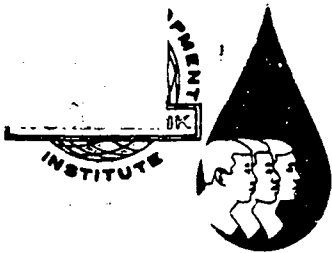


2 0 2 . 6  
3 5 I N



# structor Guide | Institutional Analysis

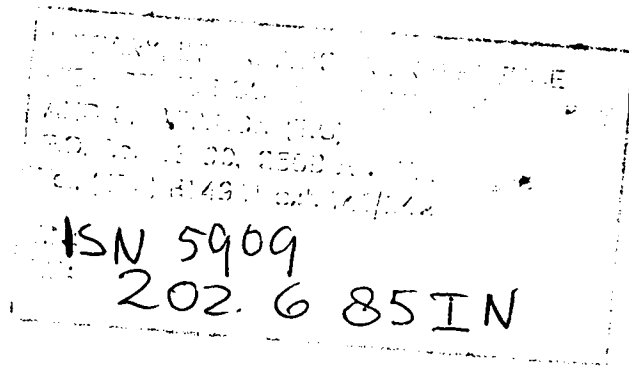
INTERNATIONAL DEVELOPMENT INSTITUTE  
WASHINGTON, D.C.

Copyright © 1985 by the International Bank for Reconstruction and Development. All rights reserved.

202.6-85 IN-5909

INSTITUTIONAL ANALYSIS

Instructor Guide



For additional information please write to:  
The Economic Development Institute of  
The World Bank  
Studies Unit  
1818 "H" Street, N.W.  
Washington, D.C. 20433

## GENERAL INFORMATION FOR THE INSTRUCTOR

### Module Use and Content

The "Institutional Analysis" module may be used as an independent instructional unit, or in conjunction with the other modules in EDI's two-week seminar on "Water Supply and Sanitation."

The module includes the following presentation materials:

- ° An Instructor Guide
- ° A Participant Manual
- ° A slide/tape program

### Time Required

The module is divided into two parts and requires approximately four hours to complete.

### Participant Manual and Instructor Guide

The Participant Manual contains all the information and instructions required to complete the module activities.

The Instructor Guide is organized so that Instructor Notes appear on the left-hand pages, opposite the Participant Manual pages printed on the right. (The Participant Manual pages in the Instructor Guide are identical to those in the actual Participant Manual.) The Instructor Notes include suggested time requirements, steps for conducting the module activities, discussion guidelines and suggestions on presentation. The time requirements are approximate, but following the suggested times will ensure that the module does not require more than four hours to complete.

The Instructor Guide and Participant Manual both contain reference copies of the visuals and the narrative text from the slide/tape program.

### Slide/Tape Program

Most of the instructional content for this module is presented in the slide/tape program, "Institutional Analysis." The slide/tape program includes 80 35mm slides which are synchronized with the narration on an accompanying audiocassette.

The slides are inserted in a carousel tray that most projectors will accommodate. The narration for both Parts I and II is on the same audiocassette. The audiocassette is pulsed with audible tones. These tones are cues that the slide projector should be advanced immediately to the next slide.

## Equipment and Materials

Presentation of the module by an instructor to a group of participants requires the equipment and materials listed below:

### For the instructor:

- ° One copy of the Instructor Guide
- ° A flipchart easel, pad and markers, or chalkboard and chalk
- ° One copy of the slide/tape program (slides and audio-cassette)
- ° One slide projector and white projection screen
- ° One audiocassette player

### For the participants:

- ° A copy of the Participant Manual for each participant
- ° Paper and pencils for each participant

## Instructor Preparation

The "Institutional Analysis" module is not a self-instructional program. It requires an instructor who is knowledgeable about the techniques and application of institutional analysis.

Instructor preparation involves a review of the Instructor Guide to become familiar with the topics, the sequence of activities, and the content of the presentations. It is also useful to preview the slide/tape program in order to become familiar with the content and the synchronization of the slides with the audiocassette. If possible, the program should be previewed on the equipment that will be used during the actual presentation.

## Equipment and Facilities Preparation

Preparation of the audiocassette for play requires rewinding it completely to the beginning. When the cassette is loaded into the player, Side 1 should show at the top. Preparation of the carousel tray of slides for viewing requires four steps. First, it is important to ensure that all of the slides are inserted into the tray in sequential order, with the printed numbers showing at the top right corner, along the outer edge of the carousel tray. Second, the black plastic lock ring must be turned in the direction of the

arrow marked "Lock" until the ring is secured on the tray. Third, the tray is placed in operating position by lowering it onto the projector and turning it clockwise until the tray drops down securely. Fourth, the projector must be advanced so the first slide, the title slide, appears on the screen.

Operation of the slide projector and audiocassette player should be checked prior to the presentation. At that time, it is advisable to arrange for power cords required to operate the projector and the audiocassette player, extension cords and extra projector bulbs. It is also useful to determine who should be contacted if assistance is needed from an engineer or audiovisual specialist.

It is important to check that each participant will be able to see and hear the slide/tape program easily. To view the slides clearly, overhead and back lighting should be kept to a minimum.

## INSTRUCTOR NOTES

### Overview

The "Institutional Analysis" module is an overview of the functions in a typical water supply enterprise and the managerial tasks that are required to ensure the enterprise's effectiveness.

The module is divided into two parts. Both parts include one segment of the slide/tape program and at least one activity to reinforce important concepts.

Most of the activities are conducted best in small groups of five to seven participants. If the participants are not divided into small groups, you may want to do so before proceeding with the module.

### Introduction

Time required: 15 minutes

1. Refer the participants to the Introduction on page 1 in their manuals and review the topics that will be discussed during the module.
2. Ask the participants to describe their past experience with institutional analysis. Then ask them to describe their objectives in learning more about institutional analysis and how they intend to use the information. Knowing about their experience and their objectives will help you relate the content of the module to their needs.
3. Tell the participants that they will not have to take extensive notes during the slide/tape program. Their manuals include copies of the visuals and the narration from the slide/tape program as well as summaries of all major concepts.
4. Introduce Part I of the slide tape program. Explain that Part I is an overview of the module. Part I of the slide/tape program is approximately five minutes in length.
5. Turn on the equipment and make sure the title slide is projected before you turn on the audiocassette player. When you turn on the audiocassette player, the music at the start of the program will begin. When you hear the first signal tone, advance the slide projector immediately to the next slide. Continue advancing the slides at the sound of the tone until the narrator announces the end of Part I and you see a corresponding message projected on the screen.

## Introduction

The "Institutional Analysis" module is designed to provide project analysts and managers a general orientation to the concepts of institutional analysis.

The module is divided into two parts and includes a review of the topics listed below.

PART I:            GOALS AND OBJECTIVES

Performance Indicators

PART II:            ORGANIZATIONAL FUNCTIONS

Operations  
Marketing  
Administrative Support  
Personnel

MANAGERIAL TASKS

Planning  
Organizing  
Staffing  
Directing  
Controlling



## INSTRUCTOR NOTES

### Part I

#### Goals and Objectives

Time required: 25 minutes

1. After the participants have viewed the first part of the slide/tape program, ask them if they have any questions.
2. Refer to the part of the slide/tape program that raised the issues of how well a water supply and sanitation enterprise was meeting its goals to provide the entire community with complete services and what indicators reflect performance. Explain that the following discussions will focus the participants on their institutions' goals and objectives and the performance indicators that are used to measure performance.
3. Review the information on page 2, then ask the participants to discuss the questions at the bottom of the page with the members of their group.
4. After 20 minutes, stop the participants and ask a representative of each group to summarize the group's discussions.

## PART I

### Goals and Objectives

Goals reflect the mission of the institution. Goals describe desired end results, such as providing all residents of an area with a safe water supply, or reducing the disease in a certain community through an improved water supply, sanitation and health education.

Objectives describe the actions that will be taken to achieve goals. Objectives are specific and measurable statements, such as reducing operating expenses by 10% by the end of the year, or increasing connections to the water supply by 25% within two years.

Goals and objectives may be set at three different levels:

- ° National level goals or objectives of ministries and departments are often based upon macroeconomic as well as sector goals and objectives.
- ° Regional level goals or objectives for state and area agencies typically include project planning, design and construction.
- ° Local level goals or objectives for community based enterprises and agencies reflect targets for service, operations and maintenance.

### Discussion Point

1. What are your institution's goals and objectives?  
How do those goals and objectives relate to goals and objectives set by institutions at other levels?
2. How are your institution's goals and objectives documented and communicated to those within the institution and outside of it?
3. To what extent are goals and objectives consistently attained? What obstacles or problems have been encountered? What contributed to the successes in achieving goals and objectives?
4. Describe any projects that became part of your institution and the stage in the project cycle when the project was taken over. To what extent have the projects produced the intended benefits?

## INSTRUCTOR NOTES

### Performance Indicators (continued)

Time required: 25 minutes

1. Ask the participants to review the partial list of items on page 3 and to add to the list. Record additional indicators on the flipchart or board.
2. Lead a discussion of the questions at the bottom of the page.
3. Introduce Part II of the slide/tape program as a review of the major functions in a water supply and sanitation enterprise and management tasks. Explain that Part II of slide/tape program will prepare the participants to analyze the functions in a water supply and sanitation enterprise and to discuss how to make them more effective.
4. Show Part II of the slide/tape program, which is approximately 18 minutes in length.



