a specific water agency about the age and condition of the various conduits and pipes in the distribution system often also means that the agency does not have an adequate maintenance and planned replacement program. That in turn means that major capital replacement programs will have to take place sooner than the design life would require.

The assessment team members in the absence of information should exercise their judgment about the extent and importance to the sector of a problem that

cannot easily be quantified or measured. The sector assessment process itself, in uncovering gaps and weaknesses in information about the sector, should be a motivator to the sector institutions to improve the information base.

While the protocols are intended to guide the collection and analysis along certain channels, it should not be the cause of frustration when it is found that desired information is not available or is inaccurate.

*b) Analytical Questions/Issues.* These questions are not specifically intended for interview situations, but are a guide to the sector team on what kind of analysis is expected in the sector assessment report. Before interviewing any particular respondent, in addition to reviewing the *data/information gathering* questions likely to be used with that respondent, the assessment team member should also review the *analytical questions/issues* associated with the data/information gathering questions. This review will remind the interviewer of the underlying analytical theme that particular portion of the protocol is pursuing.

Note that an information gathering question and an analytical question are often similar. For example, one analytical question that the sector assessment team should address in its report is:

*"Do local companies or entities providing water and sanitation services have sufficient authority to set user fees or to use other forms of cost recovery to be able to recover the full costs of operations and, if it is their responsibility, make provisions for capital investment in the future?"*

As an analytical question, it is not intended to be used in an actual interview, but it tells the sector assessment team that the report should address the issue. However, for that issue, it also is useful to learn the perceptions of respondents as to whether service providing entities have sufficient authority to set user fees or use other cost recovery methods. Therefore, a very similar question appears in the data/information gathering protocol for the team to ask about the perceptions of authority. In the assessment report the team would not only present their own findings about whether sufficient authority exists or not, but the team should also report and discuss important found differences in perception. For example, it is often the case that officials in central agencies or institutions feel service providing entities have sufficient authority but that officials in those service providing entities feel that they do not have sufficient authority. Sector problems may arise from this difference in perception. The data/information gathering protocols therefore appear to repeat analytical questions in order to make sure that the assessment team not only collect specific factual information but also collect perceptual information.

<b>Data/Information Gathering Question</b>		<b>Analytical Question</b>	
1.	Data/information gathering through interviews and documents.	1.	Orients the reflection process of the team during the interview.
2.	Assess sector perceptions through interviews.	2.	Orients the team as it analyzes the information and develops the sector assessment report.

**Sector Level.** It is important where possible to begin with the principle agencies involved at the national or sector level in setting goals and objectives for the sector, planning and financing sector services, and/or regulating or governing the institutions that actually deliver water and sanitation services. At least two-thirds of the effort in gathering information and reviewing material should focus on these sector level organizations.

At the sector level, it is likely that several individuals from each of the following institutions or agencies should be interviewed:

- Ministry of Planning/National Planning Agency
- Ministry(ices) of Health and Social Welfare
- Ministry of Economy
- Ministry of Finance
- Ministry of Public Works
- Ministry of Environment
- Ministry of the Interior
- Ministry of Community Development
- Ministry of Social Development
- Municipal Development Institute
- Ministry responsible for regional and local government relations
- Nos and other community representative groups
- National Development Bank and/or other financing agencies
- Major large private sector construction and other services firms that may be involved in water and sanitation or related environmental activities.
- Bilateral and Multilateral financing and technical assistance organizations that have permanent offices or representatives in the country.

In interviews with sector or national level institutions, the team has two purposes. One is to obtain information and views on the sector as a whole, its current circumstances, sector bottlenecks and ideas on strategies for improving sector services. Second is to assess the adequacy of these institutions to fulfill their roles in the sector. The protocols contain data/information gathering questions that focus on these two separate aspects, and the analytical

questions in the protocols designed to guide the team's analytical purposes concern both the sector and the institutions who have roles to play in the sector.

*Service Delivery Level.* The interviews at the level of service providing companies should be conducted after having obtained, within a few days, a sample of three or four companies which directly supply water and sanitation services. The objective of this direct contact with the sample entities is not to make detailed institutional analyses but to comprehend the sector by understanding the criteria of the service providers. To concentrate on a detailed institutional investigation of one or several companies because it seems simpler only contradicts the objectives of the sector assessment which is to inform about the most critical themes (the bottleneck that most affects the sector) and to implement strategies and solutions which could be applied throughout the sector.

The institutional sample should be examined after the gathering of the greater part of data at the sector or national level is completed. The protocols in Chapter 6 contain analytical questions as well as questions from the data and information gathering relative to entities responsible for providing water and sanitation services. Among these could be important urban entities of water systems and sewerage or rural community organizations administrated by volunteers.

#### **2.2.7 Step 7: Analysis and Synthesis**

There will be no clear distinction between the data collection/information gathering phase and the analysis phase, as the team will be discussing among themselves and with the country sponsor(s) what they are learning as the data gathering goes on. Gradually the effort will shift to primarily analysis and preliminary written findings.

Nevertheless, the analytical questions that are contained in each topic in the protocol provide key guidance to the assessment team as to what a sector assessment should answer. Careful review of these analytical questions prior to and during data gathering will help ensure that relevant information is collected. These analytical questions should form the basis for organizing the analysis and findings.

Informal, preliminary discussions between the team and the sponsor(s) should be frequent, especially during the third week of the sector assessment when the team is formulating its preliminary findings. The assessment team has to maintain a balance between what they as professionals have found and what

they recommend and what the sponsors find acceptable. Ultimately, the formal, contractual sponsors for the assessment team may have to make arbitration-like decisions about how to balance the teams findings and recommendations and what the sponsors wish to see in the assessment report.

The assessment preliminary report will be presented to the sponsors before it is presented to a broader audience. It is possible to include in this preliminary report both "majority" findings and alternative views if there is some disagreement, but should not be in the form of dissenting opinions. Differences should rather focus on possible different paths the sector might take when the team is unable to agree among themselves and/or with sponsors on which paths might be more feasible.

### ***2.2.8 Step 8: Presentation and Preparation of Final Report***

The country sponsors will convene another workshop near the end of the last week of the sector assessment. Ideally at this workshop the sponsor(s) rather than the assessment team will present the basic findings and recommendations. In some cases recommendations may be considered as possible alternatives rather than definitive prescriptions.

Chapter 7 is an annotated outline of the *Sector Assessment Final Report*. Unless the early discussions with the sponsor(s) have modified that outline, it should be followed as closely as possible in order to facilitate cross country comparisons.

### ***2.2.9 Step 9: Approval of the Report and Final Revision***

Once the final workshop in which the results are presented is concluded, the primary country sponsor will formally request all the participating institutions of the study that they carefully examine the sector assessment report so that they can make comments on it. Once all comments are compiled, one member of the assessment team with a representative of the primary country sponsor will incorporate the expressed comments to compose the final sector report.





### **3. KEY SECTOR PERFORMANCE CHARACTERISTICS**

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A sector assessment should summarize key aspects of sector performance by reporting on several basic performance characteristics<sup>1</sup>. The objective of the present chapter is to suggest a series of indicators which as a whole could provide an impression of the sector's situation. The mentioned indicators should be evident in the different chapters when deemed relevant.

Collecting data and reporting on these performance characteristics serves multiple purposes:

- It encourages sector agencies to improve their monitoring and information management so that performance characteristics that may have to be estimated at the time of the first comprehensive sector assessment can be based on more accurate records in the future;
- It describes at a particular moment the sector conditions, pinpointing in some cases potential issues that need addressing or key bottlenecks that may need to be addressed in order to improve sector performance;
- It facilitates comparisons across countries, which provides a rich resource of information on key sector conditions, which in turn increases the information available to countries about experience in other countries. The ability to make comparisons enables countries to learn from each other and the availability of comparative performance indicators often acts as an important motivator for improved performance.

The selected performance characteristics are grouped into several categories:

1. Sector Outcomes (Goal Related)
2. Use and Availability of Water
3. Coverage and Access to Water and Sanitation Services
4. Quality of Service and Quality of Product
5. Management, Operations, and Finance
6. Desirable but Unavailable

The team will collect the necessary data and information for the following performance characteristics during the sector assessment. To the extent that the following characteristics are not readily obtained from two or three of the national level institutions with whom the team will be meeting, the detailed data and

<sup>1</sup> The purpose of the selection of performance indicators is to facilitate sector assessment. Performance characteristics that are more detailed and precise are not formally included due to lack of accepted measures or methodology and are cited later in comment form to stimulate their development or to improve the registries in motivated countries or institutions.

information collection protocols should enable the team to make reasonably valid and reliable estimates of the following performance characteristics. Over time, emphasis on these as the most important sector performance characteristics should cause recordkeeping to improve so that the validity and reliability of the data improve.

### **3.1 Sector Outcomes**

#### **3.1.1 *Improved Health***

The purpose of water and sanitation services is to improve health, to decrease the exposure to water borne diseases, to diminish the incidence of diseases that are attributed to other vectors but are exacerbated by unsafe water and/or unsanitary disposal of human waste, and to improve general living conditions that increase the susceptibility to various other diseases.

*Performance Characteristics.* Morbidity and Mortality rates from diarrheal diseases and other water and sanitation-related illnesses by zones (urban, periurban and rural).

#### **3.1.2 *Increased Economic Production***

Availability of sufficient quantity and for some industries sufficient quality water supply decreases production costs and increases the economic efficiency of those commercial and industrial production entities that utilize water in the production process.

*Performance Characteristics.* Gross production or gross revenues or other available indicator of economic production for firms using water in the production process.

*Comment:* This type of measure is unlikely to be available initially. The most readily available are anecdotal and case studies that show the constraints on production due to lack of water. It is also possible to find case studies and country studies on the impact of the lack of infrastructure investment on production<sup>(2)</sup>. Focusing attention on the commercial and industrial production uses of water is more likely to encourage looking at water and sanitation as an economic as well as social good.

<sup>2</sup> Cite A.I.D./WASH report on Macro economic Benefits of Water Supply and Sanitation Investment.

### 3.1.3 *Improved Environmental Conditions*

Release of untreated or insufficiently treated human and industrial wastes into streams, rivers, lakes and oceans increases the treatment and/or other remedial costs necessary to use the water sources affected, increases the costs due to use of alternative, noncontaminated sources, increases the costs due to more complex treatments, and decreases the perceived quality of life associated with the recreational and nonuse values attached to water systems.

*Performance Characteristics.* Quantity of water affected by un- or undertreated human and industrial discharges as a percent of total country or regional water sources.

### 3.2 Use and Availability of Water

*Performance Characteristics.* Percent total water use consumed by: Household, Commercial/Industrial, Agriculture

*Comment:* If there are no regional variations within the country the percentage breakdown of the total water resource availability used by the three major users should be national figures. If there are regional differences such as when there is competition among users for scarce water resources in some regions and non in others, regional figures or estimates should be used to indicate the extent of scarcity and use distribution.

### 3.3 Coverage and Access to Water and Sanitation Services

*Performance Characteristics*

#### a) Access to Water Service

Access to Water	Hold Connection <sup>a</sup>	Standpipe < 200 Meters <sup>b</sup>	Hold Private <sup>b</sup>	No Formal System
Urban and Periurban	% Population	% Connections	% Connections	% Connections
Rural	% Population	% Connections	% Connections	% Connections

<sup>a</sup> Organized system

<sup>b</sup> Individual, safe system (e.g., deep well)

b) Access to Sanitation Service

Access to Sanitation	Hold Connection <sup>a</sup>	Hold Private <sup>b</sup>	Latrine	No Formal System
Urban and Periurban	% Population	% Connection	% Connection	% Connection
Rural	% Population	% Connection	% Connection	% Connection

<sup>a</sup> Formal sewer system

<sup>b</sup> Individual septic system or group septic system

3.4 Quality of Service/Quality of Product

*Performance Characteristics*

a) Quality of Water Service/Continuity of Service for 24 hours

	% Household Connection		% Standpipe < 200 Meters	
	24 hour service	Intermittent service less than 24 hours	24 hour service	Treated or disinfected <sup>a</sup>
Urban and Periurban	24 hour service	Intermittent service less than 24 hours	24 hour service	Treated or disinfected <sup>a</sup>
Rural	24 hour service	Intermittent service less than 24 hours	24 hour service	Treated or disinfected <sup>a</sup>

<sup>a</sup> % of sewage from formal sewer system treated before discharge

*Comment:* It is desirable to develop some measure of the extent of overload of the sewer system. Although no simple system has been designed at this time, an example would be that the system discharge sewage at other than designed disposal point(s) during heavy use or heavy rains. Ultimately, *the volume at design capacity compared with average flow and peak flows is the desirable measure.*

### 3.5 Management, Operations and Finance

#### *Performance Characteristics*

a) % Unaccounted water due to physical losses and commercial losses

*Comment:* In the likely event that accurate data for the sector/country as a whole is not available, figures will be estimated with the weighted average (weighted by production volume) of the largest systems for which reasonably accurate information is available.

b) % total system cost intended to be recovered through user charges

*Comment:* Data may not exist in this form, but may be available in the form of the ratio of average price per cubic meter to total cost per cubic meter. Total cost should include both capital and operating costs. The weighted average (weighted by production volume) of the largest systems for which reasonably accurate information is available is a likely substitute for information aggregated for the entire sector.

c) Rate collection effectiveness -- ratio of charges collected to charges due

*Comment:* Data may not exist for the sector as a whole, but this may be estimated from the weighted average (weighted by production volume) of the largest systems for which reasonably accurate information is available.

d) Proportion of physical infrastructure (treatment plants, distribution or collection systems) that exceeds design life\*

*Comment:* It is probable that this data for the sector does not exist, but can be calculated using data from the largest systems.

