

8 2 4

D J . D J 8 9



**WATER AND SANITATION  
FOR HEALTH PROJECT**

Operated by  
CDM and Associates

Sponsored by the U S Agency  
for International Development

1611 N. Kent Street, Room 1001  
Arlington, VA 22209-2111 USA

Telephone: (703) 243-8200  
Fax (703) 525-9137  
Telex WUI 64552  
Cable Address WASHAID

The WASH Project is managed by Camp Dresser & McKee International Inc. Principal cooperating institutions and subcontractors are: Associates in Rural Development, Inc.; International Science and Technology Institute, Inc.; Research Triangle Institute; Training Resources Group; University of North Carolina at Chapel Hill; University Research Corporation.

**ANALYSIS OF A SOCIOCULTURAL  
SURVEY OF HOUSEHOLD WATER USE  
AND SANITATION PRACTICES  
IN DJIBOUTI CITY**

**WASH FIELD REPORT NO. 242**

**MARCH 1989**

**Prepared for  
the Office of the A.I.D. Representative  
to the Republic of Djibouti  
WASH Activity No. 415**

824-DJ-6758



WASH FIELD REPORT NO. 242

**ANALYSIS OF A SOCIOCULTURAL SURVEY  
OF HOUSEHOLD WATER USE AND SANITATION PRACTICES  
IN DJIBOUTI CITY**

Prepared for the Office of the A.I.D. Representative  
to the Republic of Djibouti  
under WASH Activity No. 415

by

John P. Mason, Ph.D.  
with  
Catherine Cutbill, M.A.

- 1511 = 6758  
024 D.J. 01-89

March 1989

**Contributions by: Guedda Mohamed Ahmed, ISERST  
Idriss Ali Sultan, DINAS**

Water and Sanitation for Health Project  
Contract No. 5942-C-00-4085-00, Project No. 936-5942  
is sponsored by the Office of Health, Bureau for Science and Technology  
U.S. Agency for International Development  
Washington, DC 20523



## TABLE OF CONTENTS

CHAPTER	Page
ACKNOWLEDGMENTS .....	v
ACRONYMS .....	vii
EXECUTIVE SUMMARY .....	ix
1. INTRODUCTION .....	1
1.1 Goals of the Assistance .....	1
1.2 Objectives of the Assistance .....	1
1.3 Background to Assignment .....	2
2. ANALYTIC FRAMEWORK: DJIBOUTI CITY PLANNING NEEDS AND SOLUTIONS AT THE HOUSEHOLD, NEIGHBORHOOD, AND COMMUNITY LEVELS .....	5
2.1 A Multi-Level Analysis and Planning Perspective .....	5
2.2 Djibouti's Inter-Sectoral Approach to Its Urban Water and Sanitation Needs .....	8
2.2.1 ONED .....	8
2.2.2 DUL .....	9
2.2.3 STDD .....	11
2.2.4 PDUD .....	12
2.2.5 SHE/ES .....	13
3. OVERVIEW OF METHODOLOGY .....	15
3.1 Final Organization of Questionnaire .....	15
3.2 Recruitment and Training of Survey Personnel .....	16
3.3 Sample Preparation and Selection .....	16
3.4 In the Field .....	17
3.5 Data Analysis .....	18
3.6 Special Note for Urban Planning Purposes .....	18
4. OVERVIEW OF THE FINDINGS FOR THE OLD QUARTERS AND BALBALA .....	19
4.1 The Old Quarters .....	19
4.1.1 Water .....	19
4.1.2 Urban Services .....	20
4.1.3 Health .....	21
4.1.4 Community Conditions .....	26

**CONTENTS (continued)**

<b>CHAPTER</b>	<b>Page</b>
4.2	Balbala ..... 29
4.2.1	Water ..... 29
4.2.2	Urban Services ..... 30
4.2.3	Health ..... 31
4.2.4	Community Conditions ..... 34
4.3	General Comparison of Water and Sanitation Conditions in the Old Quarters and Balbala..... 36
4.3.1	Water ..... 36
4.3.2	Urban Services ..... 36
4.3.3	Public Health ..... 37
4.3.4	Community Conditions ..... 37
5.	SOME KEY RELATIONSHIPS FOR CONSIDERATION OF PLANNING GUIDELINES ..... 39
5.1	Key Relationships in the Old Quarters ..... 39
5.1.1	Water Source and Storage Constraints ..... 39
5.1.2	Physical Space and Occupancy ..... 39
5.1.3	Differences between Owners and Renters ..... 40
5.1.4	Willingness to Move to New Housing Zone ..... 40
5.1.5	Willingness to Pay for Improvements ..... 40
5.1.6	Willingness to Assist or Participate in Water and Sanitation Improvements ..... 40
5.2	Key Relationships in Balbala ..... 41
5.2.1	Water Source and Storage Constraints ..... 41
5.2.2	Physical Space and Occupancy ..... 41
5.2.3	Differences between Owners and Renters ..... 41
5.2.4	Willingness to Move to New Housing Zone ..... 42
5.2.5	Willingness to Pay for Improvements ..... 42
5.2.6	Willingness to Assist or Participate in Water and Sanitation Improvements ..... 42
5.3	Some Suggested Planning Guidelines for Urban Services, Public Health, and Health Education ..... 43
6.	IMPLICATIONS OF THE SOCIOCULTURAL RESEARCH PROCESS FOR DJIBOUTIAN PLANNING AND TRAINING PURPOSES ..... 49
6.1	Benefits to the Planning Process ..... 49
6.2	Benefits to the Sociocultural Research Process ..... 49
<b>REFERENCES</b>	..... 51