INSTRUCTOR NOTES

Part II

Organizational Functions

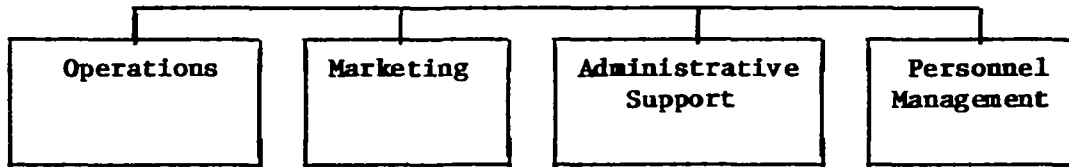
Time required: 30 minutes

1. After the participants have viewed the second part of the slide/tape program, ask them if they have any questions.
2. Ask the participants to read page 4 and to discuss the questions at the bottom of the page with the other members of their group.
3. After 20 minutes, stop the participants. Ask a representative of one group to summarize the group's discussion and to describe any differences in the way the institutions with which they work are structured and organized.
4. When you are ready to proceed, tell the participants that the next activities will prepare them to analyze the four functions more closely.

## PART II

### Organizational Functions

Many water supply and sanitation enterprises are organized around the four functions shown and described below.



Operations - Responsible for the operations and maintenance of current works and new projects.

Marketing - Responsible for the marketing of services, consumer records, metering, billing and collection.

Administrative Support - Responsible for the management of financial resources, accounting, fixed assets and inventories.

Personnel Management - Responsible for selection, recruitment, training and evaluation of the personnel who staff the institution.

#### Discussion Point

1. How are the functions in the institution in which you work organized? Are they similar to or different from the functions shown above?
2. Does the way the functions are organized support the achievement of the institution's goals and objectives? What changes could improve the way the institution's functions are organized?
3. Are the institution's priorities reflected in the way funds, staff and resources are allocated among the functions? Which functions require additional resources or support?

INSTRUCTOR NOTES

**Review of the Operations Function**

Time required: 20 minutes

1. Ask the participants to review the information on page 5. Then ask them to add to the lists of activities, funding, information, causes of problems, and solutions.

## Review of the Operations Function

### Activities

The Operations function in a water supply enterprise carries out the following activities:

- Production of sufficient quantities of safe water
- Distribution to consumers
- Metering of production and consumption
- Corrective and preventive maintenance of equipment and facilities

### Funding

- Generates most of the enterprise's funds by distributing the water that brings revenue.

### Information

- Main source of information on the enterprise's performance so that managers can monitor and improve the system. The most important data result from metering, including data on the level of unaccounted water, which is the result when metered consumption is subtracted from metered production.

### Problems

Causes of unaccounted water and possible solutions include the following:

<u>Causes</u>	<u>Solutions</u>
Illegal connections to the system	Connection census
Unmetered connections	Meter installation
Leaks in the distribution system	Leak detection program
Faulty meters	Meter calibration



INSTRUCTOR NOTES

Review of the Marketing Function

Time required: 20 minutes

1. Ask the participants to review the information on page 6. Then ask them to add to the lists of activities, funding, information, causes of problems, and solutions.

## Review of the Marketing Function

### Activities

The Marketing function in a water supply and sanitation enterprise typically carries out the activities listed below.

- Setting prices
- Maintenance of records on consumer groups
- Invoicing of consumers
- Promotion of services
- Analysis of metering data

### Funding

- Bills consumers for connection fees and water consumption

### Information

- Information on the unconnected population still to be served
- Tariff levels that will enable the enterprise to recover investment and operating costs and still be affordable to consumers
- Accurate socioeconomic data on consumers
- Breakdown of water sales and revenues by groups of consumers

### Problems

Causes of marketing ineffectiveness and potential solutions include the following:

<u>Causes</u>	<u>Solutions</u>
Low percentage of connected population and relatively high water vendor sales	Distribution investments plus connection campaign
Unaffordable tariffs	Customer-friendly connection fees and financing

INSTRUCTOR NOTES

**Review of the Administrative Support Function**      Time required: 20 minutes

1. Ask the participants to review the information on page 7. Then ask them to add to the lists of activities, funding, information, causes of problems, and solutions.

## Review of the Administrative Support Function

### Activities

The Administrative Support function in a water supply and sanitation enterprise typically carries out the activities listed below.

- Processing of meter readings
- Sending bills to consumers
- Payment collection
- Financial reporting and accounting
- Maintenance and management of fixed assets

### Funding

- Influences the enterprise's funding by the timeliness of the billings and collection of payments
- Financial policies including rates, use of debt, working capital management, etc. that affect the financial performance of the enterprise

### Information

- Accurate meter readings
- Financial statements
- Inventory reports
- Performance analysis, such as aging analysis of accounts receivable

### Problems

Causes of administrative inefficiency and possible solutions include the following:

<u>Causes</u>	<u>Solutions</u>
Inaccurate meter readings	Monitor meter readings
Infrequent billing of consumers	Monthly billing
Lax credit policies and high percentage of overdue bills	Firm credit policies and sanctions on overdue bills
Liquidity problems	Timely and up-to-date financial data and forecasts
	Improved working capital management
Cost overruns	Budgeting and cost control
Equipment failure	Regular preventive maintenance

INSTRUCTOR NOTES

**Review of the Personnel Management Function**

Time required: 20 minutes

1. Ask the participants to review the information on page 8. Then ask them to add to the lists of activities, funding, information, causes of problems, and solutions.

## Review of the Personnel Management Function

### Activities

The Personnel Management function in a water supply and sanitation enterprise typically carries out the activities listed below.

- Recruitment and selection of employees
- Training and career development
- Setting salaries and benefits
- Establishing personnel management policies

### Funding

- Influences the cost-effectiveness of the enterprise, depending on the employees' productivity and compensation.
- Compensation should be competitive with other sectors in order to attract high quality employees but at a level that keeps operating costs realistic.

### Information

- Turnover of employees each year
- Number of connections served per employee  
(In well-managed enterprises, this ratio is 200 connections served per employee.)
- Number of served population per employee  
(In well-managed enterprises, this ratio is 1,000 people served per employee.)

### Problems

Causes of personnel problems and possible solutions include the following:

<u>Causes</u>	<u>Solutions</u>
Poor employee performance and low productivity	Competitive selection to attract quality employees Evaluation of performance Training Motivation through special programs
High turnover	Competitive salaries and promotion opportunities
Low productivity	Performance-based remuneration

## INSTRUCTOR NOTES

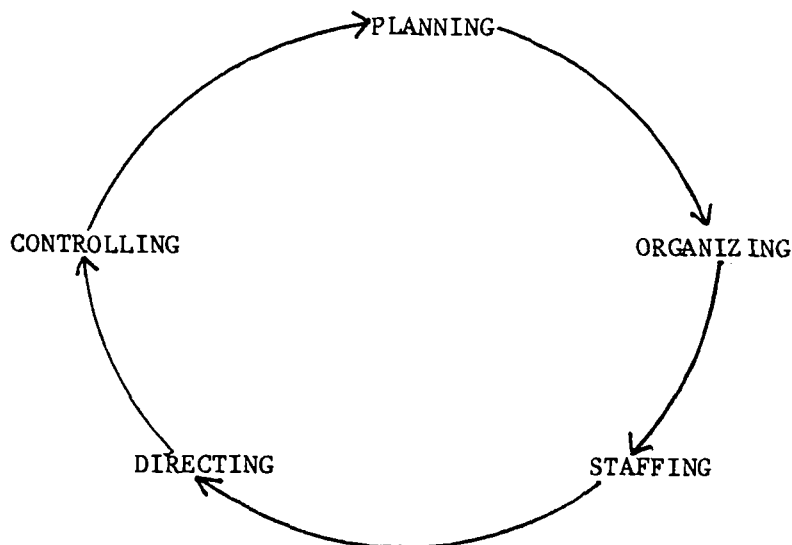
### Review of Managerial Tasks

Time required: 25 minutes

1. Make a transition from a discussion of organizations functions to the managerial tasks that were summarized in Part II of the slide/tape program.
2. Ask the participants to review the list of managerial tasks, definitions and activities on page 9.

## Review of Managerial Tasks

The major managerial tasks that help to ensure each function in an institution performs effectively are planning, organizing, staffing, directing and controlling. The tasks represent a continuous cycle, as shown below.



The chart below includes a definition of each major task and the types of activities that are required.

<u>TASKS:</u>	<u>PLANNING</u>	<u>ORGANIZING</u>	<u>STAFFING</u>	<u>DIRECTING</u>	<u>CONTROLLING</u>
DEFINITION:	Determine a course of action	Arrange work for effective accomplishment of objectives	Choose competent people for positions	Bring about action toward meeting objectives	Ensure progress toward objectives according to plan
ACTIVITIES:	<ul style="list-style-type: none"> <li>◦ Forecast</li> <li>◦ Set objectives</li> <li>◦ Develop strategies</li> <li>◦ Program and budget</li> <li>◦ Set policies and procedures</li> </ul>	<ul style="list-style-type: none"> <li>◦ Establish institutional structure</li> <li>◦ Delineate relationships</li> <li>◦ Create position descriptions</li> <li>◦ Establish position qualifications</li> </ul>	<ul style="list-style-type: none"> <li>◦ Select</li> <li>◦ Orient</li> <li>◦ Train</li> <li>◦ Develop</li> </ul>	<ul style="list-style-type: none"> <li>◦ Delegate</li> <li>◦ Motivate</li> <li>◦ Coordinate</li> <li>◦ Manage differences</li> <li>◦ Manage change</li> </ul>	<ul style="list-style-type: none"> <li>◦ Establish reporting systems</li> <li>◦ Develop performance standards</li> <li>◦ Measure results</li> <li>◦ Take corrective action</li> <li>◦ Reward</li> </ul>



INSTRUCTOR NOTES

Review of Managerial Tasks  
(continued)

3. Lead a discussion of the questions on page 10. Summarize major points on the flipchart or board.

**Review of Managerial Tasks**  
(continued)

**Discussion Point**

1. How are managerial tasks assigned in your institution?  
Is each manager responsible for all tasks? Is the responsibility for any tasks limited to particular levels?
  