### 3.6 Desirable but Presently Unavailable Performance Characteristics

Several of the measures above have been commented on to suggest acceptable substitutes for lack of available, accurate information at the sector level. There are other measures for which there are no commonly accepted measurement conventions. In addition, there may be common agreement on the desirability of some conditions, but not in every circumstance. Therefore, even if an acceptable measure were available, it may not be appropriate at the sector level but only applicable under certain conditions. For example, some rural systems are not likely to be successful without extensive community participation, but if a conventional, acceptable indicator of community participation were developed and measured, it would not make sense at the sector level because a high level of community participation may be completely irrelevant to the successful operation of a formal, urban water supply system.

*Performance Characteristics*

- a) Intra and Intersector institutional coordination
- b) Community participation in design and operation of systems
- c) Health education programs for the public

**3.7 Summary Table of Performance Characteristics**

- **Morbidity and Mortality rates from diarrheal diseases and other water and sanitation-related illnesses**
- **Gross production or gross revenues or other available indicator of economic production for firms using water in the production process**
- **Quantity of water affected by un- or undertreated human and industrial discharges as a percent of total country or regional water sources**
- **Total percentage of water consumed by domestic, commercial or industrial, and agricultural use**
- **Total percentage of water use consumed by various uses**
- **Access to water service**
- **Access to sanitation service**
- **Quality of water service:-continuity of service for 24 hours -treated or disinfected water**
- **Total percentage cost to the system whose cost recovery is foreseen through user charges**
- **Physical losses**
- **Commercial losses**
- **% water connections metered**
- **% total system cost intended to be recovered through user charges**
- **Rate collection effectiveness -- ratio of charges collected to charges due**

- **Proportion of physical infrastructure (treatment plants, distribution or collection systems) that exceeds design life**
- **Intra and intersector institutional coordination**
- ***Community participation in design and operation of systems***
- **Health education programs for the population**





## 4. DIMENSIONS OF THE ASSESSMENT

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This chapter introduces and describes the sector components that should be analyzed for the purpose of the sector assessment. Its evaluation will be realized by means of the use of protocols presented in Chapters 5 and 6 which are designed to guide the processes of data and information gathering.

The "dimensions" of the sector assessment are the large groups of aspects that typify the current situation of the sector and its performance--areas that should be analyzed in depth. The coverage of the dimensions goes beyond the requirements for investment in physical infrastructure.

### *Basic Components of the Assessment*

1. General characteristics of the country
2. Institutional structure of the sector
3. Legal framework
4. Goals, policies and programs
5. Technical and physical characteristics
6. Finances
7. Beneficiaries of the services/ Community participation

#### 4.1 General characteristics of the country

This component includes the data, information, and observations that make it possible to gain a thorough overview of the basic characteristics of the country whose water supply and sanitation sector is being studied and evaluated.

The following subcomponents are considered: the country's political organization and structure; population; general health aspects linked to the sector; education and other social aspects; economy; geography; climate; and hydrologic resources.

#### 4.2 Institutional structure of the sector

This section refers to the analysis and assessment of all the sector's institutional components in terms of the agencies and their linkages and operations. It implies an identification and analysis of the following aspects:

##### 4.2.1 *Sector Institutions*

- Sector institutions (in urban and rural areas).

- Number of agencies in charge of health services and scope of their attention (national, regional, state, or local).
- the legal status of these agencies (government entities, private, mixed economy); their place in the government structure, linkages, interference, and coordination among these agencies and others outside the sector.

#### **4.2.2 *Planning and Information***

- Economic and sector planning agencies.
- Coordination and planning of water resources.
- A national information system for the sector.
- The decision-making process.

#### **4.2.3 *Community Participation***

- Number of personnel in the sector (urban and rural).
- Composition of the personnel structure.
- Management, degree of professionalization, stability.
- Wages and benefits of sector personnel.
- Qualifications, training programs.

### **4.3 Legal Framework**

This section includes the analysis of all laws, regulations, decrees, and other legal instruments that affect sector activities. It will include arrangements through which responsibilities of the participating institutions are defined, those relevant to the institutional reform within the context of the modernization of the State and those that regulate technical aspects of the sector.

#### **4.3.1 *Legal Context***

Description of the legislative process, hierarchy of laws and dispositions that regulate the sector.

#### **4.3.2 *Institutional Aspects***

Administrative division of the sector and institutional fields according to laws that regulate organizational structure.

#### **4.3.3 *Relation of the Sector with other Sectors***

Applicable to other sectors as in, natural resources, human establishments, health, urban planning and construction.

#### **4.3.4 *Structural Reform of the State***

Process of modernization of the State and legal reforms that tend to restructure the sector.

#### **4.3.5 *Technical Aspects***

Legal norms of a technical nature and its adaptation to current needs and technical criteria.

### **4.4 *Goals, Policies and Programs***

This dimension refers to the aspects of the country's macro-planning for the water supply and sanitation sector. Its purpose is to determine what the current situation is and the likely trend in government decision-making to improve or optimize the sector's efficiency and productivity, as well as its ability to comply with government decisions or serve the needs of users and the community at large.

#### **4.4.1 *Goals***

- For coverage in water supply and sanitation services (urban and rural);  
Satisfaction of demand;  
Quality of water provided;  
Quality of water provided before making it available;  
Continuity of services;
- Time frame and programming to meet these goals;
- Feasibility of meeting them.

#### **4.3.2 *Policies***

- General country policies on investment in sanitation infrastructure;
- General administrative organization and sector administration (decentralization, privatization, contracting with private entities)
- Rate levels (financial self-financing, subsidies);
- Labor;
- Management of hydrologic resources;
- The environment in general.

### **4.3.3 Programs**

- For improving the sanitation infrastructure;
- Expanding coverage;
- Expanding the services provided by the entities of the sector;
- Special operational programs (preventive maintenance, macro- and micro-measurement, water quality control, training and education).

## **4.5 Physical and Technical Characteristics**

This section evaluates the physical and functional situation of the sector's components at the national, state, and local levels, from the main perspectives, which should be coordinated to ensure adequate service delivery.

### **4.5.1 Physical Infrastructure**

- Hydrologic resources (their availability, origin, uses, limitations, pattern of rainfall),
- Physical systems of supply (number, degree of quality and treatment, distribution by regions);
- Capacity of the distribution and storage systems;
- Coverage;
- Number and types of sewerage systems (sanitary, rain, combined, treated, gravity-based, pumped) and sanitary excreta disposal.

### **4.5.2 Conditions of Service Delivery**

- Organization;
- Standards for water quality and service delivery;
- Continuity of the services;
- Water quality control.

### **4.5.3 Technical, Administrative, and Logistical support (At the national, regional, and/or local level)**

- Technical and financial cooperation agreements;
- Norms and procedures for the preparation of studies and designs, the construction of works, inspection;
- Physical and financial planning;
- Human resources (quantity, quality);
- Logistical resources;

- Commercial aspects (micro-measurement, census of subscribers and user registry, rates, billing, and collection);
- Operational aspects (special programs: preventive maintenance, registry of networks, installations and equipment, operation, pitometry, macro-measurement).

#### **4.6 Finances**

The analysis of sector finances includes a description of the availability, origin, and application of financial resources in the country and a careful examination of their allocation, particularly those connected with the water supply and sanitation sector. Furthermore it includes the mechanism with which the sector analysis is financed in urban and rural areas.

##### **4.6.1 *Size of the Sector*** (with respect to the national economy; as a component of the public sector).

- Total expenditures of the sector over the past five to ten years, by origin (national, regional, state, or local government and private);
- Total public budget and the sector's share of it.

##### **4.6.2 *Financing of the Sector***

- Main sources of financing;
- Financial obligations (capital and interest);
- Debt service (domestic and foreign);
- External assistance and external credit.

##### **4.6.3 *Structure and Rate Levels***

- Levels of approval (central government, autonomous);
- Payment capacity of the users.

##### **4.6.4 *Composition of Sector Budget Expenditures***

- Total annual expenditures;
- Distribution of the expenditures;
- Budget categories (capital, operation and maintenance, debt service) for each level of government;
- Budget projections and participation at the central, regional, local, and private level.

#### **4.7 Community Management/Community Participation**

This dimension studies the relationship between service providers and users and between the community at large and the leading entities of the sector.

##### **4.7.1 Coverage (from the point of view of the user)**

- Total (registered users vs dwellings);
- Coverage in terms of quality of the water provided and the continuity of service;
- In terms of equivalent satisfied user.

##### **4.7.2 Supply and Demand**

- With regard to design;
- In accordance with the supply conditions created by the operation of the systems.
- With regard to design; based on the population served;
- Based on measurements of consumption.

##### **4.7.3 Community Participation (in urban, periurban, and rural areas).**

- In the decisions of the service provider;
- In investments for rehabilitation, expansion, or new works; in the operation and maintenance of the services and systems.
- The role of women.
- Scope and reach of community participation in identifying its priorities and in the implementation of solutions (type of services and sanitation systems).

##### **4.7.4 Health Education and Institutional Dissemination of Information**

- Programs that provide health education and health care to users which emphasize the proper use of the water supply and sanitation services and systems.

## 5. PROTOCOL AT THE SECTOR LEVEL

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The objective of the protocol at the sector level is to orient the tasks of the study team to enable them to be carried out in an orderly fashion, both during the data collection phase and the analysis and interpretation of information phase.

Each protocol theme is divided into various sections and corresponds with the established components in Chapter 4. In each section the following is presented: a) data and information to collect, and a series of questions which the assessment team will ask the people or officials of participating institutions with the purpose of gathering additional and relative data and perceptions; and b) a series of analytical questions whose objective is to guide the analysis of the gathered information; the obtained answers will constitute the base for the conclusions of the sector assessment when identifying the restrictions that hinder the adequate performance of the sector and, consequently, help to define sector strategies in order to overcome them.

### 5.1 General Country Characteristics

#### a) Data and Information Gathering

##### 1. *Political Organization*

- Federal or Unitary System
- Central, state or local responsibility for water supply and sanitation
- Number of states, regions, departments, provinces, etc.
- Number of cities, subdivided by appropriate size categories

##### 2. *Population*

- Total
- Urban/Rural
- Largest cities (metropolitan areas)
- % population living in metropolitan areas
- % population living in periurban areas
- Population distribution by city size including village level
- Population growth rate
- Urbanization rate

##### 3. *Health* (for last 5 years)

- # cases cholera, typhoid, hepatitis, severe diarrheal, other
- # cases (above diseases) per 1,000 population
- Note regional concentrations within country for above diseases

4. ***Geography and Climate***
  - Average annual rainfall
  - Note major natural disasters in recent years
  - Relevant topographic features affecting water supply and drainage
  - Relevant hydrogeological features and general water resource availability
  
5. ***Economy***
  - GDP trends
  - Public external debt as % GDP
  - Principle components of GDP
  - Main issues in country economic policy
  - Inflation rate and trends
  - Exchange rate and trends
  
6. ***Social/Education Characteristics***
  - % population defined by country as living in poverty
  - % population completing primary, secondary, post-secondary education
  - Literacy rate
  
7. ***Water Resources***
  - Total annual availability: surface, underground.
  - Note geographic/regional distribution issues
  - Note important seasonal variation
  - Water usage: amount consumed by agriculture, commercial/industrial, human, other
  - Note any special legal issues in water resource use, protection

## **5.2 Institutional Structure**

The objective is to gain an understanding of how the sector is organized, both in terms of its formal structure and in its dynamics of operation. This implies an identification of the areas and government agencies with functions linked to the sector (urban or rural, legal, regulatory, financial, operational, or other) in the country's various political jurisdictions (federal, state, municipal), the existing interrelationships, and the mechanisms through which they operate. It also implies an identification of the principal areas and agencies, an assessment of the effectiveness of the mechanisms that they employ to carry out their roles, and their actual leadership capacity. The analysis should permit an appraisal of the organization's strong and weak points, detect gaps and/or overlapping of functions at the formal and operational levels, and provide knowledge of how well the structured system ensures sector development that is consistent with the country's needs. It should be linked with an analysis of the legal structure to enable the functionality of this structure as it relates



to the current organization to be evaluated and to anticipate any obstacles that may eventually arise. This will contribute to a better organizational structure for the sector.