CONTENTS (continued)

	Page
<b>APPENDICES</b>	
A. Officials Interviewed .....	55
B. Notes on the Methodology - by Idriss Ali Sultan .....	59
<b>FIGURES</b>	
1. Map of Djibouti City .....	viii
2. Example of Multi-Level Analysis and Planning Perspective .....	7
3. Suggestions for Planners .....	44
<b>TABLES</b>	
1. ONED Service to Old Quarters Based on Billings .....	9
2. Survey Sample Block Selection for Old Quarters and Balbala .....	17
3. Type of Toilet and Characteristics of Use: Old Quarters .....	22
4. Form of Pit Latrine Waste Removal .....	23
5. Distance of Latrine from Water Reserve and Kitchen Areas: Old Quarters .....	24
6. Garbage Container: Location and Characteristics of Use: Old Quarters .....	25
7. Types of Waste Water and Methods of Evacuation: Old Quarters .....	26
8. Level of Education of Head of Household: Old Quarters .....	27
9. Comparison of Average Monthly Costs for Services and Amounts Ready to Pay: Old Quarters .....	28
10. Toilet Type and Characteristics of Use: Balbala .....	32
11. Distance of Latrine from Water Reserves and Kitchen Area: Balbala.	33
12. Method and Location of Garbage Disposal: Balbala .....	34





## ACKNOWLEDGMENTS

This second mission by the WASH socio-anthropologist to Djibouti received the same warm welcome and support as the first. Again, high praise is due the National Committee on Water, Sanitation and Hygiene and its chairman, Hassan Robleh. A special word of appreciation extends to ISERST sociologist Guedda Mohamed Ahmed for his daily, side-by-side work and effort in quietly and humerously nudging others along. DINAS statistician Idriss Ali Sultan and technical advisor Gérard Chenais deserve very warm thanks for implementing the survey and churning out a daily quota of statistical tables. To Messrs. Mahmoud Awale, DUL, Ali Youssouf, ONED, Ahmed Ali and Bill Rounds, PDUD, Dr. Ahmed Mohamed, Health Education, F. Gaudebert, STDD, and Dr. C. Bailly, SHE, much appreciation is extended for very informative interviews. As in the case of the prior report, many thanks go to Mme. Josiane Aïdid for her translation and bi-lingual production of this report. To Mr. John Egan McAteer, Chargé at the U.S. Embassy, warm thanks for his continued active support of the overall activity.



## ACRONYMS

CNEHA	Comité National Eau-Hygiène-Assainissement (National Committee for Water-Hygiene-Sanitation)
DF	Djibouti Francs (176.5 DF = U.S. \$1)
DINAS	Direction Nationale de la Statistique (Djibouti National Office of Statistics)
DUL	Direction de l'Urbanisme et de Logement (Division of Urbanism and Housing)
EDD	Public utility which provides electricity
ES	Education Sanitaire (Health Education)
GROD	Government of the Republic of Djibouti
ISERST	Institut Supérieur des Etudes et de la Recherche Scientifique et Technique (Advanced Institute for Scientific and Technical Research)
ONED	Office National des Eaux de Djibouti (Djibouti National Water Authority)
PDUD	Projet de Développement Urbain de Djibouti (Djibouti Urban Development Project, funded by USAID and the World Bank)
SHE	Service d'Hygiène et d'Epidémiologie (Hygiene and Epidemiology Service)
SPSS	Statistical Package for the Social Sciences
STDD	Services Techniques du District de Djibouti (Technical Services of the District of Djibouti)
TAG	Technical Advisory Group
UNFD	Union Nationale des Femmes Djiboutiennes (Djibouti National Women's Union)
USAID	United States Agency for International Development
WASH	Water and Sanitation for Health Project