2. Which tasks are given priority? Is more time devoted to certain tasks?  
Does more attention or time need to be devoted to any of the tasks?
  
3. Which tasks represent the managers' strengths?
  
4. In which tasks do the managers need development or improvement?

INSTRUCTOR NOTES

Action Research

Time required: 10 minutes

1. Review the information on the action research model with the participants.
2. Ask the participants to describe any other models or techniques they have used to analyze institutional performance problems and solutions.

## Action Research

Action research is one name for a form of systematic identification and solution of problems in institutions.

The action research model comprises the four steps that are defined below.

### **ACTION RESEARCH MODEL**

- |                    |  |
|--------------------|--|
| 1. DATA COLLECTION | Gathering facts and opinions from people in the institution  |
| 2. DIAGNOSIS       | Identifying the gaps between what people say "is" and prioritizing what "needs to be"                              |
| 3. ACTION          | Planning and carrying out the steps that will eliminate the gaps that people agreed were most important to resolve |
| 4. EVALUATION      | Assessing results and rediagnosing where the gap is now and what the next priorities should be                     |

Although the steps are listed in sequence, action research is not quite so cut and dry. Going back and forth between the steps is usually necessary. Nevertheless, by the end of action research, all four steps should have been completed.

You will have a chance to apply the action research model to the institution described in the case study on the next pages. Specifically, you and the members of your group will simulate the steps of action research by reading the case study (data collection), identifying the institution's priorities for change and improvement (diagnosis), deciding how to solve the problems (action), and determining how to assess results (evaluation).

## INSTRUCTOR NOTES

### Case Study

Time required: 20 minutes

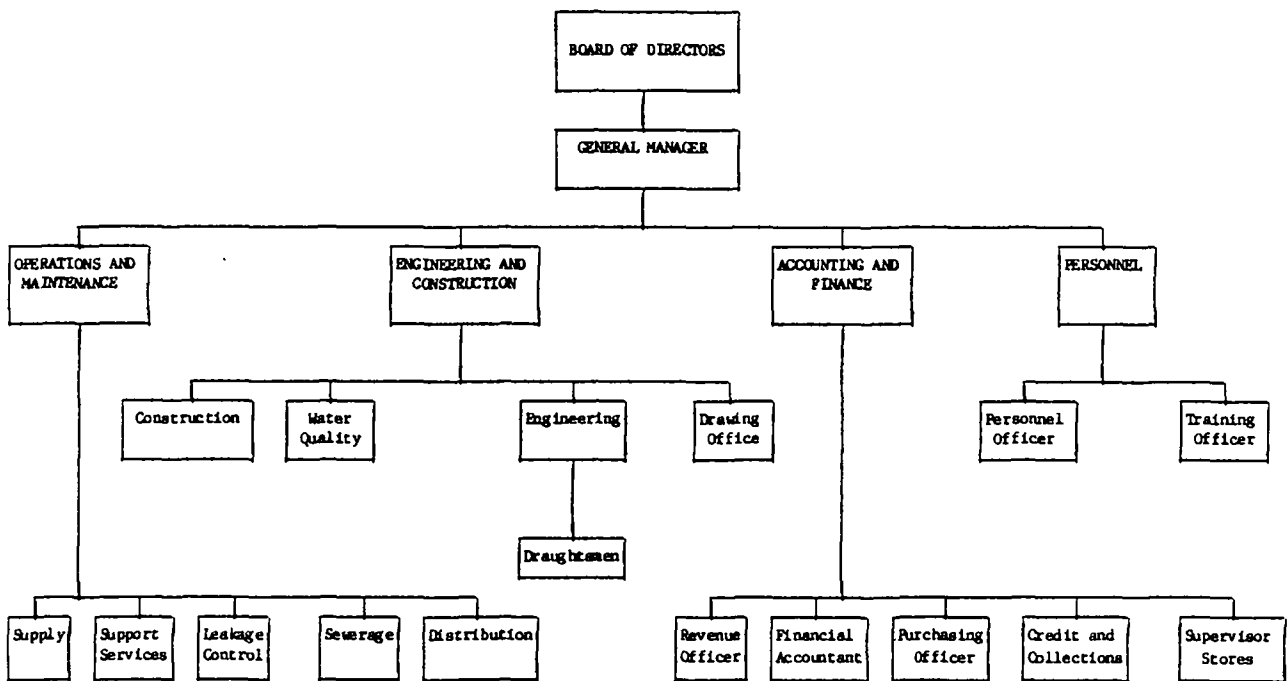
1. Ask the participants to read the case study on pages 12 - 20.
2. Give the participants any additional information and assumptions that you believe will help them analyze the case study.
3. After the participants have the information they need, ask them to turn to page 21.

## Case Study

### 1. Data Collection

#### Institutional Overview

The Water and Sewerage Company of Zodiac Island has 324 employees, organized as shown in the chart below.



INSTRUCTOR NOTES

**Case Study**  
(continued)

## Case Study

### 1. Data Collection

(continued)

#### Performance

The table below reports several indicators of the company's performance during the previous year.

Water Supply and Sewerage Company  
Zodiac Island  
Previous Year .  
( '000)

---

Total population	156.0
Average number of persons per water connection	4.5
Average number of persons per sewerage connection	4.5
Connections, water, new	0.8
Connections, water year end	21.7
Connections, water, average	21.1
Connections, sewerage, new	0.0
Connections, sewerage, year end	3.0
Connections, sewerage, average	3.0
Volume of water consumed per connection, per month	4.9
Volume of water produced	2,302.0
Volume of water billed, retail	1,245.0
Unaccounted water (%)	45.9
Average tariff, water, retail	11.0
Average tariff, sewerage	0.0
Unit fee per new connection, average	0.2
Reconnection fee, average water connection	0.3

---

The company has maintained a high level of water supply coverage to 90% of the population. Almost 25% of the total connections, however, have been inactive or are already disconnected because of increasing reliance upon wells. Last year, only 40% of the disconnected were reconnected. Currently, 10% of the population has sewerage service.

Average tariff levels of U.S. \$11 per month were required to cover high operating costs, capital investments and debt service. This tariff level is among the highest in the region. And, unless, unaccounted water (45.9%) is reduced, the tariff level may have to be increased.



INSTRUCTOR NOTES

Case Study  
(continued)

## Case Study

### 1. Data Collection (continued)

In general, the company's overall performance has declined over the past three years. Next year, the company will take over the operations and maintenance of several new water and sewerage projects to expand service on the island. In light of declining performance and the planned expansion of services, the Board of Directors has decided that the company's financial and service performance must improve before the new projects go into operation.

You have been called in as a consultant to determine what steps the company should take to improve its performance. After extensive interviews and a review of available information, you have discovered the following facts and opinions about the company's management and the operations, marketing, administrative services, and personnel management functions.

#### Management

Top management includes the Chairman of the Board of Directors, who is the Minister of Works and Utilities, and the Deputy Chairman, who is a permanent secretary to the Minister and representative of the Ministry of Finance. The three other members of the Board of Directors are appointed by the Minister of Works and Utilities. The General Manager reports to the Board and has overall responsibility for the company.

Middle management comprises the department heads of Operations and Maintenance, Engineering and Construction, Accounting and Finance and Personnel.

First-line management supervises 19 units. Technical personnel in the company number 218, including superintendents and field supervisors.

Of the 324 employees, 5.6% are professional and 8.6% are in management. 42% of those in management positions are professional and 9.3% of the managers are expatriates. Management attrition in the past three years was 7%, 5%, and 15% respectively.

#### Planning

Short-term planning is carried out primarily through the annual budgeting process. Each department manager is assigned operating and capital budgets by top management. The objectives assigned to managers are based on financial and budgetary goals, not on performance standards.

Up to the present time, strategic and long-range plans have not been prepared. Most planning decisions are made by the General Manager with the approval of the Board.

INSTRUCTOR NOTES

Case Study  
(continued)

## Case Study

### 1. Data Collection (continued)

In addition to budget-based planning, the projects to expand the water and sewerage services on the island have also required planning. Last year, the Board of Directors brought in consulting assistance for physical and long-term investment planning for the projects because in-house capability is limited.

An area that requires more planning is expanded sewerage service. Last year, several department managers began to prepare a sewerage plan, but it has not yet been completed.

Some financial forecasts are prepared for budgeting purposes. More extensive and long-term forecasts have not been prepared since 1983 when a tariff study was completed.

#### Organizing

The Board of Directors devised the company's present organizational structure and implemented it in February of last year. The reorganization included the creation of new positions in Training and Hydrology. Those positions are still vacant, but all other changes were implemented immediately. At the time of the reorganization, the Board created new policies and procedures. These will be written up into manuals and distributed to the employees by the Personnel Manager, who wants to complete the manuals before the end of the year.