### **5.2.1 *Institutions of the Sector***

#### **a) Data and Information Gathering**

- Reform of the State, economic adjustment, ministerial jurisdiction, the creation of sector agencies, missions and their functions, organizational chart and personnel structure of the sector institutions.
- Laws, bills, or regulations at the national or state level that may affect the organizational structure of the sector or the jurisdiction of the existing institutions; policies on privatization and/or public service concessions, decentralization, etc.
- What entities and institutions define the policies, goals, and programs to be followed by the organizations in charge providing the water supply and sanitation services?
- What people or institutions are responsible for determining the general level of investment in the water supply and sanitation sector?
- Are there separate national agencies for carrying out programs to provide services to the various population groups (urban, periurban, rural, etc.)? Are these agencies duplicated in the states or provinces? As national delegations? As provincial agencies? Are programs implemented by a single state enterprise?
- Through what legal, financial, regulatory, or other type of mechanism do national agencies (where they exist) interact, and how do they interact with the provincial, state, and district agencies?
- Have there been any changes in the institutional structure of the sector because of the private sector's incorporation into the operation and/or expansion of services? How advanced is this process? What have the legal and operational criteria been for granting concessions or privatizing services? What functions remain under the jurisdiction of the State? What institutional arrangements have been made for this purpose?
- What role do local institutions (municipal, cooperatives, development associations) play in the sector? Are they service providers? Do they monitor the quality of drinking water of the service? Do they finance programs, collect contributions from neighbors? What is their share in the current provision of services (percentage of population served, number of localities, size of localities)?
- From the institutional, financial, regulatory, and supervisory standpoint, how are local institutions linked with state, regional, and national agencies?

- Do public and/or private companies have sufficient authority to set rates that will enable them to meet their budgetary demands to comply with sector policies or their own self-financing norms?
- Do the public and private companies have sufficient authority to design systems, employing standards that are realistic at the local level (in terms of both the ability and the will to pay)?
- What is the mechanism for approving the materials and inputs of the sector? Is it competitive bidding sponsored by the State? How are service providers and suppliers linked to this mechanism?

**b) Analytical Questions/Issues**

- How much autonomy does the sector have in carrying out its programs? How much does it depend on political decisions from higher up? At what level are decisions on investment and external credits made?
- Do the current organizational structure and anticipated restructuring respond to the socioeconomic or regional situation or to sector needs?
- How effective has each of the national agencies been in fulfilling its role? What are their achievements in terms of the development of sector programs?
- Is there complementarity? Is there a duplication of functions, although it is not consistent with the jurisdictional areas designated by statute or regulations?
- Are there some functions that are not exercised by any of the institutions mentioned? To what is this attributed? Should the current jurisdictions be redefined? Should another agency be created?
- Are there explicit policies on decentralization and/or private sector participation, encompassing all or almost all sectors, that will alter future participation at the central, regional, local, and private levels of the sector?
- Does the ability of the service providers to make budgetary decisions and control costs bear any relation to their responsibilities as service operators?
- Do the institutional arrangements aim at establishing a new national system that articulates the operations of the whole or are they limited to supervising or monitoring a single concession or privatization in particular?
- Is there currently any plan, trend, or policy for the organizational transformation of state utility companies aimed at redefining functions and areas of competence, decentralizing the functions or operations of the service agencies or their autonomy, or delegating functions to the private sector? How advanced is this process?

- If the changes in progress or those for which a policy decision has been made were to materialize, how large a population would be served by state enterprises and by private companies?
- What is the dominant form of political organization in these local institutions (municipalities, cooperatives, community development associations)? Are there different levels of management effectiveness depending on the type of legal entity? To what is this attributed?
- What limitations are observed in the articulation of functions (for example: quality control, operation and maintenance, regulation)?

### 5.2.2 *Planning - Information*

#### a) Data and Information Gathering

- Is there coordination between national agencies outside the sector and entities within the sector? Through what institutional mechanism? How is sector planning linked with national planning? With the socioeconomic development plan?
- At the national level, is the planning, regulation, control, and preservation of water resources the purview of a specific agency? Does this agency supervise all uses? How is it linked with the sector agency?
- Does the watershed serve as the frame of reference for planning, regulation, or control? How is this issue resolved?
- Are there national programs to protect watersheds and control the exploitation of groundwater?
- Has a national sector information system been implemented? What institutional area exercises this function? Is it the agency that sets policy or the one that allocates resources? What mechanism ensures a continuous flow of state, provincial, and local data? Does participation in the national information system constitute a benefit for the agencies that provide the data?

#### b) Analytical Questions/Issues

- In practice, does the sector planning respond to the guidelines and objectives of national planning?
- Is the sector information system effective? Does it use the information for decision-making in the sector? Is the lack of an adequate information system an impediment to sector development?
- What is the sector's history with regard to preserving the quality of its water sources for human consumption and what responsibility does it bear for pollution?

### 5.2.3 *Human Resources*

The analysis of this theme comprises an assessment of human resources of the sector, its correspondence with the institutional objectives and the restrictive conditions that impose the regulation and the mechanisms in force applied to personnel requirements.

#### a) Data and Information Gathering

- Identify the number of personnel currently serving in the sector (distinguish urban and rural areas; national, state, and local areas).
- Describe its composition, by number of professionals, technicians, administrative personnel, and workers. Are only the personnel employed in the operating agencies and/or in local operations included in these figures? Are projects prepared and works executed with external personnel? By how much would the figure increase if the latter were included?
- Does the sector's absorption of employees respond to the demand for the activity or to national employment policies?
- How professionalized is management? (% of political appointments)
- What is the average time a manager remains in his position?
- Is there a training program consistent with the investment plans or are only isolated courses given? Is more than one agency responsible for this activity? Is there coordination between such agencies? Is the country's formal educational and training system utilized?
- Is the country considered self-sufficient with regard to the professionals necessary for resolving the needs of the sector?

#### b) Analytical Questions/Issues

- Do the agencies have the autonomy to determine the personnel required?
- Is there an excess of some professional specialty at the expense of others? Are some specialties lacking? What would these requirements be and in what specialty?
- Are wages and benefits good enough to attract and hold highly trained personnel? Is there any relation between training and income levels? What relationship is there between these wages and benefits and those of other sectors of the national or provincial government and/or other public utility companies?

### 5.3 Legal Aspects

In this section the legal aspects that regulates the sector will be analyzed in global terms even though other sections mention or analyze certain pertinent legal aspects. The complete analysis will serve to provide the countries a tool which permit the need to check, create, or update legal instruments compatible with the demands of economic and social reform.

#### 5.3.1 *Legal Context*

With the objective of familiarizing the reader with the analyzed legal context it will be necessary to briefly mention the mechanism of law formulation and its hierarchical organization. In addition, a brief description of all current regulations that are directly applicable to the sector of water supply and sanitation.

##### a) *Data and Information Gathering*

- Which laws, regulations and decrees regulate the sector? What rank of the legislative hierarchy have applicable norms?
- Which international agreements applicable to the sector have been endorsed?
- What sanctions exist when legal dispositions are not fulfilled? Are the sanctions realistic? What are the control mechanisms for the its obeyal?

##### b) *Analytical Questions/Issues*

- Which of these norms are not aplicable to reality? Why?
- What legislative vacuums exist in relation to the needs of the sector?
- How efficient and effective is the legislation that is currently in force?
- Are the mechanisms for the presevation of water resources effective? Are the mechanisms that control water quality for human consumption effective? What restrictions do they present?
- What conflicts exist between the sector objectives and the currently in force legislation?

#### 5.3.2 *Institutional Aspects*

In this section the applicable administrative division, including the functions and domain of the institutions that form it are described, as well as, institutions whose programs or functions that directly affect the sector. The arrangements that affect the organizational structure of the sector, like ministerial legislation,

entity creation, decentralization, special fund assignments, and others that are relevant should be included in the study.

a) **Data and Information Gathering**

- Is there a duplication of functions?
- Which programs, by law, need to be executed by different institutions of the sector?
- What laws exist for the allocation of funds, whether by origin national or international?
- Which are the principal sources for the financing of sector institutions?

b) **Analytical Questions/Issues**

- Which legal restrictions adversely affect the fulfillment of functions or services rendered by the institutions?
- Which laws impede an efficient institutional management? Are there legal vacuums that impede the interinstitutional coordination?
- What financial problems have as a base restrictions or impediments of a legal nature?

**5.3.3 *Relation of the Sector with other Sectors***

The sectors correlated with water and sanitation, like health, environment, town planning and others, will need to be identified and defined. In this context the legal dispositions that regulate the identified sectors will need to be analyzed.

a) **Data and Information Gathering**

- Which laws in these sectors counterbalance each other?
- What institutional problems are applicable to the legislation?
- Which are the extrasectorial coordination mechanisms?
- What legal contradictions exist in relation to applicable norms to natural resources, health, urban planning, construction, etc.?
- What conflicts exist between sector objectives and currently in force legislation?
- Is there a real necessity to create or modify the legislation to resolve identified obstacles?

#### 5.3.4 *Structural Reform of the State*

It is necessary to have a general overview of the modernization process of the State to determine which procedures within this process will affect the sector. An analysis of modifications of the legal framework necessary to implement reforms that affect the sector, mention of pertinent legal projects, and a mention of international loans to finance the sector reforms should be included.

##### a) Data and Information Gathering

- Which are the main reforms at the institutional, operative, or functional level within the sector?
- What international loans are being executed? Are there national equivalents?

##### b) Analytical Questions/Issues

- Is there a tendency towards decentralization or privatization of services in the sector?
- Are there conditions that affect the sector that require the creation or modification of legislation?

#### 5.3.5 *Technical Aspects*

Many of the applicable technical specifications in the sector are within the legal dispositions. The legislative norms that regulate the technical aspects of the sector should be analyzed.

##### a) Data and Information Gathering

- Which are the national regulations of water quality for human consumption and what is their legislative reach? Are the parameters international or based on country specifics? How do they interact with the current state regulations?

##### b) Analytical Questions/Issues

- Are these laws adaptable to the present situation or do they need to be updated with new technical criteria?
- How effective are the technical parameters established to comply with the legal dispositions?
- Are there control mechanisms to comply with these regulations? Are the sanctions effective against the non-fulfillment of technical dispositions?

- Are technical criteria followed or are they abandoned because of pressures and interests of a political nature when a law of technical nature is created?

#### **5.4 Plans, Policies and Programs**

The analysis of this component should permit the identification of the objectives of plans, policies, and programs of water supply and sanitation at the national, federal, state, and municipal level in the rural and urban areas, as well as the existing instruments and mechanisms to reach these objectives.

In addition, the analysis should identify the policies for the different areas within the sector and within the different jurisdictions, the congruency and vacuums, as well as to be aware of their effectiveness and grade of observance. The efficiency with which the mechanisms help reach the objectives should also be evaluated to recognize the differential suitabilities of instruments utilized in different sectors and the lack of appropriate instruments to reach the objectives in the different fields. As a result, the analysis should provide a clear vision of the functionality of the organizing structure in relation to sustained policies and of the objectives proposed with respect to sector policies.

##### **5.4.1 Goals**

###### **a) Data and Information Gathering**

- Obtain documents related to the short- and long-term plans for national development, the special laws for allocating funds of national origin, special plans for social and community development, official sector plans approved by the Executive and Legislative Branch, etc., plans and programs with national or external financing that have been approved or are in the process of approval.
- Has the country established explicit goals for coverage with regard to water and sanitation services? Have targets, disaggregated by service, rural and urban area, region, level of service, and socioeconomic sector, been defined? If general goals only have been established, have these aspects been taken into account in defining them? What is their time frame? Will their fulfillment be monitored?
- Have the water and sanitation priorities been defined?
- Do the goals only refer to the expansion of services or do they include the rehabilitation and optimization of existing systems?
- At what political level have these goals been ratified? -Are these objectives established by the national authority? How are they



- transferred to the regional, state, and local operating agencies? To the community? Through what legal, institutional, or financial instruments?
- What are the targets for the quality of water for human consumption? Have the special characteristics of the regions been taken into account? Has the decision been adapted to the sanitary vulnerability of the various social groups?
- Have the financing needs of the sector been quantified? Are the following aspects included in this estimate: technical cooperation in general; institutional development; training; the preparation of studies, design and consultancy in general; equipment and materials for works; the equipment, tools, materials, and elements necessary for operation and maintenance; and the equipment, elements, and training necessary for logistical support?
- When defining its goals, does the sector make a priority of resolving issues linked to health, economic development, environmental protection, land use, the optimization of the systems' operational capacity, the self-financing of the sector, the development of the entrepreneurial capacity, community participation, etc.?
- Is there political resolve at the highest possible levels to prioritize the sector?