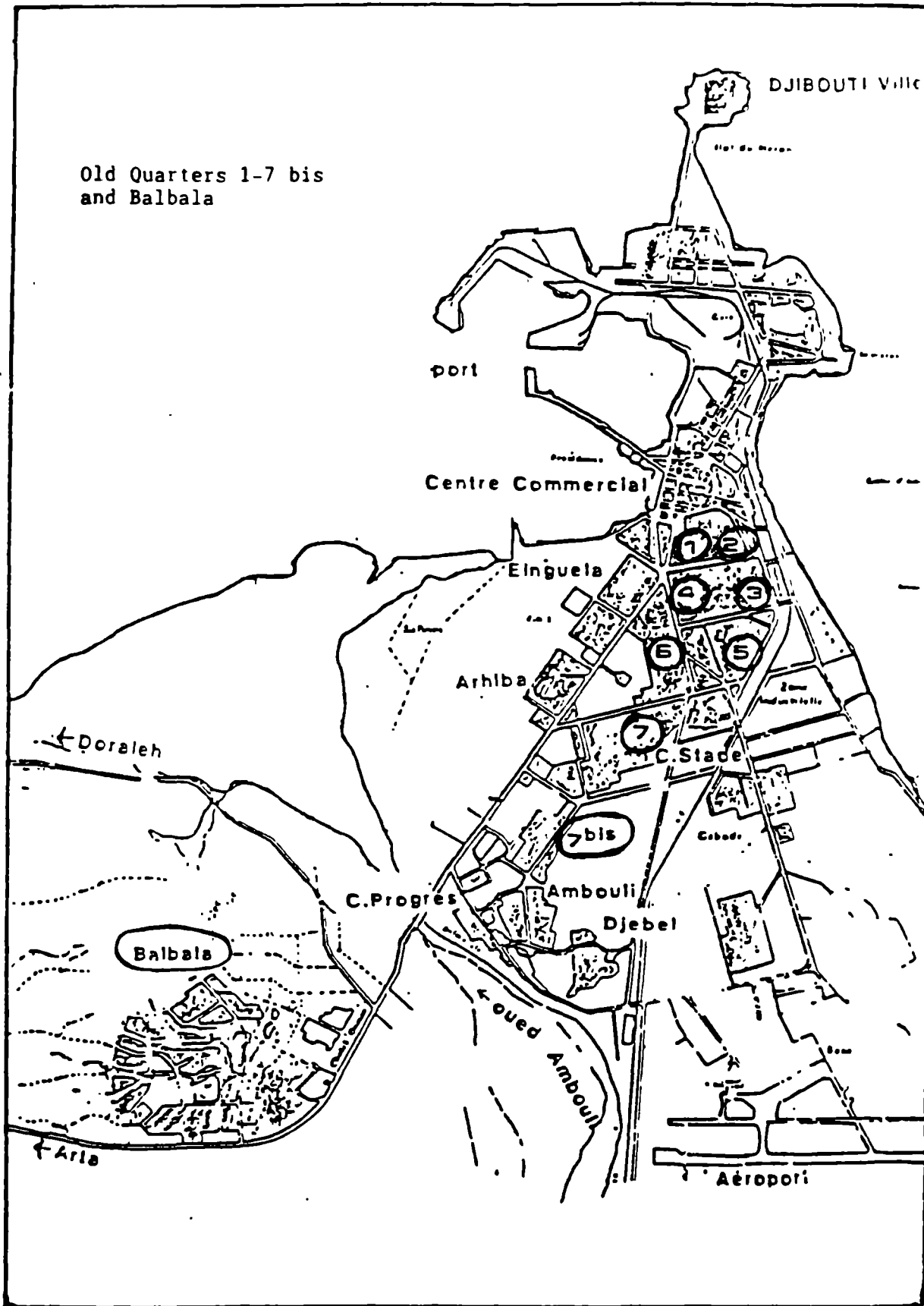


Figure 1. Map of Djibouti City

## EXECUTIVE SUMMARY

This assignment was a follow-on to several WASH training missions to Djibouti to assist the National Committee on Water, Sanitation and Health. Carried out between May 23 and June 10, 1988, the assignment focused on assistance in the analysis of the sociocultural survey on water use and sanitation practices in low-income settlements in Djibouti City. The survey, designed and pre-tested with assistance of the same WASH advisor and associate in November-December 1987, was carried out in March-April 1988 by the National Committee. With special effort from DINAS (National Office of Statistics) in administering the survey and support of ISERST (Advanced Institute for Scientific and Technical Research), 838 households in the Old Quarters and Balbala were scientifically sampled.

The WASH consultant worked closely with DINAS statisticians and the ISERST sociologist in preparing statistical analyses of the 838 questionnaires. Computer analyses of data used the Quadeole statistical program. Simple tabulations of all data and cross-tabulations of selected data are presented.

The analytic framework is one which provides useful and usable data to planners in urban development, health, and health education. For this purpose, the analysis considered those household-level conditions for which neighborhood and larger-community planning interventions can be effectively made.

In addition to survey research, interviews were held with planners to assist in determining their data needs for planning purposes. Several important, national-level considerations came out of these interviews: need for a national housing policy, including treatment of displacement-relocation-rehousing; constraints surrounding land tenure; recoverability of costs for urban services. It is noted for authorities in charge of water (ONED), sewerage, roads-networks-drainage (DUL), urban services and maintenance (STDD), and urban upgrading (PDUD) that cost recovery is a critical issue for each. Each, in turn, expressed a concern that in the foreseeable future it is able to bring its operation onto a cost recoverable basis. Public health and health education offices expressed the need to bring a balance to the equation based on: (a) creating public awareness and (b) enforcing health standards.

Water use and sanitation practices in the Old Quarters and Balbala (a newer, until recently informal or unofficial settlement) differed considerably. Despite generally more debilitating conditions in Balbala, for example, disposal of household waste water poses more of a health hazard for the Old Quarters in light of greater population density there and the relatively flat terrain. Balbala's location on a large hillside permits "natural" drainage.

At the level of household sanitation, many of the same conditions exist in the two settlements, making the approach by health authorities somewhat, but not always, similar for both. Latrine evacuation, for example, is more of an issue in the Old Quarters as a function of population density and the older age of that settlement. In Balbala, not every household has a latrine (in

which case nature is used). Garbage disposal, on the other hand, is more of a potential public health hazard in Balbala because of the lack of municipal collection and consequent dumping of garbage in open spaces.

On the community level, there is a greater expression of willingness of Balbala residents to relocate to a new housing zone somewhere else in that settlement than occurs among Old Quarters' residents. This situation is related to the existing availability of urban services in the Old Quarters and their absence in Balbala, as well as the low availability of space in the Old Quarters and its much greater availability in Balbala.