#### Staffing

Generally, the managers can attract the employees they need because the company pays salaries that are competitive with other ministries. The recruitment and selection of employees is considered satisfactory. Currently, the company is searching for expatriates, mainly in Engineering, because of the limited national expertise. New employees are briefed and trained by their immediate supervisors.

#### Directing

Authority is centralized through the reporting relationships and delegation of the authority is limited. Most managers direct by "putting out fires" on a daily basis and find that their priorities are continually shifting. Most managers personally supervise the performance of their employees using a straightforward directive style. Performance is managed "top-down" with little input from employees on methods and procedures.

INSTRUCTOR NOTES

Case Study  
(continued)

## Case Study

### 1. Data Collection

(continued)

#### Controlling

The Executive Committee, including the department managers and the General Manager, meets every two weeks to review budget performance and to address new priorities. Meetings at lower levels between departments are rare. Communication among the employees in different departments is done through their department managers. The lack of coordination at lower levels has created problems. For example, the responsibilities for meters, which are shared by the Revenue Office in Accounting and Finance and the Meter Shop in Administrative Support Services are ill-defined and have created problems.

Performance standards are set by the managers on an individual basis. There are no written performance standards. Managers control performance on an "as needed" basis, addressing performance problems as they occur.

More specific information on the Operations, Marketing, Administrative Support and Personnel Management functions includes the following observations.

#### Operations

##### Systems Operations

In general, day-to-day operations are hampered by the poor condition of many distribution system components and by a lack of information on operations.

The poor physical condition of the distribution system, valves, master meters and house connections has resulted in intermittent service in some areas of the island's major city and low pressure throughout the system.

Last year, a goal to reduce unaccounted water from 46% to 38% was not met but leak detection and control improved. Good records are being kept on leakage repair work. These records are updated manually.

Inefficient meters have not yet been rehabilitated or replaced and little maintenance and calibration is performed on master meters. One crew performs pitometer testing, but no surveys have been done on the pipe condition and master meter accuracy.

Operations data and mapping of the system is limited. For example, there is no data base inventory for lines, valves, equipment or facilities. All of the available information is on the water supply system. No data are kept on the pumping operations or on sewage quality.

INSTRUCTOR NOTES

Case Study  
(continued)

## Case Study

### 1. Data Collection (continued)

Another goal of this function is to improve water quality. Recently, 60% to 70% of water samples showed 500 to 900 parts per million (ppm) of chlorides, well exceeding the acceptable level of + 400 ppm. Less than 25% of the samples have a satisfactory factory chlorine residual. Watershed surveillance is erratic.

#### Project and Works Management

The company uses in-house resources solely for small works. Outside consultants are used to design, oversee and manage larger projects and works because of the limited in-house capability. The company's managers would like to increase the in-house capability to manage larger projects and works.

#### Metering

The metering policy is 100% coverage. Meters are read quarterly, with manual verification of readings. Monthly readings are taken for large consumers (265 companies). Of the 22,000 meters in operation, approximately 30% are defective or were installed incorrectly.

Preventive maintenance is performed on meters that are 1 1/4" in diameter and larger. Information on the age and accuracy of installed meters is currently incomplete. The Meter Shop has a backlog of work because of limited personnel and limited facilities.

#### Marketing

The Marketing function's chief problem is the lack of reliable records which makes it difficult to define the status of existing connections and to determine how the company can improve its service coverage.

#### Connections

The last time that the consumer records were completely updated was eight years ago. The different sources of information on consumers are inconsistent. The best estimate shows 25,861 recorded connections, 3,714 disconnected users, and 2,754 inactive connections. Data on connections are inconsistent with consumer records and the master billing files.

Currently, water and sewerage records are kept separately and updated manually. The files are structured on a seven digit code-reading routes and sequential numbers. No information is available on the physical identification of connections and buildings. Only those registered with the company are kept in the records. It is estimated that 86% of the total number of buildings and apartments on the island are in the company's records.



INSTRUCTOR NOTES

Case Study  
(continued)

## Case Study

### I. Data Collection (continued)

#### Tariffs

The tariff structure includes fixed charges based on meter diameter. Excess consumption is charged in blocks. Sewerage charges are not related to water consumption. The average tariff, \$U.S. 11 per month, is among the highest in the region. 2.8% of the connections account for 59% of the consumption and 63% of the revenue. 70% of the connections are consuming under 12 cubic meters of water per month. The number of illegal connections is not known.

#### Potential Consumers

Currently, there are 6,500 (29%) inactive connections and no policy on how to handle them. Out of 6,500 inactive accounts, 2,750 are billed for minimum charges. Only 40% of disconnected accounts were reconnected during the past year.

Consumer complaints are increasing, largely on service interruptions and poor water pressure. Complaints are handled by a small staff with limited technical resources to investigate the causes of problems. There are no promotional or educational programs in effect at the present time to identify and attract new and potential consumers.

#### Administrative Support

##### Billing

Customers are billed separately for water and for sewerage. The bills are issued every three months and due one month later. Billing and collection records are kept on a computer linked to the computer system at the Ministry of Finance. Accounts receivable are equivalent to 132 days of billings.

##### Accounting and Financial Management

Accounting practices and financial management are considered good and follow acceptable standards.

The General Ledger is kept manually. Financial reports are issued 35 days after the period ends. A trial balance is done monthly and the accounts ledger is updated quarterly.

Cost accounting is monitored by cost center codes. The cost centers are clearly defined, but up to now, no cost analysis has been undertaken. Some ad hoc studies were done last year on particular cost centers with problems.

INSTRUCTOR NOTES

Case Study  
(continued)

## Case Study

### 1. Data Collection (continued)

Cash flow is managed on a monthly basis. There are two cashiers for customer payments. No bank collection is available. The company has overdraft privileges at the bank. Invoice payments to local suppliers are made after 30 days. Imports, however, are paid immediately.

#### Inventory and Fixed Assets Control

The inventory is kept within specific maximum and minimum levels. Forecasts on the inventory requirements are limited. The inventory is priced on average values and is partially kept on the computer.

No budget purchase program is in effect for the purchase of inventory. Most purchases are made on an individual basis, with little planning to take advantage of volume discounts.

Limited storage space has created problems, especially for the handling and storage of pipes. A new warehouse is planned for next year.

The materials catalog includes 1000 coded items with a minimal description of specifications and without guidance on selection criteria. As a result, purchases are not uniform and sometimes do not meet all specifications.

Quality control includes visual inspection against the written specification. Sampling tests are limited and standards or sampling sizes have not been established.

Fixed asset control is limited. Legal documents on properties are not available and assets have not been revalued. Installations and equipment are insured.

#### Computerization

The company plans to convert its manually-kept records to a computerized system. Top management has met several times to plan the conversion, but has not yet decided whether to use a service bureau linked with Ministry of Finance's computer where some records are already kept. The alternative is to establish a new and independent in-house system. The managers also need to decide how to sequence the computerization of various functions with the minimum of disruption to the employees and the consumers.

#### Personnel Management Function

Personnel management policies are being reviewed and a staff survey is in progress.

#### Recruitment and Selection

Recruitment and selection is considered satisfactory. A search for expatriates in Engineering is underway, because of the few numbers of qualified national staff.

INSTRUCTOR NOTES

**Case Study**  
(continued)

## Case Study

### 1. Data Collection (continued)

#### Personnel Costs

Management salaries are structured into a schedule with 8 grades. Salaries range from \$15,000 to \$31,500. Within-grade increases are available. Non-management employees negotiate salary schedules. Union scale ranges from \$6,800 to \$14,200 in 7 grades. The salary scale is close to the average in other government agencies.

In spite of high salaries for clerical and technical personnel, productivity is considered low, at 13 employees per 1,000 connections. Salary expenses have increased because of the new merit increase policy and greater employee benefits.

Sick leave and unjustified absences have increased departmental averages to 2% absenteeism. Absenteeism in individual work units ranges from 1-8%.

Overtime for peak periods has contributed to higher personnel costs, particularly when absenteeism is high and a few employees must work significantly longer hours.

The staff benefits include life and medical insurance and 100% tuition refund for job-specific training. A pension system is open to staff members with five or more years with the company.

#### Performance Management

Performance appraisals are conducted annually. The appraisals rely largely upon the subjective judgments of employees' managers since no written performance standards or objectives are used to measure performance. Within-grade and merit increases are awarded at performance appraisal time.

#### Training and Development

Training and development will be the responsibility of the new Training Director, whose position is still vacant. A training center is currently under construction. The Training Officer will be responsible for identifying training needs and scheduling the training.

Most of the training is technical in nature. Instructional materials and technical aids, however, are limited. Most training, therefore, is done on the job, by the employee's manager.

Managers currently receive no formal training in supervisory skills.

Career paths in the company are informally communicated. Employees typically are limited to training that is applicable to their current positions, but they receive no development to qualify them for advancement.

## INSTRUCTOR NOTES

### Diagnosis

Time required: 30 minutes

1. Review the instructions on page 21 with the participants. Tell the participants to discuss the company with the other members of their group for 20 minutes and to complete a list of major gaps, in order of their priority.

### Action

1. After 20 minutes, call time and tell the participants that they should begin working on the action steps, if they have not already done so.
2. After each group's list of action steps is complete, ask a representative of each group to list the steps on the board and flipchart. Lead a discussion of the steps so that the participants compare alternative action steps and decide which would be most important to take.

## Case Study

### 2. Diagnosis

Work with the members of your group to analyze the institution and to identify the major gaps between "what is" and "what needs to be." After your discussion, agree upon a list of the gaps that you and the members of your group believe are most important to address. List them in the order of their priority in the space below.