**b) Analytical Questions/Issues**

- Are the goals defined on the basis of an exhaustive knowledge of the needs?
- Are the goals established consistent with the demand identified in the analysis?
- Are the goals utilized to verify the sector's managerial capacity?
- Has the feasibility of the goals been analyzed from the standpoint of the necessary economic financial, institutional, and human resources?
- On setting priorities, has their impact on health, the environment, the type of settlement, the differential costs by type of service, the protection of the water sources, the control of consumption, etc. been evaluated?
- Have these goals been complemented with policies related to financing and institutional and human resources development?
- What mechanism ensures compliance on the part of the sector?
- Is the basis for quantifying the sector's financing needs reliable? How frequently is it updated?
- Through what regulations is the policy decision to prioritize the sector implemented?
- Is there commitment on the part of the sector authorities to meet the targets for the quality of water consumed by the population?

- When making investment decisions, do the sector entities at the national planning level take into account such technical and operational priorities as the termination of incomplete or unfinished works or the optimization of systems, or do they prefer to allocate resources on the basis of other criteria?

#### 5.4.2 Policies

##### a) Data and Information Gathering

- Identify laws or regulations that govern the quality of the water resources, planning, and watershed management.
- Obtain the standards for quality and the regulations governing quality control and provision of the services in order to develop projects and resolutions or regulations for the system for approving and monitoring materials and inputs.
- What are the policies concerning the rational use of water? Is rational water use a goal or is there a regulation in this regard that governs all uses of the water resource?
- What are the national policies, plans, and programs for micro-measurement? What entities are in charge of their development and financing?
- Are there norms, plans, and programs that stipulate the quality of the wastewater discharged? What agencies are in charge of monitoring? Do these agencies have sufficient operational capacity? Do the policies to preserve the quality of the resources respond to the concept of sustainable development?
- Are there policies to monitor the quality of the sources of water for human consumption?
- Are the regulations or sanctions applied to household effluents similar to those for industrial or other effluents?  
What policies deal with the reuse of water?
- Is this practice standardized and regulated in its technical and sanitary aspects? For what purposes?  
What are the national standards for the quality of drinking water? Are the parameters international or based on the specific characteristics of the country? What is the jurisdictional scope of the national quality standards? How do they articulate and reconcile with those of the state and local authorities? Is there a national system for certifying the technical and operational capacity of laboratories?
- Are the requirements consistent with the operational capacity of the monitoring agencies? Are there controls external to the agencies that operate the services?

- How is monitoring accomplished if the companies are private enterprises? Is this the responsibility of the State? Does the public agency have the material, human, and financial resources to perform this task?
- How is monitoring accomplished in cases where the services are operated by small rural communities? By NGOs?
  - Is there an operational plan to provide emergency drinking water in case of natural disaster? What type of disasters? How frequently? What kind of problems does this engender in the disaster systems?
  - What are the policies for identifying and selecting water supply and sanitation projects? Is the identification based on sector planning, the preparation of a Master Plan, the evaluation of alternatives, community demand, the reduction of areas with health risks, geopolitical criteria, or political commitments or pressures?
  - Are there policies, norms, and procedures at the national level with regard to the preparation of projects and designs? Are there agencies charged with their regulation and monitoring? Is there a "Project Bank" at the national level?
  - Are there policies at the national level regarding the construction of works? Are there agencies charged with their regulation and supervision? Is there a national inventory of sanitary works for determining the technical and operational condition of the works (unfinished, deficient, or incomplete works; works constructed with inappropriate technology)?
  - What priority is assigned to optimizing the operation of the existing water and sanitation services? Is this priority expressed through training, investments, the majority of processes, other aspects?
  - What policies and objectives ensure that the sector is self-financing? With regard to rates, consumption, etc.? Through what mechanisms is this objective implemented? Does this imply institutional changes?
  - What priority is assigned to the development of the marketing system? Is this reflected in a greater allocation of human, material, and financial resources for such ends? Have specific programs been defined for such purposes? What activities are deemed a priority in these programs?
  - What are the policies concerning subsidies in the sector? Are the subsidies financed by the government or do they fall to the companies? Are they indiscriminate? Transparent? Total or crossed?
  - Have policies related to community participation during the project cycle been defined? Is this participation included in the regulations governing the financing programs of the operating agencies?

b) Analytical Questions/Issues

- When defining the policies related to the measurement of potable water consumption, does the sector make a priority of solving the population's health-related problems, protecting the water resource, optimizing the systems' operational capacity, self-financing, postponing unnecessary investments, adapting the requirements or demands for external financing programs, developing managerial capacity, etc.?
- Do the policies to preserve the quality of the water resources for human consumption have feasible objectives that are linked with those of the other sectors that use the resource? What progress has been made in this regard?
- What developments have occurred in the country with respect to the reuse of water, based on the application of usage policies? What priority is assigned to this practice? Does the health authority exert effective control over use?
- Does the actual implementation of the system to monitor water quality and the services meet the requirements of the policies established?
- What are the policies concerning the rehabilitation and optimization of services and installations?
- Are rate policies for the services adequate for achieving the objective of sector self-financing?
- What effect has the application of subsidies had on the sector's performance?
- Are there mechanisms to preserve the water resource and monitor the quality of drinking water? What limitations are there?

**5.5 Physical and Technical Aspects**

**5.5.1 Physical Infrastructure**

a) Data and Information Gathering

In this section, the work team should obtain the necessary documents and classify and order them properly to form the Annex and the files that will define and support the sector study.

This part will also include all information obtained about the different national or international sources mentioned in this Document, plus those collected from other sources identified and contacted by the work team in the performance of its duties. As is normal in this type of study, when the data and information cannot be confirmed in the documents provided in the study's annexes, the

information sources included in the sector analysis should be cited and clearly identified.

- ***Hydrologic Resources:***

- Obtain summaries of the principal hydrologic studies carried out in the country with a view to establishing quantities, patterns of rainfall, and the availability of water for human consumption.
- Indicate the potential amount of groundwater for human consumption at the national level (with a regional breakdown), according to the authorities and institutions of the sector--in particular, those charged with directing groundwater management.
- Estimate the ratio between the amount of water available and the use of the water resource.
- Indicate the country's characteristically wet months, by region and overall, if possible.
- Describe the conditions of the physical, climatic, and hydrologic environment that impact the sector and specify the origin and magnitude of this impact, analyzing the limitations that this may impose on the availability and magnitude of sources, plant operations, storage, distribution, etc.

- ***Physical Systems of Supply:***

**Urban Areas**

- List the total number of systems of water supply for human consumption, disaggregated by the quality of treatment (Type A: systems with complete treatment; Type B: systems with disinfected groundwater; Type C: systems with primary treatment and disinfection; Type D: systems with disinfection only; Type E: systems that provide raw water without disinfection) and by region, according to geopolitical and socioeconomic division and the administrative jurisdiction of the utility companies.
- Indicate the ratio of water supply systems to total localities.
- With respect to the total number of systems of water supply for human consumption, in both the urban and rural areas, indicate the percentages of:
  - Systems with complete treatment
  - Systems with primary treatment and disinfection
  - Systems with disinfection only
  - Systems that provide raw water.

- List and briefly describe the multi-purpose projects (supply for human consumption, irrigation, energy generation, recreation) designed, built, under construction, and in operation.
- For the urban and rural population, indicate the average age of the supply systems when this average is representative for the analysis of the country.
- Indicate the ratio of the population supplied by groundwater to the total population supplied.

#### **Rural Areas**

- Indicate the total number of systems of water supply for human consumption.
  - Indicate the percentage of water systems.
  - With respect to the total, indicate the percentage by type of systems, on a list of different possible systems.
  - Relate and briefly describe projects of multiple purposes, that are designed, in construction, constructed, and in operation.
  - Relate the average age of the systems.
  - Indicate the percentage of the population supplied by subterraneous water.
  - Indicate the percentage of systems with individualized solutions (through public sources).
- *Capacity of physical systems:*
    - With the above breakdown, indicate the capacity of the physical systems in terms of design capacity, productive capacity, real production, and the correlation between the period of design and age of the systems in operation.
  - *Supply facilities*
    - Indicate, at least for the total urban and rural population, the proportion of inhabitants whose homes and land are supplied with water from the public network and the proportion supplied by public fountains or standpipes or by non-household systems formally organized by the entities in charge delivering the services.
    - For the population not served by public water networks, specify the following information, with a breakdown by urban and rural areas (in percentages and absolute numbers):
      - Population utilizing adequate individual systems.

- Population utilizing inadequate individual systems.
- ***Physical Sewerage Systems***
  - Following the above breakdown, indicate the number of complete systems with wastewater treatment and those without it.
  - ***Based on information from the authorities and institutions of the sector, indicate the sewerage systems designed as sanitary systems that function as combined systems, and by type of treatment utilized.***
  - ***With respect to the country's total population, determine what proportion of inhabitants have sewerage facilities connected to their homes or easy access to sewerage facilities.***
  - ***Indicate the number of sewerage systems that treat the wastewater collected before its final disposal and the ratio to the total number of systems in operation.***
  - ***For the population not served by the public sewerage network, specify (in percentages and absolute numbers) the population without a system for wastewater collection that is technically adequate and sanitary for both urban and rural areas.***

#### **Rural Areas**

- Following the above breakdown, indicate the number of complete systems with wastewater treatment and those without it.
- Indicate the percentage of systems that supply treated water.
- Indicate the percentage of the population supplied with pits and latrines.

#### **b) Analytical Questions/Issues**

- ***Is the water resource sufficient for the development of the sector? Is there a disequilibrium between availability and exploitation?***
- ***Does the seasonal variation in rainfall in the country (in general and by regions) affect the provision of services? This variable can be qualified as decisive, important, or irrelevant?***

- Are external vigilance and auditing effective in terms of water resource conservation?
- In global terms and at the national level, are the condition and the conservation of the infrastructure of services good, acceptable, deficient, or bad?

### 5.5.2 *Conditions of Service Delivery*

#### a) **Data and Information Gathering**

- Determine the total number of localities that receive water supply on a continuous basis, those that receive service from 12 to 24 hours a day, and those that receive rationed or intermittent service for periods equal to or less than 12 hours a day.
- Determine the total flow of wastewater discharged into receiving bodies of water, with or without treatment.
- Calculate the weighted average (with regard to the number of users) of the continuity of services (hours per day).
- Taking the level of coverage into account, express the percentage of current use of the systems, utilizing the capacity defined by the design as a reference.
- List the utility companies and the most frequent defects in the water supply and sanitation systems by region, state, province, and locality.
- For both types of service, indicate the ratio of the population living in poverty to the total inhabitants without services. Provide a breakdown of this data for the rural and urban population (by size of urban center).
- Estimate the ratio of the population living in poverty to the total of the population without services, for both services. Disaggregate the data by urban, size of urban center, and rural populations.

#### b) **Analytical Questions/Issues**

- Are the procedures used in monitoring the quality of water provided to the users satisfactory?
- What are the principal bottlenecks that hamper the continuous and adequate supply to urban localities and rural areas (sources, conduits, pipelines, available energy, treatment capacity, distribution networks, storage capacity, financial resources, etc)?
- Are the instruments and procedures for obtaining the rational use of the resource effective?
- Have such instruments yielded concrete results? Identify them.



- What is the jurisdictional scope of the national standards for the quality of water for human consumption? How do these standards interact with those of the states and localities? Is there an adequate national quality control system for certifying the technical and operational capacity of laboratories and supervising the quality of the water that the population consumes? Where there is no such system, is there a valid reason for it?
- Are the controls applied during the treatment process adequate for ensuring the continuous disinfection of the water supply?
- Are the plans and programs for addressing the most frequent defects in the operation of the sanitary systems effective? Where are such programs not available, what is the reason?
- Based on the overall analysis of the country (with a breakdown by the capital city and large, intermediate, and small cities), can it be said that there is an unutilized capacity in the systems? Is there a deficit?
- Are the problems connected with pressure, intermittency, and, generally speaking, the quality of the service attributable to operational deficiencies? To the poor state or saturation of the systems? To other things? Identify them.

### **5.5.3 *Administrative, technical, and logistical support***

#### **a) Data and Information Gathering**

##### **Urban Areas**

- Obtain the data and documents containing descriptions of the programs, plans, budgets, and other resources allocated in support of the water supply and sanitation projects identified and proposed by communities (management and personnel, transportation, and materials for training and education).
- Obtain, list, and briefly describe the national plans and programs for preparing projects and designs.
- Identify and list the entities in charge of regulating and supervising the preparation of such studies and those responsible for their approval.
- Obtain and list the country's regulations and procedures for implementing projects and designs, indicating whether they are national, regional, local, private, etc.
- Confirm whether or not there is a "Project Bank" at the national level.
- If there is one, obtain the national inventory of sanitary works to determine the technical and operational condition of the works (unfinished, deficient, or incomplete works, or works constructed with inappropriate technology).