Certain key relationships were pulled out of the survey data for use as planning guidelines. These are organized in terms of: a) water source and storage constraints, b) physical space and occupancy, c) differences between owners and renters, d) willingness to move to new housing zone, e) willingness to pay for improvements, and f) willingness to assist or participate in water and sanitation improvements. These relationships as well as other interpretations of the survey data generated several suggested planning guidelines for urban planners, public health and health education planners. The guidelines are intended to assist these planners in thinking through the sociocultural research process and reflecting sociocultural findings in planning aimed at improving household, community and larger-community water and sanitation conditions and practices.

The full text of this report was submitted in French to the National Committee for Water, Sanitation, and Hygiene.

## Chapter 1

### INTRODUCTION

The assistance in data analysis of the sociocultural study of household water use and sanitation practices in Djibouti City is a logical follow-on to the design of that study in November-December 1987 by the Water and Sanitation for Health (WASH) consultant (see WASH Field Report No. 214, April 1988). As in the case of the study design, assistance in analysis was requested by the National Committee for Water, Sanitation, and Hygiene. Specifically, training assistance was provided to that Committee in designing an analytic framework for use in the data interpretation. The assistance was intended to be of direct and presumably immediate benefit to Djiboutian health, health education, and urban planners in their efforts to improve living conditions in the Old Quarters and Balbala. The same socio-anthropologist who assisted in the earlier study design undertook this effort.

#### 1.1 Goals of the Assistance

The major goals of the assistance provided by the WASH consultant were to:

- a. assist the National Committee and its constituent members in the design, execution, and analysis of a sociocultural survey of household water use and sanitation practices so that urban, health, and health education planners would be able to incorporate relevant sociocultural factors in their planning;
- b. provide training for the Committee's constituent members in the analysis and interpretation of sociocultural data for planning purposes;
- c. demonstrate the usefulness of the sociocultural research as a process integral to the overall planning of urban services and health and health education programs.

#### 1.2 Objectives of the Assistance

The purposes of the WASH assistance were directed at the short- and longer-term needs of planners involved in establishing criteria for upgrading the water and sanitation services of the Old Quarters and Balbala, to improve environmental health conditions of the inhabitants. More specifically, the assistance was to:

- a. provide a sociocultural data analysis framework relevant to distinct planning needs;
- b. provide a methodology for inclusion of planners' and other experts' knowledge and experience in the analysis and interpretive process;

- c. demonstrate the usefulness of observation and interviewing alongside the systematic survey approach as an important part of including inhabitants' knowledge, experience and preferences in the planning process; and
- d. institutionalize the sociocultural research process including the analysis and interpretation of findings in such a way that they are immediately usable by planners and so that Djiboutian social researchers, statisticians and planners can work together effectively in carrying out this process in the future.

The WASH assistance included establishment of a working sub-group of the National Committee which planned and implemented an analytic framework and work plan. This sub-group consisted of the sociologist from the Advanced Institute Scientific and Technical Research (ISERST); a statistician from the National Office of Statistics (DINAS); the WASH socio-anthropologist; and an American researcher carrying out long-term social anthropological studies in Djibouti who had participated in the earlier survey design.

### 1.3 Background to Assignment

This WASH assignment grew out of five earlier requests from the Government of the Republic of Djibouti (GROD) through the National Committee for Water, Sanitation and Hygiene to the U.S. Agency for International Development (USAID). Those requests were for assistance in the development of training and training-related activities in support of urban water and sanitation initiatives in Djibouti City. Urban sanitation conditions were worsening in the capital in part as a consequence of constraints in systems operations management and maintenance, inter-agency coordination, and manpower.

A request by the GROD to USAID resulted in a visit by a WASH representative in late 1986. The result of that visit was agreement among Djiboutian officials concerning the major goal of USAID training assistance. That goal was "to reinforce GROD capacity to analyze, plan, execute, and evaluate activities in order to deal with the problems of urban sanitation, with particular emphasis on individual household excreta and wastewater management" (see WASH Field Report No. 200, January 1987).

Various training activities grew out of the training initiative over the subsequent two years, including a group of workshops and seminars which bore directly on community organization for health and sanitation education of Djibouti-City low-income families in several residential quarters. Several training assistance needs were formulated during these workshops and seminars for Djiboutian authorities in water provision, sanitation, and health services. One of the needs pinpointed was community organization for health and sanitation education in domains of water and sanitation. The lack of systematic information on Old Quarters and Balbala communities led authorities to recommend a sociocultural study of water use and sanitation practices at the household level in these communities. Underscored in the recommendation was the need for sociocultural data directly relevant to planning needs for the upgrading which was already underway in one part of the Old Quarters.



Assistance provided by the WASH socio-anthropologist during the November-December design phase included preliminary but systematic field observations with residents and interviews. These were undertaken in Balbala and the Old Quarters with a Djiboutian public health physician, a sociologist, and a water agency official. Numerous meetings of the National Committee were held to facilitate the collaborative character of the research as well as to begin, early on, to invoke the immediate planning needs which the study had to address. Officials of international donor agencies involved in or potentially having an impact on water and sanitation improvement programs were interviewed. Simultaneously, the questionnaire was developed, interviewers were selected and trained, and the pre-test sample was chosen. Field testing of the questionnaire, with some ninety households selected along lines of ethnicity, generated several interesting suggestive trends and patterns regarding water use and sanitation practices among Djibouti City's low-income families (see WASH Field Report No. 214).