### 3. Action

After you have prioritized the gaps, identify the action steps that you would recommend to resolve each gap. List those action steps in the space below.

### 4. Evaluation

Then describe how you would go about monitoring and evaluating the results that were achieved?



## INSTRUCTOR NOTES

### Summary

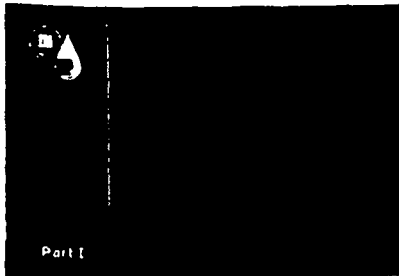
1. Conclude the case study and action research activities by inviting the participants to discuss how they can apply the techniques in their own institutions.
2. Summarize and conclude the module.

**INSTITUTIONAL ANALYSIS**

SLIDE/TAPE PROGRAM VISUALS AND NARRATION

Institutional Analysis: Part I

1.



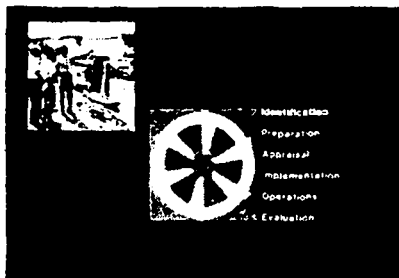
TITLE SLIDE: Institutional Analysis  
Part I

2.



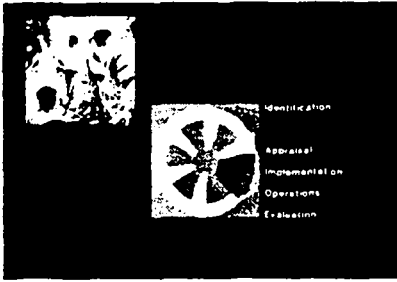
Projects, such as these, are designed to provide consumers with a safe water supply and sanitation. The project investments yield the intended benefits only when the projects have reached the operations phase.

3.



Completed projects will have passed through a series of phases, called the project cycle. First, several alternative projects are defined during the identification phase.

4.



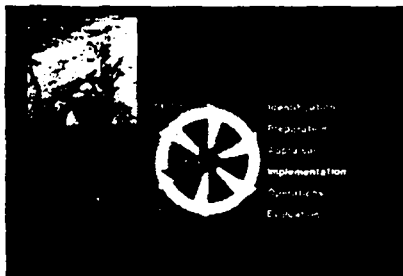
The specific information required to analyze and compare alternative projects is collected and analyzed during the preparation phase.

5.



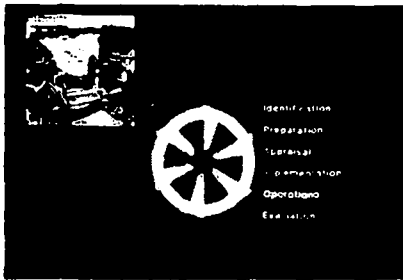
Then, the projects are reviewed and approved during the appraisal phase. This phase includes testing the project's feasibility from an economic, financial, technical, institutional and social point of view. At the end of this phase, the best project is selected.

6.



The next phase is project implementation. New facilities are constructed, and equipment is purchased. In order to prepare for the operational requirements, the future operating staff may have to be trained.

7.



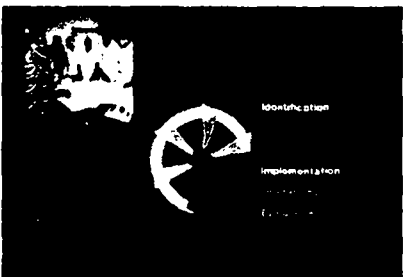
Next, the project moves into the operations and maintenance phase. For a project to yield maximum benefits, operations must be combined with on-going maintenance.

8.



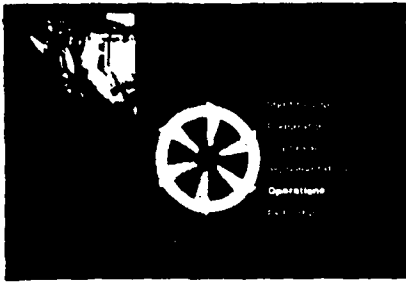
And the last phase is evaluation. The lessons learned during evaluation provide valuable information on planning future projects.

9.



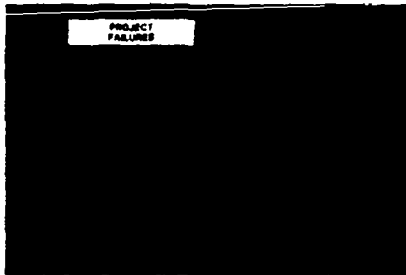
The first four phases are usually carried out by a variety of specialists, technical experts, consultants and contractors. Although the responsibility for the projects remains with the water supply enterprise, most of these experts are contracted from outside the water supply enterprise, from the private sector.

10.



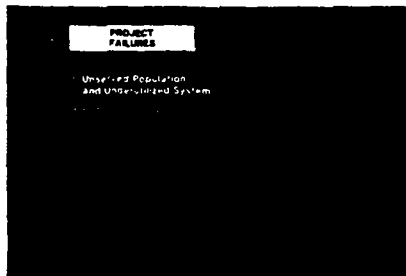
But operations and maintenance will remain the responsibility of the enterprise that will manage the project. Usually, the enterprise is a public utility; however, the private sector is increasingly becoming involved in the operations and maintenance of water supply and sanitation systems.

11.



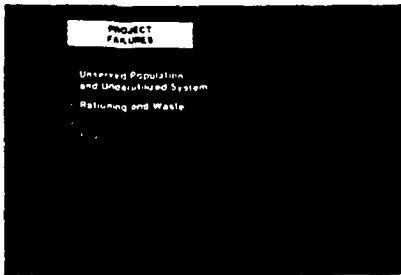
In the water sector, when projects fail to produce the intended benefits, the causes can usually be traced to the enterprise's operating performance. For example, one indicator of a project that has failed is when a large portion of the population remains unserved while the capacity is underutilized.

12.



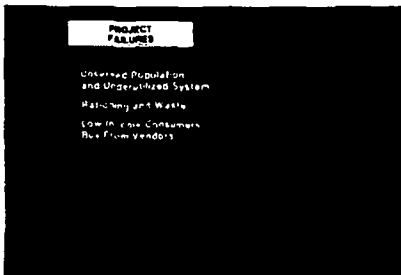
Another indicator is when water is rationed in some parts of a city, but is wasted in other parts of the city because of the lack of any controls on the use of water.

13.



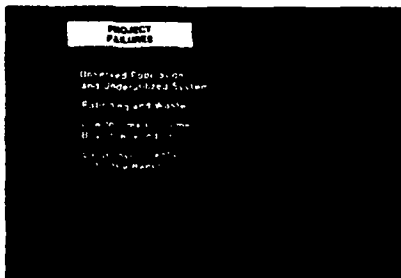
A third indicator of project failure is when low-income consumers buy water at high prices from vendors when they could be connected to the water supply system, for the same amount of money.

14.



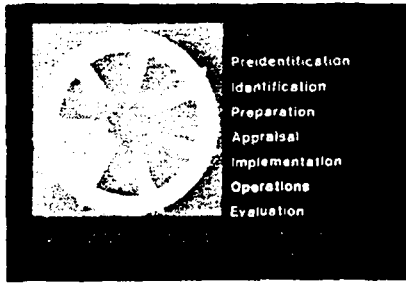
A fourth indicator is when large and costly treatment plants periodically produce unsafe water because the stock of chemicals has run out or when the lack of spare parts caused equipment to break down.

15.



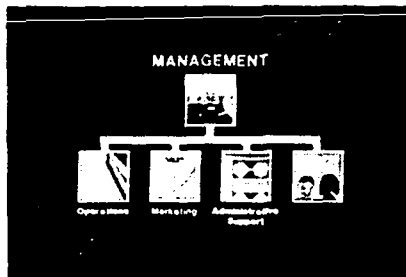
Underlying these problems, is the enterprise's difficulty in attracting and keeping a qualified staff. Turnover is high and those who leave are replaced with less qualified employees. As a result, expensive facilities are operated by poorly paid and inadequately trained personnel.

16.



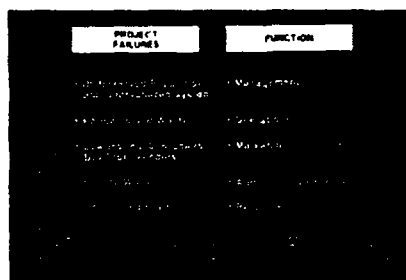
Project failures at the Operations phase negates all of the efforts to plan, design and complete a project. The operating enterprise in this case is a barrier to successful completion of the project cycle.

17.



This module on institutional analysis reviews what the enterprise's management and functions must do in order to operate a completed project that will produce maximum benefits and meet future demand.

18.



In order to analyze how problems like these can be remedied, it is important to review the major functions in an enterprise to see how they influence overall performance.

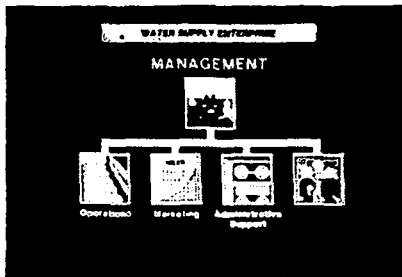


19.