- Confirm the existence of special national programs on technical aspects of the service delivery: preventive maintenance, macro-measurement, pitometry, network census, census of installations and equipment. Obtain a copy of the documents that establish them, or at least a descriptive list.
- Obtain the data on total micro-measurement coverage (meters installed vs household connections) and effective measurement (working meters vs installed meters).
- At the national level, determine the total amount and main characteristics (age, type of indebted user, etc) of the portfolio of arrears maintained by the utility company. Obtain information on the main causes of non-payment by users.
- Determine the origin, amount, application and management of the resources allocated to studies and the design, construction, operation, maintenance, and marketing of the water supply and sanitation services.
- Describe the mechanism established for receiving and approving the materials and inputs for the infrastructure and water treatment works, indicating whether it is the purview of the State or each individual utility company.
- List the technical and/or financial cooperation agreements with bilateral or multilateral entities (implemented within the past ten years, in execution, under negotiation, in planning), indicating the object, scope, cost, and duration.
- With sector authorities, jointly estimate the percentage of unmetered water supply (by region, company, and national total, if possible).
- With respect to unmetered water, identify in percentages the amount corresponding to leaks, commercial losses in general, and clandestine connections.
- Confirm whether or not there are operational plans for emergency water supply and sanitation in case of natural disaster. Describe the type of disasters considered in the plans and the kind of problems that they are intended to solve.

#### Rural Areas

- Obtain data and documents, originated in the community and identified by them, with the description of the programs, plans, estimates and other assigned resources, to support the rural institutions of potable water and sanitation with respect to administration and personnel, transport and material for training.
- Obtain, relate, and describe briefly the plans and programs originated at the national level in terms of formulating projects and designs.

## 5.6 Finances

### 5.6.1 *Size of the Sector*

#### a) Data and Information Gathering

- Determine the relative size of the water and sanitation sector as a component of the economy and as a component of the public sector. Ideally:
  - Total expenditures on water supply and sanitation (separately and together) each year for the last 5 to 10 years, of all sources (central government, subnational government, private).
  - GDP for the last 5 to 10 years.
  - Central government budget for last 5 to 10 years, subnational governments for last 5 to 10 years, total public sector budget.
  - Determine the relative size of the other major sectors in the public sector budget for the last 5 to 10 years.
  - Determine if there are explicit public sector policies, statutes, decrees or other pronouncements defining the proportion of water supply and sanitation *should* have of the public sector budget and the economy.

#### b) Analytical Questions/Issues

- What is the proportion of the total public sector budget spent on water supply and sanitation (together and separately)?
- How does that compare with other sectors? As a percent of the public sector budget? As a percent of GDP? Per capita?
- How do the annual growth rates in water supply and sanitation expenditures compare with growth rates in GDP? With other sectors?
- Is water supply and sanitation gaining, decreasing, remaining steady in the public sector budget? Share of GDP? Compared to other sectors.
- Is water supply and sanitation changing in the same direction as change in GDP? Is it increasing or decreasing at rates similar to or greater than rates of GDP change?
- Do existing analyses of the financial implications of water supply and sanitation goals/targets take into account the implied financial growth in the sector relative to growth of other sectors, of the public sector budget, of the economy as a whole? If so, is it reasonable to expect that the sector can grow at the targeted rates, given independent projections of growth rates in the economy, the public sector budget, and expectations for investments in other sectors?

- Identify and relate the entities in charge of the normalization, supervision and control of the formulation of such studies and those entities that have the responsibility of approving them.
- Verify the existence and evaluate the "Bag of Projects" at the national and regional level.
- Obtain, if it exists, an inventory of sanitation projects developed at the national, state, or provincial level that indicates the technical operative conditions (incomplete new works, deficient new works, new works constructed with inappropriate technology).
- At the national or state level, verify the existence of special technical programs that, among others, support the optimization of equipment.
- Relate the agreements of technical or financial cooperation with bilateral or multilateral entities (executed in the last ten years, in execution, in negotiation, projected), indicated objectives, reach, amount and duration.

b) Analytical Questions/Issues

- Is the mechanism articulating the technical and administrative functions of the utility companies with the regulatory agency at the national level effective? Does the national entity have the technical and operational capacity to fulfill its regulatory function? Do the utility companies?
- Is there effective and efficient control on the part of some public or private institution with regard to the quality of the materials and inputs used by the utility companies? Is this a national and comprehensive system? How are the utility companies linked to this mechanism? How are the supplier companies?
- What priority is assigned at the national level to optimizing and rehabilitating the operations of the existing water supply and sanitation systems?
- Do the water quality standards correspond to parameters accepted in other countries? Have they been adapted to the country's situation? Have the costs and benefits of employing these parameters been evaluated? Have the thresholds or permissible maximum pollution levels or the elements that characterize drinking water as safe been identified and quantified?
- Has the technology utilized in the provision of drinking water and the disposal and treatment of wastewater been adapted to the institutional capacity and training level of the human resources in the utility companies and communities? Do they take the socioeconomic characteristics and the cultural dictates of the users into account?
- Do the level of knowledge and the availability of appropriate technologies impose limitations on the development of the sector?

### 5.6.2 Sector Financing

#### a) Data/Information Gathering

- Are the financial requirements to meet service coverage goals or other targets explicitly worked out over at least a 10 year period? Does sector planning include explicit financing plans to develop the financial resources to meet broad sector coverage and other goals? Do the financing plans take into account goals and financing for other sectors so that the financial requirements of the water supply and sanitation sector are integrated with overall public sector financial requirements?
- Over the last 5 to 10 years, what have been the primary sources of capital financing for water supply and sanitation investments? What proportions of total investments in the sector has each source represented?
- What is the total indebtedness due to credit financing of capital investments in the sector? Principal and interest? What is the profile for principal and interest payments over the next ten years?
- What is the proportion of total public sector indebtedness attributable to water supply and sanitation? What is the annual proportion of public sector debt service payments (principal and interest) attributable to water supply and sanitation? Is debt service for water supply and sanitation growing, declining or remaining steady relative to total public sector debt service and relative to other sectors?
- What is the extent of reliance on external donor assistance in financing in recent years for capital investments in the sector? What is the distribution of that assistance among donors? What is the mix of grant and loan assistance?

#### b) Analytical Questions/Issues

- Are the financial requirements required to meet goals or targets consistent with the size of the sector, relative to the economy and to other sectors? Would undertaking the financing required by the goals or targets cause the sector growth rate to change relative to overall economic growth projections? Relative to projected growth in other sectors?
- Are the financial implications for meeting goals or targets used in the overall economic planning process? The long-term investment budget process? Does it seem likely that the financial implications of meeting the targets have been an explicit part of overall macroeconomic policy planning? Of the forward budget planning process?

- Is water supply and sanitation credit financing contributing more than, less than, or about the same to the composition of public sector indebtedness? Are projected trends in borrowing for the sector expected to change its contribution to public sector indebtedness?
- Do the financial implications of sector goals or targets recognize or take into account the extent to which credit financing will be necessary.
- Is the amount of borrowing implied by meeting sector goals or targets consistent with the country's capacity to undertake additional borrowing? Consistent with agreements with lenders, such as the IMF? Reasonable given the requirements for credit to finance investments in other sectors?

### 5.6.3 *User Charges, Tariffs and Rate Setting*

#### a) Data and Information Gathering

- At the sector level, has there been explicit analysis of willingness and ability to pay?
- Do the institutions directly providing water supply and sanitation services have the authority to set tariffs, billing schedules, penalties for failure to pay user charges, and so forth?
- What is the tendency across all service providing institutions with respect to collection efficiency (*charges collected / charges due*)?
- What is the percentage of unaccounted for water; what is the percentage due to uncollected revenues; to illegal or unbilled connections?

#### b) Analytical Questions/Issues

- Is local water and sanitation enterprise authority to set and collect tariffs sufficient to allow them to meet their financial requirements?
- To what extent are tariffs determined by need/requirement for the sector to be self-financing; what is the extent to which the general public sector budget is expected to subsidize water and sanitation services; what are the mechanisms for providing this subsidy?
- To what extent do service coverage and quality objectives and their technical and financial requirements take into account affordability and willingness to pay?

#### 5.6.4 Sector Budget Composition

##### a) Data/Information Gathering

###### Urban Areas

- What are the total annual expenditures for water supply and sanitation, excluding credit financed capital investment, but including debt service, capital depreciation or other "amortization of prior years' capital expenditures", operation and maintenance and any "expensed" capital expenditures?
- What is the annual share of total sector expenditures undertaken by central governments, regional or state or provincial governments, and local governments? What is the expenditure budget composition (capital, operations and maintenance, debt service) for each level of government?
- What are the projected roles for central, regional, local and private sector in terms of expenditures for the sector?

###### Rural Areas

- What are the total annual expenditures for the supply of water and sanitation excluding the investment of capital financed by credits but including interest on the debt, depreciation of the capital or other repayments of the expenditures of capital in previous years, the operation, and maintenance, and other expenditures of capital made?
- What is the annual proportion of the total expenditures of the sector aided by the central government, regional government or state or provincial and local governments? What is the composition of the expenditure budget (capital, operations and maintenance, and debt interest) for each level of government?
- Which are projected functions for the central, regional, local and private sectors in terms of expenditures of the sector?

##### b) Analytical Questions/Issues

- Are operation and maintenance expenditures in future years explicitly identified as part of the capital project selection process? Are they a factor in the actual selection of capital projects? Are they fully self-financed from user charges? Is there any evidence of "deferred maintenance" (insufficient expenditures on maintenance and rehabilitation)? If so, is this in favor of additional capital expenditures, or is it in favor of other sectors?

- Do sector financial policies or plans take into account changing roles of subnational levels of government; of the private sector in providing services?

## **5.7 Community Participation**

### **5.7.1 Coverage**

#### **a) Data and Information Gathering**

- Determine the theoretical physical coverage ratio between connections and dwellings, and in terms of production to demand ratios for the entire country.
- Indicate the theoretical physical coverage of the water supply systems with respect to household connections and street length.
- Calculate the coverage of the sanitation systems with respect to:
  - Urban and rural dwellings
  - Household drinking water connections
  - Street length
- Specify the proportion of the population supplied by the public water supply and sewerage network. Using the following criteria, provide a breakdown of this information for the two services:
  - Coverage of the total urban population (more than 10,000 inhabitants or as defined by the country).
  - Coverage by size of urban center
  - Coverage of the total rural population
  - Coverage of concentrated rural population.
- Indicate whether there are areas where the population without services, moreover, comes up against environmental limitations when attempting to procure appropriate individual systems (scarcity and pollution of the water resource, soil impermeability, areas subject to flooding, etc.).

### **5.7.2 Supply and Demand**

#### **a) Data and Information Gathering**

- Determine the supply built into the design, that deriving from the productive capacity, and that corresponding to the conditions of supply established by the operating programs, or by the operations themselves.
- Determine the demand built into the design, that deriving from the population served, and that resulting from measurements of consumption.



### 5.7.3 *Community Participation*

#### a) **Data and Information Gathering**

- **Is there some formal mechanism in the institutions of the sector that enables users to participate in the different entities in charge of the water supply and sanitation projects and services? Identify, for example: (i) the laws protecting the user; (ii) specific areas where the community can channel its demands for access to the service and for improvements in their quality and continuity.**
- **Which officials or institutional areas are specifically in charge of carrying out these activities?**
- **Can specific groups be identified (associations of businessmen, salaried employees and workers, professionals) that currently take part in articulating the sector objectives and making them feasible? (For example: in reaching agreements on the parameters for monitoring the sources, harmonization of uses, approval of materials, training of human resources, technology application, etc.).**
- **Are there programs that provide for community participation through contributions of money, materials, or labor for the projects to be carried out?**
- **Is it customary for the community to spontaneously organize associations to resolve its lack of services? Is this organization based on the local culture, political or religious imperatives, etc.?**
- **Does this occur more frequently in some regions of the country or more frequently in certain socioeconomic sectors than in others?**
- **What does community participation consist of? Contributions, work, decision-making, the operation of the services? Does the community receive educational programs on hygiene?**
- **Have other forms or mechanisms for participation been identified that have still not been implemented? What are they?**

#### b) **Analytical Questions/Issues**

- **Has the participation of specific groups (associations of businessmen, professionals, salaried employees, and workers) made the achievement of the sector objectives feasible? Are these mechanisms random or are they institutionalized? Do they offer continuity? Are these mechanisms more prevalent than others of an informal nature?**
- **Is the focus on administration favorable in the services? Are the managers of the service rendering companies receptive to the concept of local communities organizing to support the solutions to the problems of water supply and sanitation?**

- Has there been some evaluation of the efficiency or outcomes obtained by the communities that currently handle water supply services?
- What types of evaluations have been done and with what results? Did community members participate in the planning of the evaluation and data collection?
- What degree of participation have women had in the management of the projects or systems?
- What difficulties have emerged of the organization of local communities to administer water and sanitation projects (financial needs or other resources, during planning and execution, in relation to maintenance, others)?