A framework for keeping the sociocultural study on track was also presented, out of which this WASH mission developed.



## Chapter 2

### ANALYTIC FRAMEWORK: DJIBOUTI CITY PLANNING NEEDS AND SOLUTIONS AT THE HOUSEHOLD, NEIGHBORHOOD, AND COMMUNITY LEVELS

From the outset of the sociocultural research process, planning needs have been of paramount importance. Djiboutian planners representing those sectors bearing on water and sanitation conditions participated in the WASH-assisted workshops and seminars. As members of the National Committee they contributed significantly to the research process. These planners--including urban services, public health, and health education specialists--were an important source of information in planning the pre-test questionnaire and refining it for use in the larger survey. They have continued to make valuable contributions through:

- ♦ review and commentary on survey findings in their respective areas;
- ♦ suggestions for analyses useful to them in their planning effort; and
- ♦ participation in the ongoing dialogue about the necessity of a basic understanding of sociocultural conditions in the effective planning of water and sanitation systems in Djibouti City.

#### 2.1 A Multi-Level Analysis and Planning Perspective

The basic unit of analysis in the sociocultural research has been the household. The earlier report on preparation of the survey (WASH Field Report No. 214) outlined a number of factors at the household level critical to effective planning. Based on the pre-test, observations and interviews, and available documentation, such factors as the following were cited in that report to be important planning considerations:

- ♦ relative ease of access to water;
- ♦ role of women in household water management;
- ♦ water storage in relation to spatial division of household;
- ♦ disposal of waste water;
- ♦ elimination of human excreta;
- ♦ spatial proximity of latrines to food preparation area;
- ♦ pit latrine capacity and availability of evacuation service; and

- preferences, willingness, and ability to pay for specific services.

These planning considerations as well as others clearly have implications beyond the level of the household, as shown in the next chapter in a review of the survey findings. In aggregate these factors require a considerably broader context than just the household for purposes of planning urban services, public health, and health education programs. The household level was selected as the unit of analysis because that is the most manageable point of entry in building an adequate base for the descriptive analysis of behavior, attitudes, and physical conditions of water use and sanitation practices in Djibouti City.

Generally, the behavior, attitudes, and physical conditions have been found to be consistent for sizable parts of each quarter in the Old Quarters (except for those which have been improved under the Urban Development Project of Djibouti [World Bank 1983]) and for Balbala. This is not to say a total homogeneity of sociocultural and physical conditions exists within or between the different quarters or between them and, say, Balbala. Rather, because they tend to share certain defining characteristics, the neighborhood and larger, surrounding community become the appropriate units for planning and program implementation.

The multi-level planning perspective is illustrated in a schematic diagram (see Figure 2). The vertical axis consists of the analytic categories based on people and place, moving from smallest, least inclusive to larger, more inclusive: household to neighborhood to surrounding community. Planning functions occur along the horizontal axis.

As Figure 2 indicates, the household level of analysis consists of specific water and sanitation conditions. Each condition falls in the domain of one or the other of several planning functions. These functions include what are labeled "urban services" (comprising water delivery, sewerage/waste water removal, roads and drainage, etc.), public health, and health education. Specific GROD offices carry out these functions, although, as indicated by the parentheses (ONED, SHE, STDD, etc.), there is some overlap between offices.

Interventions are being made by GROD offices at the neighborhood level and larger community level in order to improve water and sanitation conditions for households in aggregate. Such interventions as those introduced under the USAID/World Bank-sponsored Urban Development Project of Djibouti (PDUD)--e.g., wider, straightened roads, surface and underground drainage--represent efforts to improve important aspects of water and sanitation in the neighborhood and larger community. What the content of Figure 2 suggests, however, is that for water and sanitation improvement programs to work effectively, they would best be integrated with public health and health education services. In that way the higher-level neighborhood/community improvements could be more effectively promoted and reinforced at the household level. Such an effort represents a complex process of planning and coordination which the GROD has commendably undertaken through its National Committee for Water, Sanitation and Hygiene. The sociocultural study is, of course, part of the overall effort of the Committee to reflect household conditions in the planning and implementation of services and programs in water and sanitation for improved health.

FIGURE 2: EXAMPLE OF MULTI LEVEL ANALYSIS AND PLANNING PROSPECTS

1/ APPROPRIATE TECHNOLOGIES

OBSERVED PROBLEMS	LEVELS OF INTERVENTIONS		
	HOUSEHOLDS	VICINITY	NEIGHBORHOOD COMMUNITY
a. Access to water	- Reserves or meter	- Outside tank; network	- Reservoir or pressure duct
b. Sewage disposal	- Connection with public network or grease box with soak pit	- Public network drain or underground duct-evaporation	- Epuration station or local absorption field
c. Household waste disposal	- Individual garbage can	- Collection by tank-truck or fixed tank within 100 meters	- Network of collection point
d. Emptying of latrines	- Various solutions	- Sewer or tank to be periodically emptied or septic tank with filter and soak pit	- Connection with main collector - tank truck
e. Location of latrines	- At least 3 m away from food preparation	- Public facilities	- Markets - mosques - stations
f. Water reserves	- Covered cask at a safety distance opening with cover	- Standpipes - tanks	- Reservoir - controlled tanks
g. Open/closed latrines		- Prohibited on public places	- Public conveniences
h. Water management by women	- Household discipline	- Home economics education	- Media campaign
i. Individual or family sanitation	- Cleanliness control	- School education	- Mobilization of institutions
j. Food preparation	- Food protection	- Sanitation in markets, stock preservation	- Food management - TV