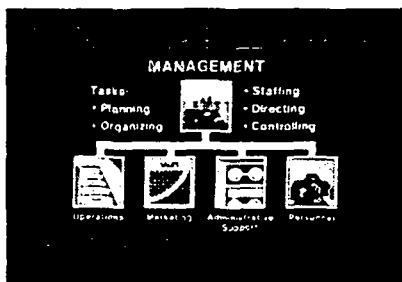
This program, therefore, first reviews the functions in a typical water supply enterprise: operations, marketing, administrative support and personnel.

20.



The functions are interrelated. It is management's role to coordinate the functions so that they provide consumers with the services they demand.

21.



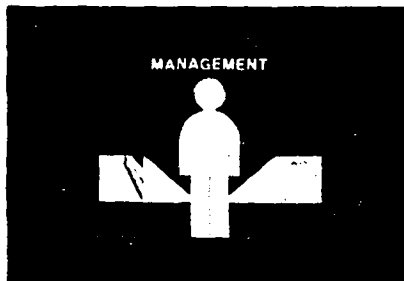
In this program, therefore, we will also examine the management tasks: planning, organizing, staffing, directing and controlling.

22.



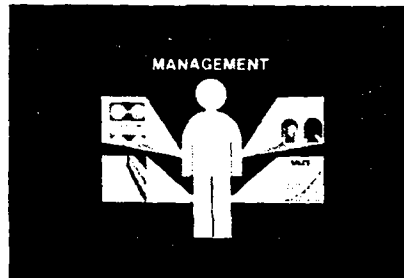
Water supply enterprises are dynamic systems, like a human body. At the head of the enterprise are the managers who coordinate and direct the functions.

23.



The two basic functions of the enterprise, on which all other functions stand or fall, are operations and marketing.

24.



Operations and marketing depend upon the administrative support function and the personnel function.

25.



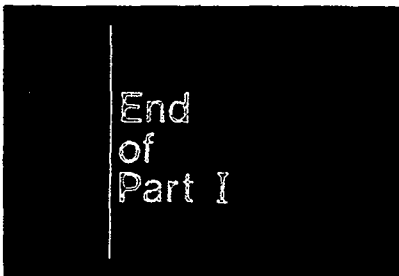
Just as a nervous system monitors the body's functions, managers need a good information system in order to monitor and correct performance.

26.



And, like a circulatory system that supplies the body with blood, an enterprise requires sufficient funding to operate effectively and deliver benefits.

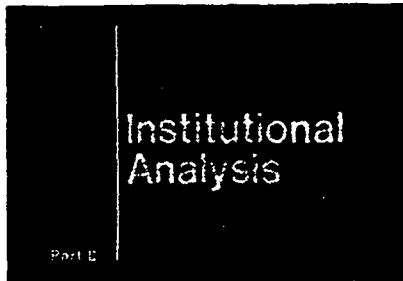
27.



This concludes the overview of institutional analysis.

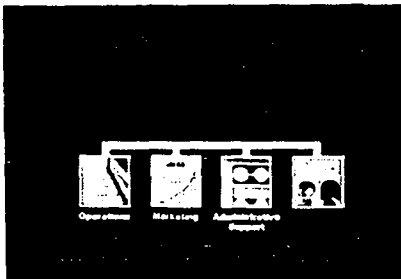
INSTITUTIONAL ANALYSIS: PART II

28.



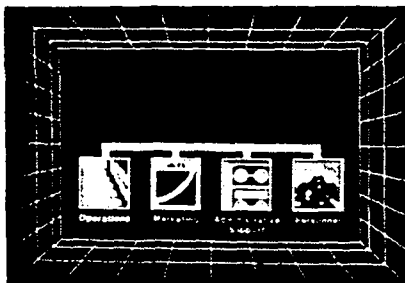
Title Slide: Institutional  
Analysis  
Part II

29.



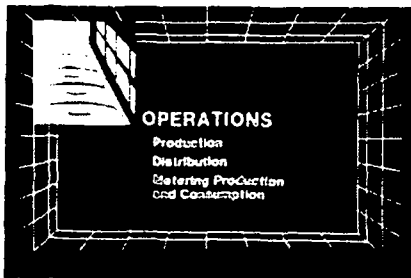
In this part of the program, we will  
review the functions in a typical  
water supply enterprise.

30.



The first function is operations.

31.



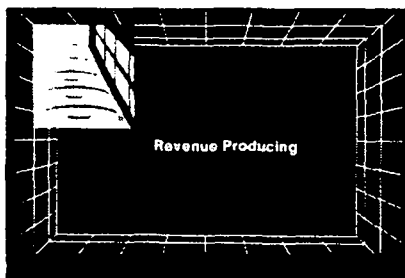
Operations is responsible for producing sufficient quantities of safe water to meet demand, for distributing it to consumers and for metering both production and consumption.

32.



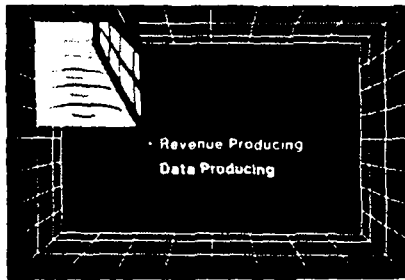
Operations is also responsible for the maintenance of equipment and facilities. This includes corrective maintenance to solve technical problems and preventive maintenance to keep problems from occurring.

33.



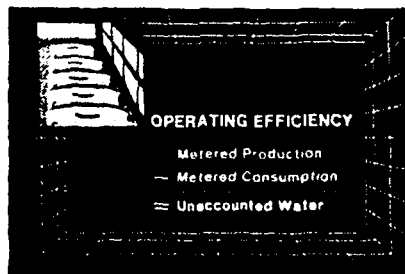
The operations function generates most of the enterprise's funds by distributing the water that produces revenue.

34.



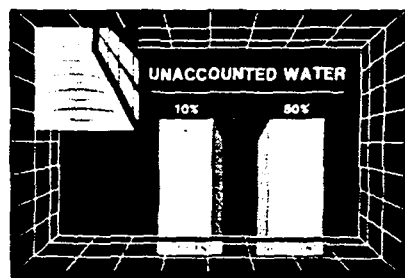
The operations function is the source of most of the information on the enterprise's performance so that managers can monitor and improve the entire system. The most important data result from metering.

35.



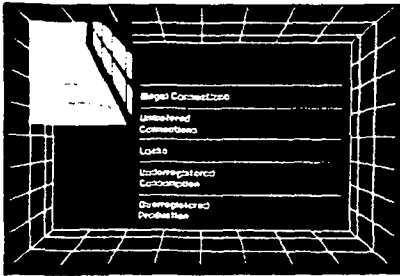
When metering consumption is subtracted from metered production, unaccounted water is the result. Unaccounted water is a gauge of the enterprise's operating efficiency. It is normally calculated as a percentage of the water produced.

36.



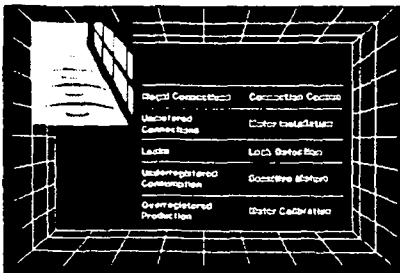
In the best-managed utilities, unaccounted water is approximately 10%. It is more common, however, for unaccounted water levels to be higher, in some cases, as high as 50%. This signals inefficient operations that result in high costs per unit of water actually consumed.

37.



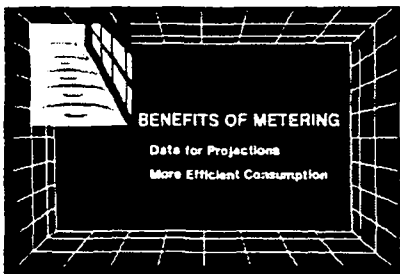
There are several causes of high unaccounted water: Illegal connections to the system; unmetered connections; leaks in the distribution system; meters that underregister consumption; and faulty meters that overregister production.

38.



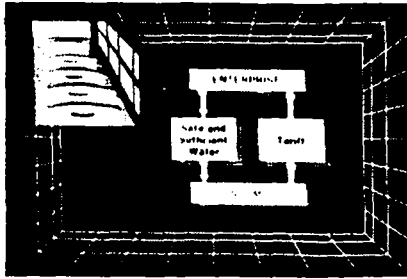
Operations has a direct impact upon high levels of unaccounted water. The types of corrective measures that may need to be undertaken include a connection census to detect illegal connections; the installation of meters; a leak detection program; and more frequent water calibration to make the meters sensitive enough to produce accurate readings.

39.



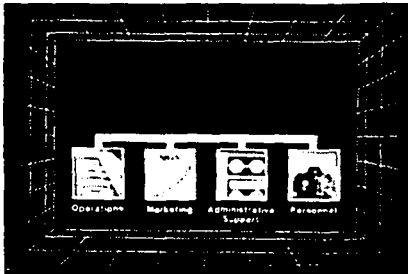
Metering offers many benefits. It provides more accurate data on production and consumption. That data is used for projecting future demand. Metering also leads to more efficient consumption because consumers conserve water if they have to pay for it.

40.



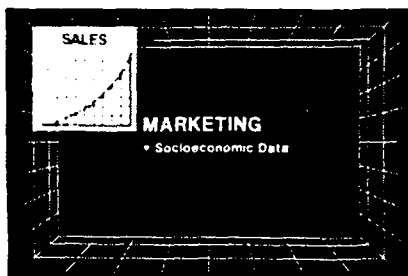
Without efficient operations that result in sufficient quantities of safe water, consumers will be reluctant to pay the tariffs that are charged. If consumers will not pay, the enterprise will not be able to recover its investment and operating costs. The quality of operations, therefore, has an impact upon the commercial health of the enterprise.