#### **5.7.4 Health Education and Community Development**

##### **a) Data and Information Gathering**

- What programs exist for promoting hygiene and health education? What methods are used? (mass media, community education).
- Obtain budgets and other information that identifies resources that are available for promoting community organization around water and sanitation.  
Have health education materials been developed for specific rural culture groups?

##### **b) Analytical Questions/Issues**

- Considering the needs for water supply and sanitation services in periurban and rural areas, what are the major difficulties in providing programs that will assist communities in organizing themselves and developing local leadership to achieve and use water and sanitation services and to carry out proper hygiene practices?
- Are the health education and training materials available adequate to carry out effective education and training programs? What additional resources/supplies are necessary?
- Did the water supply and sanitation projects foster the development of other community projects?
- To what extent did the collaboration of the various agencies promote community organizations? How frequently do they interact or meet with them? Is there planning and utilization of joint resources?
- What are the main priorities with regard to future needs and resources to help the communities procure adequate water supply and sanitation systems?

- How many local community organizations have been established during the past five years? How many function efficiently?



## **6. PROTOCOL FOR UTILITY COMPANIES**

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The objective of this chapter is to guide the assessment team in gathering data and to guide it in the analysis of information at the utility company level with the assistance of protocols that are organized according to components of analyses identified in Chapter 4.

Utility companies have been defined as the institutions or companies charged with the provision of the sanitary services and, accordingly, may cover regions (district, state, province, etc.) or municipal areas (localities, metropolitan areas, etc.), depending on their work area or sphere of influence.

The study at this level should cover areas similar to those analyzed at the sector level (national), with any adaptations and broadening that may be necessary. The team should not attempt a detailed analysis of any service delivery institution. The purpose of the service delivery level assessment is to see the sector as a whole, from the point of view of the organization that directly provides the services.

The team should select three to four service entities that are as representative as possible of conditions in the sector in general. The sponsoring agency should be able to help select these entities, and both urban and more rural areas should be represented.

As noted in Chapter 2, the team should not allow the time spent on these selected service providing institutions to dominate the sector assessment. No more than one-third of the entire data gathering and analytical effort, and therefore perhaps about one-fifth of the total sector assessment timetable, should be devoted to the sample of service providing institutions.

The sector assessment team as a whole should not visit and review each of the sample institutions. Subteams of two to three people, spending about three days with the institution, should be able to interview all of the management level staff, observe company operations, review financial and other data, and complete an analysis of the company.

The following protocols are designed to accomplish two objectives:

1. Provide depth to the sector analysis by obtaining data and information about a selected set of institutions that provide water and sanitation services directly to clients/users, data and information that is about those particular institutions rather than the entire sector;
2. Provide the team with contrasts, where they exist, between the view of individuals who work at the sector level, typically in national government agencies, and the views of individuals in the daily business of providing

services, about the major issues and constraints in the sector and possible strategies for addressing these constraints.

## **6.1 Institutional Structure**

The objective is to describe the company's functional integration into the sector's organizational structure, both formally and in its real dynamics. This implies that, for every mission and function of the company, the existing interrelationships, jurisdictions involved, and mechanisms employed for its linkage with other agencies will be identified and described.

This analysis should make it possible to isolate aspects that hinder the company's performance and the fulfillment of its objectives, such as conflicts or duplication of functions, administrative and regulatory obstacles, maladjustments between the formal and the real structures. The treatment of this subject includes an evaluation of the company's human resources, its compliance with the institutional objectives and limitations imposed by current regulations on adjusting the composition and amount of personnel to the requirements.

### **6.1.1 *Organization and Management***

#### **a) Data and Information Gathering**

- Have there been changes in the institutional structure of the sector in which the company operates? Are these changes due to a redefinition of functions and jurisdictions among agencies? To the transfer of services to the local level, the private sector, or other areas? What impact has this had on the institutional structure? How advanced is this transformation? What impact does this process have on the company?
- How autonomous is the company in determining and carrying out its programs? How much does it depend on decisions made by another institution? On political commitments?
- Does the institution handle the planning of the services? What mechanisms integrate those plans with national plans for socioeconomic development?
- Does another entity participate in determining the destination of the funds collected by the company? Is it a political or an administrative entity? What problems does this cause?
- Which institution approves the programs of external credit? Through what mechanism?

**b) Analytical Questions/Issues**

- Does the institution have sufficient autonomy to set its own priorities, its own operating policies and practices, and its own procedures to be able to adapt to the conditions of the geographic region in which the institution provides services?
- Do political influence or national political factors affect decision-making in this institution?
- Does the institution have sufficient authority to set tariffs and to use other cost recovery mechanisms to enable it to meet its operating or recurrent costs? Capital costs?
- Do officials perceive the national policy, financing and regulatory institutions as interfering with the institutions' operations?

**6.1.2 Regulation and Supervision****a) Data and Information Gathering**

- Which entity certifies the quality of the water provided by the institution? What scope and authority does it have to impose sanctions?
- Are the companies responsible for defining the standards for water for human consumption, for the quality the water discharged, for design, construction, and maintenance? If not, what agency carries out this function? Is it linked with the national area?
- Is there a managerial information system? Is it utilized in decision-making? Is this system fed by the data base of other state or national agencies? What benefit does the company derive from supplying information to these data bases?
- Does the company's information system include data from the services delegated to local entities? If not, how are they supervised?
- Does some other agency pull this scattered information together?

**b) Analytical Questions/Issues**

- If there are agencies regulating water quality, construction, and other standards, is the institution able to work effectively with them, in the view of management personnel?
- Are the regulatory standards sufficiently flexible to permit local adaptation while sufficiently strong to ensure protection of consumers and the environment?

### 6.1.3 *Human resources*

#### a) **Data and Information Gathering**

- Specify the current number of company personnel (including those employed in all the services operated or regulated by the company).
- State the composition of the employees by the number of technicians, administrative personnel, and workers.
- If a transformation process were to materialize, what impact would it have on personnel?
- What is the degree of professionalization in technical managerial positions (% of political appointments)?
- How long, on average, does a manager remain in his position?
- How do the company's wages and benefits compare with those of other state sectors and/or other public utility companies?

#### b) **Analytical Questions/Issues**

- Does the institution have the authority to determine its own staffing patterns? Indicate the current mechanism and its flaws.
- Does the absorption of employees by the agency respond to the demand for the activity or to national or state employment policies?
- Is there an excess of personnel in some professional specialty at the expense of others? Is there a lack? What is needed and where? How feasible are these changes? What should be modified to make this possible?
- Are wages and benefits sufficient to attract and hold highly trained personnel?

### 6.1.4 *Training*

#### a) **Data and Information Gathering**

- Is there a basic training program or are isolated courses given? Who performs this activity?
- Who decides which personnel will receive enrichment courses? Is this decision related to career planning?

#### b) **Analytical Questions/Issues**

- Do the training programs respond to the needs of management, investment, company operations? Does the company have the technical and operational capacity to develop its own training programs?



- Is training the purview of an agency other than the utility company?

## **6.2 Legal Framework**

The analysis of the legal aspects that constitute the framework for company operations should permit an evaluation of the company's functionality with respect to sector dynamics and the requirements of the operation.

The aspects within the legal framework that hinder the execution of programs or policies should be identified, the gaps that inhibit the company's participation or decision-making pointed out, and eventually, the regulatory aspects that are incompatible with the effective articulation of the organizational structure identified.

### **6.2.1 *Laws and other regulations***

#### **a) Data and Information Gathering**

- What laws, executive orders, and regulations make up the legal framework in which the company operates? Summarize those related to macroeconomic policy; for example: those derived from adjustment policies, social investment incentives, the delegation of the operation and extension of services to the private sector, the garnering of co-participation funds from the states by the central government, etc.
- What laws specifically regulate the utility operator? Indicate, for example, the law creating the same legislation linked to other sectors involved in the provision of services: those related to the environment; land use; health; housing; the allocation of special funds for the sector with resources from another source; the self-financing of already existing agencies; operational decentralization.
- The analysis in this dimension should permit the identification of the objectives and goals at the company level, as well as the existing mechanisms and tools for defining and reaching them.
- The objective is to evaluate the institutional and financial feasibility of the goals and analyze the current mechanisms for meeting them.
- The description and the analysis in this area should seek to identify company policies and determine their effectiveness and adherence to the guidelines at the state, sector, and national level. Moreover, the current degree of autonomy and that necessary for meeting company objectives should be indicated.

**b) Analytical Questions/Issues**

- What functions does the company supplier of services carry out according to the norms that govern it? Which is its functional dependency?
- The company operates the services of the entire state or delegates, in some or in all cases, this function to local companies or the community? Does it hold the same function in urban and rural environments? What is its legislative domain and how do the delegated services operate institutionally?
- Are there conflicts between the objectives of the company and the legislation or other regulations that regulate activities?
- Has the impact of the non-fulfillment of the in force legislation on the company been evaluated?
- Has the need to modernize, modify, or promulgate new legislation been evaluated?

**6.3 Plans, Policies and Programs**

The analysis of this theme should allow for the identification of the objectives maintained at the company level and the mechanisms and existing instruments to define and reach them. The objective is to evaluate the institutional and financial feasibility of the goals and to analyze the current mechanisms so that these goals may be reached.

The characterization and analysis should try to identify the policies of the companies, their effectiveness and congruence with the defined goals at the state, provincial and national sector level. Likewise the extent of current autonomy and the extent needed to carry out the objectives should be noted.

**6.3.1 Goals**

**a) Data and Information Gathering**

- Are the goals established by the utility company itself? If not, which agency determines them and how does the company participate in this process?
- Have explicit coverage targets for the water and sanitation services been established? Have targets been broken down by service, rural and urban area, region, level of service, and socioeconomic sector? If only overall targets have been established, have these aspects been taken into

account in defining them? What is their time frame? Is their fulfillment monitored?

- Have priorities been established among the water and sanitation services?
- Do the targets refer only to the extension of the services or do they include the rehabilitation and optimization of the existing systems?
- At what political level have these goals been ratified?

**b) Analytical Questions/Issues**

- Are the targets used to determine how the specific programs are being managed? Has the feasibility of the targets from the standpoint of the necessary economic, financial, institutional, and human resources been evaluated?
- When setting priorities, has their impact on health, the geographical environment, the type of settlement, the differential costs by service, the protection of the water source, the control of consumption, etc. been evaluated?
- Have the goals been complemented with policies on financing, institutional development, human resources? What mechanism guarantees their fulfillment by the company?
- Are the goals defined on the basis of an exhaustive knowledge of the needs? Do they respond to the demand detected in the analysis?

**6.3.2 Policies**

**a) Data and Information Gathering**

- What is the source of the institution's operational policies related to: water quality, level of contamination of effluents, and disposal of effluents?
- Does the institution have a role in setting these policies, or are they responsive to national level regulatory agencies only?
- Are there special quality control policies for the water sources? With what results? What role has the company played in these programs?
- Have emergency programs for the provision of drinking water in case of natural disaster been developed?

**b) Analytical Questions/Issues**

- In defining its objectives, does the company make a priority of solving problems linked with the level of health, economic development, environmental protection, land use, the optimization of the systems'

operational capacity, the self-financing of the sector, the development of entrepreneurial capacity, etc.?

- Is water use subject to norms and regulated in its technical and sanitary aspects? For what purpose? Is there effective control in this regard on the part of the health authority?
- What priority is assigned to optimizing the operation of the existing water supply and sanitation systems? Is this priority expressed through efforts in Training? Investment? In the majority of the processes? In other aspects?

## 6.4 Physical and Technical Aspects

In this section, the physical and functional situation is evaluated from the standpoint of the principal areas, which should be coordinated to achieve adequate service delivery. The principal areas are the available physical infrastructure for providing the services and the conditions under which they are provided.

### 6.4.1 *Physical Infrastructure*

- ***Hydrologic Balance of the Region/Locality***
  - Determine the total contribution of the catchment areas of the water courses and bodies of water utilized in the region/locality, or whose use has been foreseen in the short term.
  - Indicate the prevailing pattern of rainfall in the region or locality, in terms of wet and dry months and in millimeters of precipitation.
  - Determine the percentage distribution of water use in the area: for human consumption, agriculture, industry, electrical energy generation, recreation.
  - Calculate the contribution of wells, filter basins, and groundwater in general to the physical systems of supply.
- ***Physical Systems of Water Supply.*** Indicate the total number of physical systems of water supply, classifying them according to the following types:
  - Type A: Single treatment components and processes; complete process (breakdown by the number of plants with patented processes and conventional plants).
  - Type B: Groundwater that does not require physical or chemical treatment, but is disinfected.
  - Type C: With primary treatment and disinfection.
  - Type D: With disinfection only.
  - Type E: Raw water supply, without disinfection.