Other examples 2/ COST OPERATION - IMPROVEMENT EFFORTS  
 3/ SELF-CONSTRUCTION - PARTICIPATION - FINANCING

## 2.2 Djibouti's Inter-Sectoral Approach to Its Urban Water and Sanitation Needs\*

As part of the effort to continue the National Committee's detailed input into the sociocultural research process, interviews were held with several of the organizations represented on the committee. These interviews were directed at a discussion of data from the survey relevant to the concerns of the respective organizations. In addition to a consideration of specific data needs of each office, an opportunity availed itself to discuss present programs and statements of intention for the future. The offices interviewed, in order of their presentation below, are ONED, DUL, STDD, PDUD, and SHE/ES. Meetings were also held with UNFD and ISERST.

### 2.2.1 ONED

The Office National des Eaux de Djibouti (ONED), located within the Ministère de l'Industrie et du Développement Industriel, provides all water in the public domain. It presently serves 13,084 subscribers or billed customers in Djibouti City, of which over 50 percent or approximately 6,700 are located in the Old Quarters.

Balbala, which was only recently included within the city's official boundaries, is served by ONED by 253 household connections. (This figure does not include the 298 houses in Cheik Osman provided to government officials.) Revenue collection for water provision in Balbala is deemed very low, while the District of Djibouti underwrites the total cost of water delivered there by public fountains. As was seen in the pre-test, considerable private, commercial provision of water is made in this growing settlement. A constraint to water delivery to Balbala is the considerable pressure required to pump the water up to that community, which occupies higher ground overlooking the city and the sea. Such pressure at times affects overall pressure throughout the city.

---

\* Researched and written in collaboration with Guedda Mohamed Ahmed, Sociologist, ISERST.

The breakdown provided by ONED of its service to the Old Quarters, based on the number of customers billed, is listed in the following table:

Table 1

ONED Service to Old Quarters

Based on Billings

<u>Quarter</u>	<u>No. of Billings</u>
1	442
2	490
3	446
4	562
5	371
6	1,391
7	1,572
7 bis	437
Jebel/Ambouli	<u>1,000</u> (approx.)
TOTAL	6,711

ONED estimates an average of six or seven inhabitants per household serviced in the Old Quarters. That means its service reaches approximately 40,000 to 47,000 inhabitants in the older, lower-income part of the city. This is a considerable number of people, although the percentage of that aggregate paying its bills regularly and in full was unavailable.

The long-term plans of ONED include extension of its services more widely across the city. One of this agency's intentions, while not yet on the drawing board, is to base its service on principles of cost recovery.

Because of the political sensitivity of the issue--especially in light of the presumed proportion of low and very low-income inhabitants in the city--it has not even reached the formal proposal stage. Another proposal it envisions for the future is to charge higher volume users more than at present so that residents in poorer sections of Djibouti City would not have to pay as much for this basic commodity of life.

### 2.2.2 DUL

The Subdivision of Assainissement et VRD (Sewerage, Roads, Networks and Drainage) lies within the Ministère des Travaux Publics, de l'Urbanisme et du Logement, Direction de l'Urbanisme et du Logement (DUL). Some of the major concerns of this agency are not unlike those of ONED, namely administrative matters. Those include such factors as expansion of services while at the

same time recovering costs of both existing and expanded services. They also touch on issues concerning the "distribution of costs," so that larger consumers would pay more of the true cost. This would imply reducing the burden on those people least able to pay for services, most of whom reside in the Old Quarters and Balbala.

For reasons of public safety as well as sanitation, DUL said it would also prefer to see most residents living in durable shelter, not the tin, wood, and cardboard structures which exist throughout all of Balbala and much of the Old Quarters. It was noted in discussions with DUL that many residents using corrugated tin for structuring their houses also employ burlap cloth tacked to wooden planks on the interior in order to provide insulation, mainly against the intense heat of summer. Despite this local ingenuity in climatizing homes, DUL expressed a concern for the lot size of houses in the poorer areas. It is the judgment of DUL that for sanitary conditions to occur, each house should have between 60 and 100 m<sup>2</sup> at a minimum.

Other constraints voiced by DUL concern the absence of services in the Old Quarters and Balbala, for example, the lack of a sewered system in the Old Quarters and the total absence of drainage in Balbala. But it is not simply a matter of the enormous cost of filling these voids, but the problem of underwriting present costs. Most of the services are underwritten by the District government since the recovery of costs does not yet seem close to being a reality in Djibouti at this time.

Although a sanitation tax is envisioned in the Old Quarters--a requirement under the World Bank-USAID Project (PDUD)--neither the rate nor the method of collection has been precisely fixed. And, while a service tax is levied against owner-occupied houses built of solid materials in the Old Quarters, it is a very low tax, indeed, which was levied in pre-independence times. That raised another important issue expressed by DUL: the distinction between owners and renters. Since owners of houses and not renters are charged for services, fee collection is at present very difficult.