41.



The marketing function has direct responsibility for the commercial health of the enterprise. Marketing is the second major function that we will review.

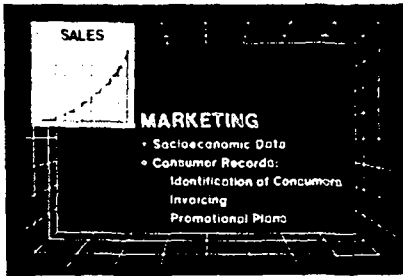
42.



The success of marketing depends upon a knowledge of the socioeconomic characteristics of potential consumers which, in turn, is the basis for supplying them water at prices they can afford.

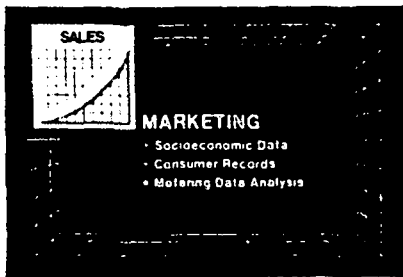


43.



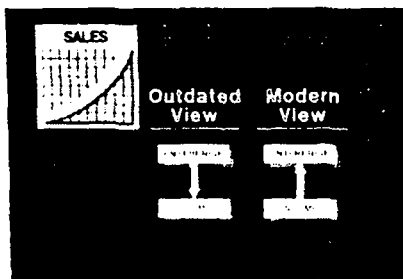
The marketing function also maintains records that provide information on different consumer groups. The information, in turn, makes it possible to invoice customers and to target promotional efforts to reach more consumers.

44.



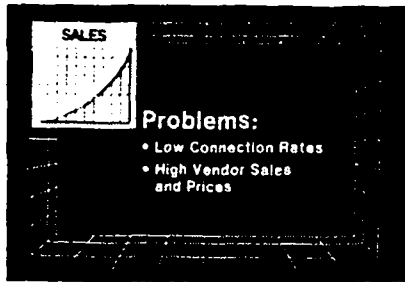
Metering data are compiled and analyzed by the marketing function in order to set tariff policies that are reflected in appropriate tariff structures. Appropriate tariff structures are affordable and equitable to different consumer groups.

45.



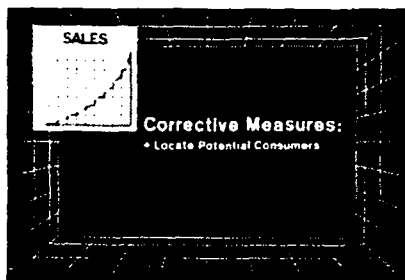
Problems in marketing the enterprise's services to potential consumers result when the enterprise maintains an outdated view that consumers are subordinate to the enterprise. A more modern way of thinking is that it is the enterprise's objectives to keep current consumers satisfied and to locate and serve additional new consumers.

46.



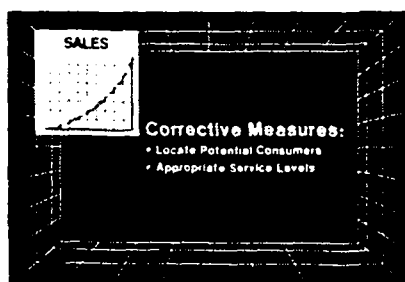
Failure to market properly is indicated by a low percentage of the population who is connected and served. Another indicator is the presence of water vendors who charge high prices to unconnected consumers. The vendors charge prices that are many times the price that the enterprise would charge for water.

47.



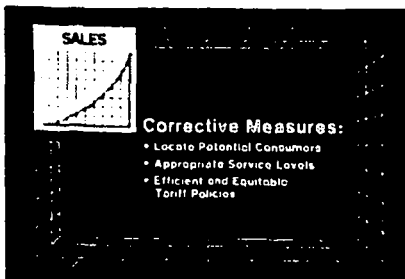
In order to improve marketing, the first corrective measure is to locate all potential consumers through a connection census. The census data show which houses in the enterprise's service area are connected and unconnected.

48.



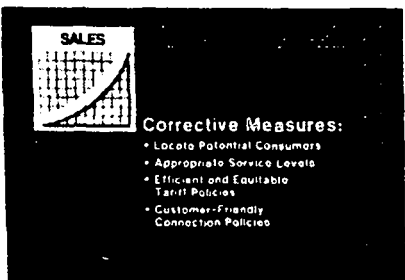
The next step is to design appropriate service levels that match the population's demand for water and still are sufficiently economical so that consumers can afford the water.

49.



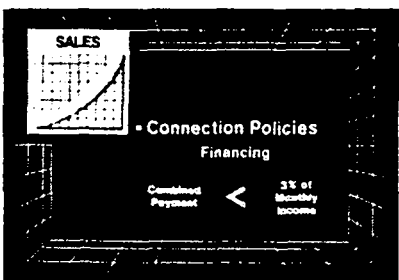
Appropriate tariffs, therefore, must be designed. For the enterprise to finance its operation, the tariff level should recover the enterprise's investment and operating costs. At the same time, the tariff levels should take into account the consumer's ability to pay.

50.



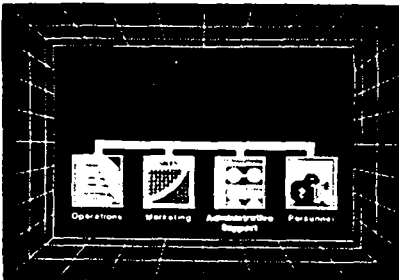
Customer-friendly connection policies are necessary in order to enable consumers to afford house connections. The connection fee is a one-time charge to consumers to defray the cost of the house connection. The connection fee should be as low as possible in order to encourage low-income consumers to become connected.

51.



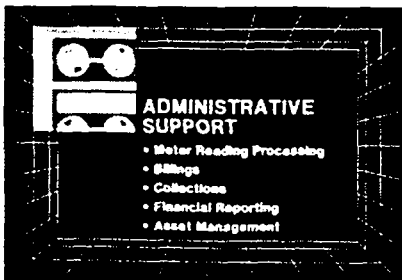
In some cases, the enterprise may decide to finance the connection over a period of several years. The connection fee can be included as part of a monthly payment that is affordable to consumers. As a general rule, the payment should not exceed 3% of the consumer's monthly income.

52.



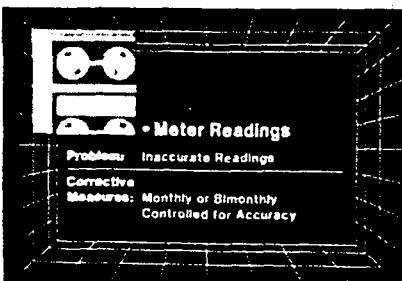
The third function in a water supply enterprise is the administrative support that operations and marketing require in order to perform effectively.

53.



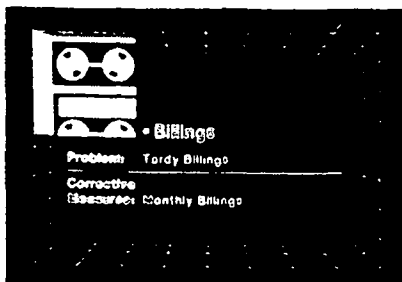
Administrative support includes the processing of meter readings, billing consumers for services, collecting payment, financial reporting and managing the enterprise's current and fixed assets.

54.



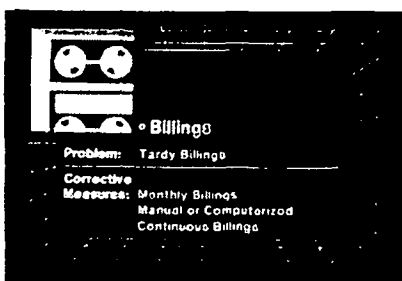
Inaccurate meter readings deprive the enterprise of the data needed to bill consumers. Preferably, meters should be read monthly or bimonthly. The readings must be carefully controlled to ensure accuracy.

55.



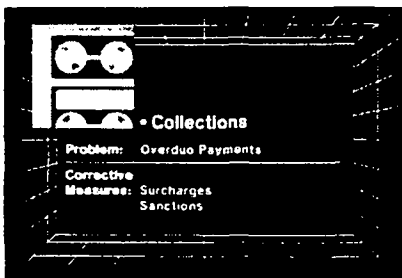
Meter readings must translate into correct and timely billings. If billings are late, consumers do not receive the information that they need to adjust their consumption and the enterprise does not receive revenue. In general, consumers should be billed monthly.

56.



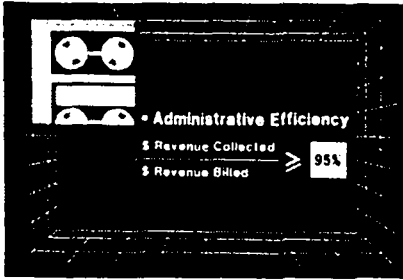
Billing can be done manually or by computer, although manual processing is realistic only for the smallest enterprises. In either case, billings should be continuous. This evens out the administrative work load and ensures a steady cash flow to the enterprise.

57.