- ***Capacity of the physical systems.*** For each physical system analyzed obtain the capacity data, in the following modalities:
  - Capacity built into the design
  - Productive capacity
  - Real production
  - Unutilized capacity (if any)
  
- ***Physical Systems of Distribution (Networks, Storage, etc.)***
  - Determine the length, conditions, and characteristics of the distribution networks, the number and capacity (m<sup>3</sup>) of the tanks belonging to the company in charge of the physical systems, by locality.
  
- ***Theoretical Physical Coverage***
  - Calculate the theoretical physical coverage in terms of the ratio between household connections and dwellings and production and demand, as well as user satisfaction.
  
- ***Special Water Supply***
  - Indicate the number and the main technical and physical characteristics of special water supply systems, such as regional water supply systems, supply based on desalinization plants, systems with special technologies, etc.
  
- ***Physical Systems of Sanitation***
  - Determine the number of sewerage systems in each of the following categories:
    - Complete sewerage systems--that is, those consisting of collection, treatment, and final disposal
    - Partial: Collection and final disposal (without treatment) only.
    - Designed and/or constructed as sanitary systems and operating as combined systems.
    - Systems with treatment and/or disposal by pumping and systems with gravity-based discharges (number and main technical and physical characteristics).
  
- ***Types of Treatment in Sanitation Systems***
  - Indicate number and capacity of sewerage systems by type of treatment applied:

- Oxidation ditches
- Stabilization ponds
- Percolation filters
- Activated sludge
- Plants with patented processes
- Others

**b) Analytical Questions/Issues**

- Are there utilization studies of the region's hydrologic resources that are used in the entity's planning and programming processes?
- Is there a balanced supply and demand ratio for hydrologic resources in the region/locality?
- Is there excess capacity or a deficit?
- Are there multi-purpose projects with regard to the utilization of these resources?
- What percentage of the total water resources available in the area corresponding to the company analyzed is for human consumption?
- Does the regional pattern of rainfall have a significant effect on the company's water supply operations?
- What percentage of the total waters captured for the company's physical systems is groundwater?
- Is the number of systems with complete treatment appropriate? Are there policies or reasonable explanations for systems with partial treatment? What percentage of systems deliver untreated water to the community?
- Is there unutilized capacity in the company's physical systems? To what is this attributable? Oversizing, excessive periods of design, low physical coverage?
- If there is a capacity deficit in the systems, is it due to the low capacity of the source? To bottlenecks in the components? Identify them.
- What is the theoretical physical coverage in each locality that the company is in charge of? What is the weighted coverage for the company as a whole?
- What is the coverage in terms of production and demand?
- Are there special systems of water supply for human consumption? What are the main reasons for their existence (policies, technology, social reasons, convenience, sanitary reasons, etc.)?
- What is the ratio of sanitation systems in operation to the number of localities with water service?
- What percentage of the sanitation systems constructed include treatment?

- What is the sanitation systems' coverage with respect to the extent of the water networks (at the level of locality and weighted for the utility company as a whole)?
- What percentage of the systems constructed as sanitary systems function as combined systems? Is this situation accidental, or was it planned by the entities responsible for wastewater management, the municipal authorities, the national authorities?
- What types of wastewater treatment are there, based on the different technologies used? List them in descending order and indicate the trend in the area with regard to the utilization of one technology or type of treatment or another.

#### 6.4.2 Conditions of Service Delivery

##### a) Data and Information Gathering

- Identify the mechanisms and procedures employed in water quality control and the infrastructure for analyzing water (physical, chemical, and bacteriological) for treatment.
- Determine the levels of continuity in the delivery of the water supply service, starting with the analysis of parameters such as the following:
  - Number of localities with service 24 hours a day
  - Number of localities with service from 12 to 24 hours a day.
  - Number of localities with service less than 12 hours a day.
- Indicate the standards and/or parameters that determine the degree of treatment and the quality of wastewater before its final disposal in receptor bodies of water or watercourses.
- Identify the mechanisms and procedures employed in verifying the degree of treatment of wastewater before its final disposal and describe the entities in charge of supervising such parameters, as well as the technical infrastructure required.
- Obtain information on the following operational aspects:
- Procedures, standards, and regulations for studies, designs, and consultancies in general and the level of execution of these tasks (national, regional, or local).
- Procedures, standards, and regulations for constructing works and the level of execution or contracting with third parties (national, regional, or local).
- Programs for the preventive maintenance of installations and equipment, level of execution, and monitoring.

b) Analytical Questions/Issues

- Are the procedures for water quality control adequate?
- With regard to the total number of water supply systems considered, what percentage are systems with discontinuous service (Service from 12 to 24 hours a day, less than 12 hours a day)?
- Analyze the two previous aspects with respect to the quality of the water provided that is discharged into receptor bodies of water or watercourses.
- What are the main bottlenecks that affect the provision of the services, in terms of *quantity, quality, and continuity*?
- Are inputs a constraint in the water treatment process? Do bottlenecks occur at the procurement stage, in the treatment process, in quality control? Are the problems economic, financial, institutional, or technical? What type of mechanism is planned to mitigate these problems?
- During the treatment process, is continuous and adequate disinfection ensured?
- Is there a mechanism for monitoring this process in the utility companies? Is it complemented with further controls in the network?
- What control of groundwater is there?
- Specify the proportion of the population that is supplied through the public water supply and sewerage network. Provide a breakdown of this information for the two services, based on the following criteria:
  - Coverage of the total urban population (population served in centers with more than 10,000 inhabitants).
  - Coverage by size of urban centers
  - Coverage of the total rural population
  - Coverage of the rural population, both concentrated and scattered
- Indicate whether there are areas in which the population without services is also exposed to environmental limitations when attempting to procure appropriate systems (scarcity and pollution of the water resource, soil impermeability, areas prone to flooding, etc.).
- In what condition is the infrastructure for the services? How old is it?
- Estimate the average age of the installations.
- Describe the state of the various components of the system for both services.
- Taking the level of coverage into account, state the current percentage of utilization of the systems, using the capacity defined by the design as a reference.
- Is there unutilized capacity? Is capacity fully utilized? Is a larger population being served than foreseen in the design of the systems?
- What is the quality of the current services? Are there problems connected with pressure? Interruptions? How frequently (daily,



- seasonal)? Are the problems attributable to the operation of the utility? To the poor condition or saturation of the systems? To something else?
- What percentage of the population is supplied from surface water sources and what percentage groundwater? Is this in line with the availability and the quality of the resource? Is there a tendency to utilize one of these sources to supply the population that still has no service?

## **6.5 Finances**

### **6.5.1 *Recurrent and capital cost recovery***

#### **a) Data and Information Gathering**

- What are the current policies and accounting practices regarding cost recovery and the setting of user tariffs?
- Are tariffs set by service providers or imposed by government regulation?
- What is the level and source of subsidization of capital and operation and maintenance costs?
- What proportion of water connections are metered?
- What is the daily minimum salary of the average domestic consumer of water and sanitation services?
- Are tariffs set to recover both recurrent or operating costs and some form of capital cost recovery?
- What are the billing procedures; is it metered or flat rates; are users expected to pay charges in person; with what frequency; are billings sent to individual users; with what frequency?
- Are records of revenue obligations of individuals, organizations, and locations linked to show obligations, receipts, and arrears by the liable individual or group?
- What percentage of charges due are actually collected; what is the average age of charges owed to the utility?
- What are the procedures followed for collecting overdue charges; are there sanctions in the case of late or nonpayment; is there a collection enforcement program?
- Is there a difference between the official and actual length of time between a payment being due and action being taken to collect?
- Describe the tariff structure; does it vary by type of customer; what is the average tariff by type of customer; what is the range from lowest to highest tariff?

#### **b) Analytical Questions/Issues**

- What proportion of the daily minimum salary of the average domestic consumer is expended on water?
- What proportion of capital costs are captured by average domestic commercial and industrial rates? Of operation and maintenance costs?
- What forms do subsidies take, i.e. are they imbedded in general budget transfers from the central government or direct grants?
- Do accounting methods capture the real financial costs of producing water and sewerage services (i.e. are marginal or average costs used)?
- How does loss of revenue from unmetered connections affect water consumption and efficiency of service delivery?
- Are collection procedures adequate to recover overdue charges for services; are enforcement mechanisms adequate to ensure a high percentage of collections?
- What is the collection efficiency (ratio of *charges collected* to *charges due*);
- Are analytical studies performed to relate the cost of providing a service to the cost imposed on the user? If so, what do they show?
- Are analytical studies performed to relate the cost of collecting a fee or charge to the revenue received? If so, what do they show?

### 6.5.2 Operations or current budgeting

#### b) Data and Information Gathering

- Using budget and financial statements for local water and sanitation enterprises for the last 5 to 0 years, determine:
  - What is the primary basis for accounts i.e., cash, accrual, cost, other?
  - Who prepares the annual operating budget? Are budget estimates revised? On what basis?
  - What are the recurrent expenditures?
  - What are the revenue sources for recurrent expenditures?
  - What is the current value of capital assets?
  - What is the level and type of outstanding debt (including principal and interest)?
  - What are the primary methods for estimating future revenues and expenditures?
  - Are there periodic reports on actual expenditures and revenues against the budget?
  - To what extent is unit cost for services information available and utilized?
  - What costs are not controlled by the service provider?

- How long does it take for revenue receipts to be recorded and deposited into accounts to be available for expenditures?
  - What is the dominant orientation for budget decisions i.e., incremental changes to previous budgets, volume of services and unit cost estimates, service delivery goals?
  - What is the main function/orientation of the accounting department i.e., control/limit expenditures, provide management information related to costs, assure the legal basis for expenditures?
- Is there a standard budgeting form and process; is the budget prepared according to this process following an established schedule and the prescribed forms; are the procedures and forms perceived to be workable?
  - How is the budget subdivided? (e.g., is the operating budget subdivided into different organizational subunits, by work activities, by program goals?)
  - Is the budget process best described as a bottom up process in which department staff and managers estimate needs and revenues for the coming year and propose their budgets to the central executive officer or central budget/planning group, or is it a top down process in which the central office informs each operating unit manager what his/her budget will be for the coming year?
  - Is there planning information available and used to prepare estimates (for example, population projections, shifts in geographic concentration, changes in commercial or industrial composition of the local economy, foreign exchange rates that may affect costs, and so forth)?
- b) Analytical Questions/Issues
- How accurate and timely is accounting information support?
  - Do service providers have authority for making operating budget decisions and control over costs commensurate with their responsibility to provide services?
  - Are accounting reports adequate to prevent obligations in excess of budgeted expenditures?
  - Is there a capacity to generate data required to determine the full costs of services?
  - Is accounting seen as limited to financial controls or is it an element in providing management information for decision-making?
  - What seems to be the dominant orientation for budget decisions (for example, incremental deviations in line items from previous budgets, volumes of services to be delivered and unit cost estimates, end product or program accomplishments)?

- What is the proportion of current or operating budget attributable to personnel and benefits costs?

### 6.5.3 *Capital Investment Budgeting*

#### a) **Data and Information Gathering**

- Is there a capital facilities inventory or "fixed assets ledger"? What capital facilities currently exist? Describe in terms of their age, condition, and level of service.
- What is the process for determining need for new constructions of and/or rehabilitation of existing capital facilities?
- What is the long and short term planning horizon? What are the long - term service objectives?
- What are the criteria for selecting new projects?
- What are the financing sources for capital investments?
- Are capital projects appraised for technical, financial and economic viability?

#### b) **Analytical Questions/Issues**

- What is the capital asset value per capita?
- What is the debt/asset ratio?
- What is the estimated future demand/willingness to pay for expanded coverage and levels of service?
- Are financing sources evaluated as to their differing impacts on the budget?
- Are operation and maintenance costs for each capital project identified in such a way as to provide useful inputs into the current budget planning process?
- If there is no reliable list of fixed assets, a warning flag should be raised.
- Is citizen input regarding capital facilities, needs identification and priorities adequate?
- Are capital projects of donor and lending agencies considered independently of each other and of the system as a whole?
- What dominates the selection of projects (e.g., financial and/or economic viability, importance of the water or sanitary need to be met; degree of health or other risk if the project is not built; ability of the utility to finance the project)?

#### 6.5.4 *Private Sector Participation*

##### a) **Data and Information Gathering**

- What are the local policies, regulations, and economic conditions regarding profitable management of water and sanitation services?
- Which aspects of new construction and operation and maintenance are currently contracted to private organizations? Are these organizations domestic or foreign?
- What types of arrangements are currently in use (management or lease contracts, BOT arrangements, investor-owned facilities, etc.)?