DUL's bill has reached enormous proportions--40 M DF (approx. US \$2-3 million) per year (excluding electricity) for the relatively small population of Djibouti City, estimated at 250,000. Next to none of that cost is recoverable. So, as DUL has indicated, it has its work cut out for it, but also clearly recognizes that the critical element of the political will of the people and the State is at stake here.

On a more definitive, manageable note, DUL has expressed a specific interest in household-level appropriate technologies for dealing with excreta removal and waste water disposal. Some effort has already been made in that area under the auspices of the World Bank Technical Assistance Group (TAG). Nevertheless, DUL has strongly urged continued assistance from TAG or similar groups in such technologies as the ventilated pit latrine which has been used effectively in many upgrading programs. As well, such participatory activities as "self-help" assisted construction which have also been found to be highly useful in similar urban improvement programs would be appropriate for testing in Djibouti.



### 2.2.3 STDD

The Service Technique du District de Djibouti (STDD), part of the Ministère de l'Intérieur, des Postes et Télécommunications, and coordinator of the National Committee, shares many of the same concerns as ONED and DUL. It is especially the complex conditions surrounding displacement and relocation, including rehousing of inhabitants, that are of concern to STDD. These conditions result from rationalizing the road systems in both the Old Quarters and Balbala, for which the STDD is responsible. It is noted that displacement from their houses is not a voluntary act on the part of residents.

Adding to the already complex conditions of displacement and relocation in the Old Quarters and Balbala is the fact that a significant portion of the problem is due to squatters who intentionally settle in the right of way of a new or improved street. Occurring almost exclusively in Balbala, this practice is carried out by settlers who will "benefit" from displacement from their newly obtained land by being offered a "free" lot to built on. Of some 2,000 displacees in Balbala, about 60 percent are purported by STDD to have benefited in this way. Through the Commissariat of Djibouti City, the land used for rehousing, technically owned by the GROD, is given to displacees to build on.

STDD has begun to tackle this situation in the Old Quarters in concert with DUL and the Service des Domaines (Land Registry). The Service des Domaines has begun registering each plot in the Old Quarters, including ownership/rental status and amount of rent. One of the purposes of this land registry effort in the Old Quarters is to establish a system for recovering improvement costs funded under the World Bank/USAID urban development project. Such a cost recovery system, carried out at the insistence of the joint donors, however, is not yet in place.

For Balbala, STDD has indicated that for construction of housing in solid materials (en dur) a 150 m<sup>2</sup> lot is preferred for basic healthful functioning of the household. But the perennial question of "who pays?" for that or even a smaller lot comes to the fore once again. This issue, along with those raised for ONED and DUL concerning recovery of costs, is one which it would seem has to be raised to a political level of discussion at some point rather soon. It is not simply a question of "who pays?" posed just for its own sake, but of Djibouti's socio-economic development in the short term and the long term.

On the more practical level, STDD's considerations for improving water and sanitation conditions in the Old Quarters, Balbala, and other low-income settlements include several elements. In regard to settlements development, STDD is interested in advancing three programs:

- ♦ housing for the very poor;
- ♦ an area permanently reserved for nomads who are in a continuous state of arriving and departing Djibouti City; and
- ♦ appropriate technologies for adaptation to the above settlements activities.

The last could include such elements as:

- pilot efforts in local production of earthen, emulsified bricks using an inexpensively priced manual brick press machine;
- odorless, ventilated pit latrines;
- automatic cut-off valve for water standpipes;
- assisted self-help construction of houses in solid materials;
- building materials production activity;
- single, fixed monthly payments for building materials, services, and plot (e.g., as in sites and services and squatter upgrading programs carried out elsewhere in the developing world).

Not all of the above elements have proven fully effective in programs in other countries--for example, World Bank studies of cost recovery from sites and services projects often indicate low recovery rates. Such programs should be studied for their potential contribution to Djibouti's settlements development program, in the context of ongoing discussions of housing policy (Becquart et Bouchaud, 1988) and a policy of recovery of service costs.

#### 2.2.4 PDUD

The Projet de Développement Urbain de Djibouti (PDUD), responsible for implementing infrastructure upgrading in the Old Quarters, not surprisingly shares some of its primary concerns with those of the agencies already discussed. Displacement of residents from the Old Quarters represents a major issue to PDUD, especially in light of the amount of actual displacement which this agency has had to oversee.

Related to that issue is PDUD's expression of the need for a national housing policy, one which would address the question of financing new housing to replace that relinquished by those displaced by infrastructure improvement programs. Their minimum size lot for displacedes would be 40 m<sup>2</sup> (Service des Domaines used a similarly low figure of 45 m<sup>2</sup>)--the lowest stated by any of the agencies. Such a lot would be purchased from the State and reimbursed through a bank or some other such mortgage plan.

PDUD raises the question of sources of funds, which ultimately comes back to the matter of cost recovery. If payments are made by beneficiaries/users for land, homes, and services acquired, then a continuing source of funds is made available to the unending flow of new "borrowers" who are queued up to "purchase". The linked concepts of buyer/borrower and lender/creditor seem somewhat foreign in Djibouti when it comes to land, shelter, and services. That situation is by no means rare in developing countries. Clearly there is

a relationship to the foreignness of those concepts and the perception of the limited economic capacity of low-income residents. But low-income people in certain developing countries have demonstrated that where there is the political will to develop or improve human settlements and related services on a "pay-as-you go" basis, then it can be done. The case of the dispossessed, the rock-bottom poor in Djibouti who are unable to pay for anything but bare means to survival, comprise a different category, but would seem to represent only a limited proportion of low-income Djiboutians.