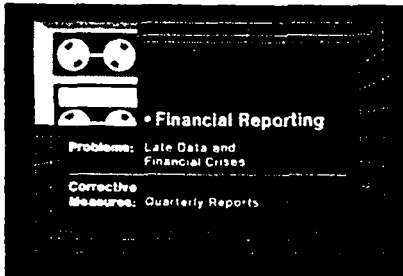
Collection of payments should be as continuous as billings. If payments from consumers are typically overdue, one approach is to establish a firm credit policy. For example, at the most, consumers should be given 30 days to pay their bills. Thereafter, the bills are considered overdue and carry a surcharge. Failure to pay should trigger sanctions, such as disconnecting service until the bills are paid.

58.



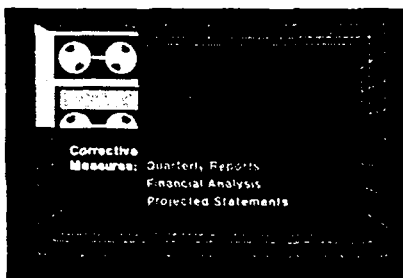
An indicator of administrative efficiency is the percentage of revenue collected divided by the revenue billed. In well-managed water supply enterprises, the percentage is greater than or equal to 95%. Percentages below this level usually reflect consumer resistance to paying their bills or lax collection.

59.



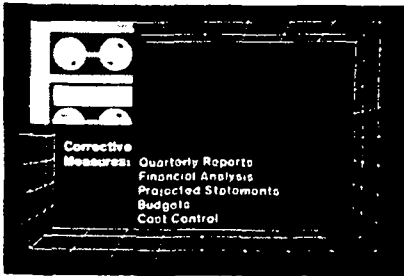
If timely data on the financial performance of the enterprise are not available, managers will not have the information they need to prevent cost overruns and cash crises. For this reason, financial statements including balance sheets, income statements and funds flow statements should be prepared at least quarterly.

60.



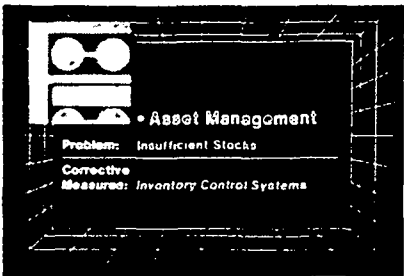
In addition to quarterly statements, it is also important to project financial statements in order to prepare for future financial needs.

61.



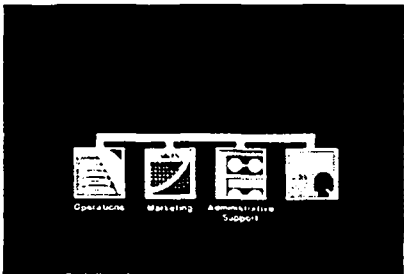
In turn, budgets are based on the financial projections. Budgets set limits on expenses and help managers determine how the enterprise is performing. After budgets are set, cost control measures go into effect. These measures help managers compare actual against budgeted performance, identify variances and take corrective measures.

62.



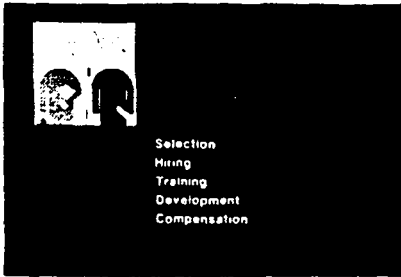
The administrative support function is also responsible for managing the enterprise's current and fixed assets. Unsafe water that results from insufficient chemicals or equipment failures for lack of spare parts are two indicators of poor asset management. Corrective measures include an inventory control system and regularly scheduled maintenance programs.

63.



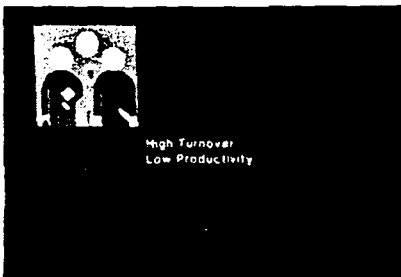
The fourth function in a water supply enterprise is personnel management.

64.



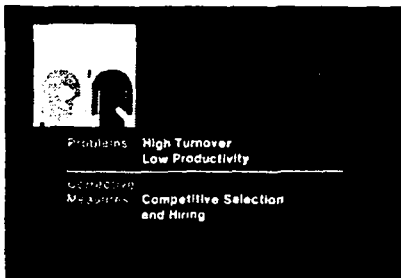
This function includes all the activities related to selecting, hiring, training, developing and compensating the enterprise's employees.

65.



Personnel-related problems are indicated by high turnover and too many employees relative to their tasks and the resulting productivity.

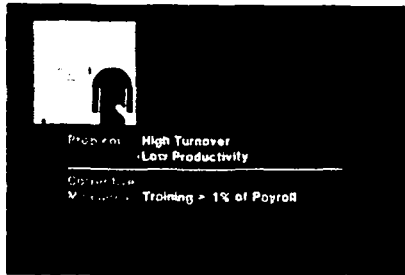
66.



Corrective measures begin with hiring the most qualified staff. Positions should be advertised in order to make the selection competitive and to hire the most qualified employees.

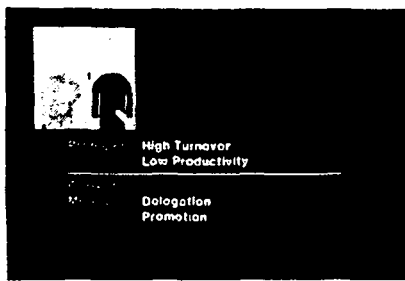


67.



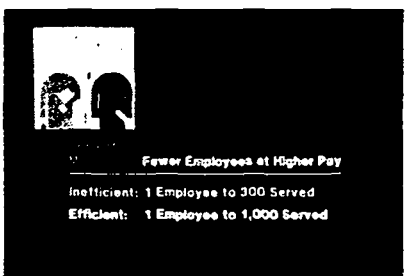
Once employees are hired, they must be trained so that they can perform effectively. In general, at least 1% of the payroll should be allocated to enabling employees to acquire the skills and knowledge that they need.

68.



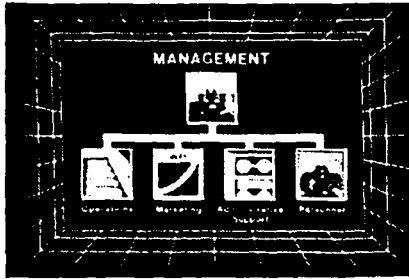
Once employees can perform effectively in their present positions, it is important to delegate more responsibility to them and to consider them for promotion. Failure to provide career development may prompt employees to leave, which results in a loss of all the knowledge and skills that they acquired.

69.



Often, enterprises maintain large staffs of poorly paid employees in relation to other sectors. In developing countries, enterprises might have one employee per 300 served population. The ratio in developed countries is one employee per 1000 population served.

70.



Next, we will review the key management tasks that are necessary to ensure that each function achieves the results for which it is responsible.

71.



The managerial tasks are: planning, organizing, staffing, directing and controlling.

72.



Planning comprises the activities to develop policies and programs; to forecast and make projections that are the basis for anticipating future needs; setting the objectives for each function; and developing strategies to attain those objectives.

73.



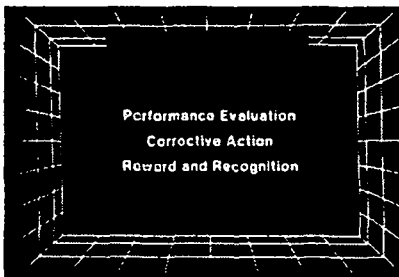
Managers are also responsible for organizing each function. They must determine the best way to establish the structure of their work units, to identify qualifications for staff positions, and to define the relationship between the functions so that they adequately support each other.

74.



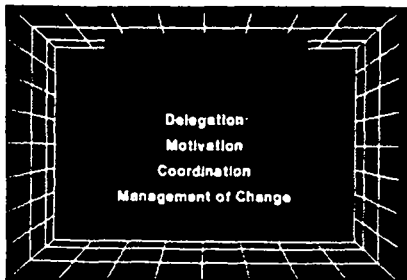
Another important managerial task is staffing each function with competent people. This involves selecting the best employees, training them to perform effectively and developing their capabilities to perform additional tasks.

75.



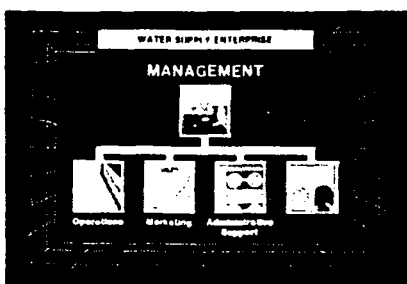
Directing is the fourth managerial task. It includes delegating responsibility so that employees' capabilities are utilized; motivating employees to reach high performance levels; coordinating employee's efforts; and managing any changes that are required.

76.



Controlling is the fifth managerial task. It involves establishing a system of reporting on the performance of each function; measuring performance against expectations; taking corrective action when necessary; and rewarding and recognizing achievement.

77.



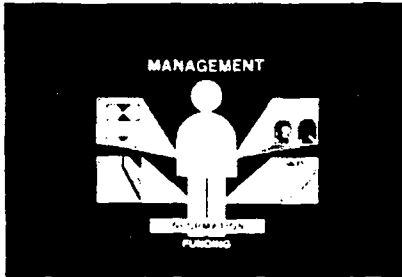
In summary, institutional analysis requires a review of how each function in the enterprise is operating. . .

78.



Managers influence results by the way that they establish and use an information flow to monitor performance. . .

79.



and in the way they control and utilize funds to support each function's performance.

80.



Produced by:  
The Economic Development Institute  
of The World Bank

MCMLXXXV