##### b) **Analytical Questions/Issues**

- Is there an adequate supply of skilled operators, managers, and workers to encourage private participation or would training programs and incentives need to be developed?
- Do service providers have cost-of-services data?
- What is the potential for joint ventures (local/foreign firms, public/private partnerships, etc.)

### 6.6 **Beneficiaries of the Services**

#### 6.6.1 *Community Participation*

##### a) **Data and Information Gathering**

- Does the company have some formal mechanism to enable users to participate in the different areas of the projects or water supply and sanitary sewerage services? Identify, for example:
  - (i) regulations to protect the user;
  - (ii) specific areas where the community can channel its demands for access to the service or improvements in its quality and continuity.
- How organized is the community in its efforts to procure water supply and sanitation services?
- Does the company have a specific area for promoting projects with community participation? Do other agencies participate? How do they articulate with the company?
- What are the main institutional priorities with respect to needs and resources to help the community procure adequate water and sanitation services?

- What degree of participation have women had in the management of water projects? Have women's groups acted or been organized for this purpose?
- How satisfied are users with the quantity and quality of the services?
- Is it customary for grassroots associations to sprout up spontaneously in the community to resolve its lack of service? What are the roots of these organizations? The local culture, politics, religion, etc.?
- What kinds of staff at the regional and community level have been trained in health education methods, training trainer skills, and skills in facilitating community involvement, including management techniques? Persons who might have been trained could include extension officers, health inspectors, community development workers, or school teachers at the regional level; health promoters or other community health workers at the community level; or village leaders (men and women) and chairpersons of health or other committees as members of the community.
- Have hygiene and health education activities been conducted for beneficiaries and community members to educate them in how to use water supply services most effectively and efficiently? What was the nature of these activities, objectives, content, etc.?
- What health education methods were used? ie. was it generally a mass media approach; or was there involvement of the community through group discussions and face to face contact?
- Have any education or training materials such as visual materials, manuals, etc. been produced to meet the specific educational and cultural backgrounds of the target populations? If so, what kinds?
- Do local schools provide any health education lessons or other activities to teach children the benefits of using safe water and sanitation facilities? Are such activities encouraged by the water supply and sanitation institutions?

b) Analytical questions

- Identify the needs or beneficiaries and members of local communities for water supply and sanitation. What attempts have been made to find out what kind of water supply and sanitation local people want and how they would like it provided?
- What activities have the operating agencies undertaken to assist local communities to organize themselves, to provide leadership and management training, and to become more educated about the proper use and benefits of water and sanitation.

## 7. OUTLINE OF THE SECTOR ASSESSMENT REPORT

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This chapter proposes an outline of the sector assessment report. The report should cover and analyze the following aspects:

### *Outline of the Sector Assessment Report*

#### **Executive Summary**

#### **Introduction**

1. Physical and Socioeconomic Conditions of the Country
2. Performance Characteristics
3. Management Characteristics
4. Institutional Analysis and Legal Framework
5. Plans, Policies, and Programs
6. Community Participation
7. Technical Analysis
8. Sector Financing
9. Critical Aspects
10. Strategies, Policies, and Recommended Action
11. Priority Projects Profiles

#### **Annexes**

### **7.1 Executive Summary**

The executive summary will provide a synthesis of the completed analysis, emphasizing the conclusions obtained and the recommended steps, policies, and strategies. Likewise, a brief description of the profiles of identified priority projects will be included. The executive summary should honor its strategic function of influencing the executive when decision-making.

### **7.2 Introduction**

The introduction will provide a general description of the document, its overall content, the participating institutions, the dates of the study, the conditions under which it was carried out, the reasons for the study, the agencies or entities that promoted it, and the beneficiaries or country counterparts, as well as any limitations or facilitating aspects found.

### **7.3 Physical and Socioeconomic Conditions of the Country**

The country's institutional and political organization and the situation and the trends of the principal national macroeconomic variables should be described. Changes and trends that may affect the sector, such as decentralization, private sector and community participation, etc., should be identified.

A link between the above described and populational aspects should be established: identification of the total population and their distribution by urban, periurban and rural areas; total and disaggregated rates of growth (historical and projected); percentage of the population living in extreme poverty; subsidy policies; and the educational level of the population, disaggregated by grades.

The overall health situation should be described, establishing a relation with the populational and economic aspects already defined. Characteristics and trends of the rates of morbidity and mortality, and incidence of water borne diseases should be specified. In as far as possible, a link between these characteristics and trends and the water supply and sanitation sector should be established.

General aspects of geography, climate, and hydrologic resources should be described. Their total availability and differences in their impact on the sector (both seasonal and spatial), the economy, health, and the environment should be identified.

### **7.4 Performance Characteristics**

The basic performance characteristics of the sector will be analyzed. The analysis includes information on distribution (by type of service) from the standpoint of quantity and quality for the country as a whole. Data from the country's greatest population concentrations will allow for the comparison to the overall situation of the country. Water quality and sanitation problems due to sector performance inadequacies will be analyzed. Restrictions to economic growth due to a lack of sector services and deteriorated water resources will also be analyzed.

The general trends in sector finances, including the sector's degree of self-financing through the revenue or resources generated within (user fees and other charges and revenue), sources of funds not generated by the sector, and scope of the external credit for the financing of sector's capital investments will be described.

The general intra- and intersector management trends, community participation, and health education will be identified.



## **7.5 Management Characteristics**

Basic management characteristics of the sector will be analyzed, including unmetered water, significant excess personnel, personnel rotation, planning, commercial and financial systems of the utility companies, problems stemming from a failure to maintain installations, equipment, and the quality of the services, and the loss in value of the sector's assets. The above management characteristics will be compared to service user satisfaction.

## **7.6 Institutional Analysis and Legal Framework**

Roles, responsibilities, and authority of the sector's principal participating institutions (national or federal agencies) and the role of national, provincial, and local agencies, including regional government units, will be analyzed and specified. The following will also be analyzed: the legal framework that regulates the responsibilities of the sector's different participating institutions; whether there exists a superposition of laws that are in force; whether current legislation is appropriate, competitive, and compatible with political, economic, and social trends; whether there is a need for legal reform or the creation of new norms when there are legislative vacuums; and whether those legal conversions could affect the sector according to the modernizing trends of the State.

The following will be evaluated: operational strengths and weaknesses of these institutions; their ability to fulfill functional responsibilities; the scope of coordination, or lack thereof, between these sector institutions; the scope of integration, or lack thereof, between the many responsible institutions that participate in policy and goal setting for the provision of water supply services; the development and preservation of the water resource; environmental protection and management; and sector financing.

It will also be analyzed and evaluated whether the management and executives of the sector's main institutions have the necessary authority and training to carry out their tasks responsibly from the technical, managerial, administrative, and financial standpoint. Based on a representative sample of utility companies, the general qualifications of the personnel and the suitability of training for the realization of the tasks at hand, as well as improvements in the current systems to attract, hold, train, and maintain appropriate and competent personnel will be evaluated.

The institutional policies and procedures for goal setting, long-term planning, and the development of operational practices and procedures will be critically analyzed.

### **7.7 Plans, Policies, and Programs**

The plans, policies, and programs destined to improve and optimize the efficiency and productivity of the sector, established for the last five years and for the next years will be described. The following will be analyzed: up to what point the goals have been met for water supply and sanitation coverage in urban and rural areas, quality of water supplied, quality of water before it is supplied, continuity of services, etc.; success or failure of the policies in terms of sanitation infrastructure investment, general administrative organization of the sector, decentralization, privatization, private company contracting, costs (self-financing, subsidies), labor aspects, level and success of program made to improve sanitation infrastructure, extension of provided services, special operative programs (preventive maintenance, macro and micro measurement, control of water quality, training, etc.). The causes for the completion or incompleteness and the effectiveness or lack of plans, policies, and programs will be described. In this context, emphasis will be made on the policies or trends of privatization and decentralization; the established mechanisms to fulfill these policies; the ability of the sector to carry out the government decisions or to attend to needs of the service users and the community in general.

### **7.8 Community Participation**

The following will be analyzed: the interactions between the operating entities and the service users and between the community in general and the chief entities of the sector; level and reach of community participation in urban areas and community management in rural areas in terms of identification of priorities and implementation of solutions. The types of service, financing, operation and maintenance, particularly in rural areas, will be described. The level of influence of the community in decision-making on restoration investments, enlargements, or new construction will be described.

Health education and programs that teach the appropriate use of potable water and services and systems of sanitation will be evaluated. The effectiveness of these programs will be evaluated and the causes of success or failure will be identified.

### **7.9 Technical Analysis**

The basic technical characteristics of the sector, including detailed information on the coverage scope of the various population groups (urban, periurban, or rural, as well as any other type of differentiation, if appropriate and/or relevant, such as the capital versus other cities, etc.), types of coverage or services, frequency of service

provision if not continuous, and, if present, regional disparities of services are analyzed and evaluated.

Water resource availability, including water scarcity, both from the geographical and seasonal standpoints, and problems of degradation in water quality caused by human activities are analyzed and evaluated. The overall availability and appropriate use of skills and technical knowledge in the country will be analyzed. Up to what point design and construction of new works meets the levels or standards from an engineering standpoint, or up to what point appropriate technology is a significant factor in the design standards is analyzed. On the basis of a representative sample of utility companies, principal technical skills and operational strengths and weaknesses will be identified. Human resources training, technical successes and failures, and technical and service operations planning will be identified and evaluated.

Characteristics of current technical and operational record keeping systems, especially inventories of the basic service infrastructure and equipment will be analyzed and evaluated. The availability and adaptation of the technical equipment used, including implementation of systems for repair and maintenance will be evaluated.

### **7.10 Sector Financing**

The sector's size or economic and financial magnitude compared to other components of the public sector budget, the contribution of the sector's debt to the total public sector debt, and the percentage of GDP attributable to the sector will be analyzed in detail. Furthermore, the financial implications of sector targets in terms of populational coverage, quantity, and quality of water supply and sanitation services will be analyzed.

This analysis should estimate the level of investments required to achieve coverage goals and other sector objectives in a given planning period (10 to 20 years). It will be analyzed what the above investment would represent for the growth of the public sector budget, whether the percentage share in the budget were to remain constant or whether the percentage share in the budget were to change. Which implications would be due to changes in public sector debt were the goals of coverage and other objectives achieved should also be analyzed and evaluated.

Moreover, a description of the mechanisms of sector financing should be included and their effectiveness and efficiency should be evaluated. This section will include a discussion on the availability, origin (governmental, national, state, local, and private), and application of financial resources in the sector, both in urban and rural areas. It will also be necessary to analyze the ability of the institutions or communities

to appropriate these resources and invest them competently. The processes and mechanisms of resource mobilization should be evaluated and the policies of setting charges, and the user's ability to pay should be described.

On the basis of the analysis of a representative sample of utility companies, the adaptation of systems of financial planning and budgeting and accounting by the companies will be evaluated with respect to their ability to anticipate future needs in terms of: development of long-term financial projections; identification of investment requirements necessary to expand service coverage and quality improvement; and to carry out programs to restore the existing infrastructure with the purpose of maintaining adequate levels of service.

The management and financial administration systems and their adaptation will be evaluated to estimate expenditures and investment needs to operate and maintain services, and to evaluate and control costs.

### **7.11 Critical Aspects**

Aspects that, because they are critical or relevant, could negatively affect the sector development will be identified and synthesized. The sector analysis should permit the identification of restrictions or key blocks that interfere with the possibility of providing efficient and effective services that ensure the overall satisfaction of the user.

The summary should be organized as follows:

- Critical Technical Aspects
- Critical Institutional Aspects
  - Problems between institutions (intra- and intersectoral) or of institutional structure.
  - Internal problems of specific institutions
- Critical Financial Aspects
- Critical Social Aspects

### **7.12 Strategies, Policies, and Recommended Action**

The strategies and recommendations should correspond to the restrictions and blocks that arise in the sector and to those identified in the previous section. All team members should participate in the preparation of recommendations as each member contributes a perspective according to his/her knowledge and experiences.

The primary country sponsor will also participate in the discussions of policy identification and recommended action with the goal of improving the efficiency and productivity of the sector. As mentioned in Chapter 2, the assessment team and the country sponsors should agree with the recommendations incorporated into the report. The team should make available the results that the participating agencies expect to obtain as a consequence of the sector assessment.

### **7.13 Priority Projects Profiles**

Included will be a section that describes the profiles of the projects that the work team and the primary country sponsor consider a priority according to policies, strategies, and recommended action. The projects will not only be projects of infrastructure, but also projects of institutional development, sector restructuring, human resources development, projects that make current policies viable, etc.

The profile will include a brief description of the potential project, emphasizing the specific development problem that will broach it, its goal, its objective(s), the strategy, a descriptive summary, the geographical area it will target, its beneficiary group, and the expected situation at the time the project is completed.