PDUD suggested that where the well-to-do (much less others) are not being charged enough for land and services to cover basic costs, then certainly low-income Djiboutians cannot be expected to carry the financial burden. Matters such as these all seem to fall on the doorstep of policy and the political will of governments--with a resounding thud! It is these issues which PDUD, probably more so than any other Djiboutian agency, has had to come up against in its work.

#### 2.2.5 SHE/ES

Service d'Hygiène et d'Epidémiologie and Education Sanitaire (Public Health and Health Education), both located in the Ministère de la Santé Publique et des Affaires Sociales, share very definite ideas about the problems and solutions to water and sanitation conditions in the Old Quarters and Balbala. Both of these health offices have devoted considerable attention and programming to household and community-wide sanitary conditions.

Several approaches have been taken by these two offices in identifying and modifying some of the relationships between environmental health conditions and local, household practices in sanitation and water use. Some of these approaches to a certain degree reflect western standards of health. Modification of sanitation practices in those instances entail or would entail "enforcement," through issuance of permits, certificates or in negative cases an imposition of fines or, in extreme situations, eviction. Another approach, often used by SHE and ES in concert with that of "enforcement," is raising the community's consciousness about sanitary conditions at the personal, household and neighborhood levels.

The SHE and ES offices have often found health and sanitary conditions (as confronted by residents of the Old Quarters and Balbala) to be rife with contradictions. In the absence of locations where household waste water might be evacuated, some residents often have few alternatives at present but to throw it in the street or pour it into their pit latrine. Rutted streets with puddles of waste water provide an excellent breeding ground for flies and mosquitoes, as do pit latrines filling ever closer to the top with excreta and waste water.

A three-pronged approach of (a.) physical upgrading, (b.) household and community level sensitizing, and (c.) regulation is clearly the most powerful attack on the problem of public hygiene in Djibouti City's low-income communities. And, while public health officials are highly aware of the potential effectiveness of such an approach, they are equally sensitive to the high cost of programs based on it. For example, SHE would propose a 100 m<sup>2</sup>

space for new lot development, knowing that it is beyond the reach of a sizable proportion of the low-income population. As well, elimination of all houses not "en dur" (because wood and tin are only "provisional" under the law) would be striving for health standards which many low-income residents cannot presently meet--as stated earlier--until some basic changes are made in the Djiboutian human settlements policy.

## Chapter 3

### OVERVIEW OF METHODOLOGY\*

#### 3.1 Final Organization of Questionnaire

The questionnaire used in the sociocultural study was almost completed at the end of the WASH adviser's first consultation in November-December 1987. With the pre-test completed and certain additions and organizational changes made in the questionnaire, it was ready for use in the full-blown survey carried out in March-April 1988 by DINAS.

The questionnaire included two major sections:

- ♦ the first was directed at the woman perceived by the rest of the household as the person most responsible for managing matters of water and sanitation, while
- ♦ the second was directed at the head of household him or herself.

The rationale for this division was that the person most responsible for matters pertaining to household water and sanitation was not necessarily the one who makes major decisions about how money is spent or who decides future plans for the house itself and the household. Conversely, the head of household was not necessarily the person who manages water and sanitation matters.

The final organization of the questionnaire was composed of nine functional categories, designed for ease of use in questioning inhabitants and in facilitating the statistical analyses. These nine categories of questions are, in order of presentation in the questionnaire:

- 1 - Physical conditions of the house and immediate surroundings
- 2 - Introductory questions concerning head of household and general physical conditions of the house
- 3 - Social composition of the household
- 4 - Provision of water and removal of waste water
- 5 - Sanitation practices

---

\* The following chapter is adapted in part from the description of methodology provided by Idriss Ali Sultan, DINAS, found in Appendix B (in French). See that for a detailed explanation of methods.

- 6 - Personal (body) hygiene
- 7 - Garbage storage and removal
- 8 - Electrical appliances and their use (for use in a separate study by ISERST)
- 9 - Head of household preferences concerning potential future change

In order to account for the national languages used by inhabitants of the Old Quarters and Balbala, the questionnaire was translated from French to Afar, Somali, and Arabic. It had been strongly recommended that these translated versions be used in the field interviews. Nevertheless, it was decided to utilize only the French version.

### 3.2 Recruitment and Training of Survey Personnel

Eight interviewers and two field supervisors were recruited to carry out implementation of the questionnaire. Over the period of a week, these personnel were trained in general survey methods including sampling and techniques for introducing themselves and the survey to interviewees. Details of the sociocultural study were also presented, including its objectives and the kinds of general findings one might expect, followed by review of each question in the questionnaire. Some time was spent examining the questionnaire translated into Afar, Arabic, and Somali to familiarize interviewers with technical terms in the three languages, where a translation of those terms was possible. Interviewers were then familiarized with maps of the Old Quarters and Balbala, followed by formulation of a work plan and schedule.

Unfortunately, no women interviewers were used in the survey, which--as is clearly understood--was directed at matters lying principally in the domain of women. In the pre-test, three out of five interviewers were women. The advantages of female interviewers, in creating a sense of ease with mostly women interviewees in discussing somewhat personal matters, became very clear during the pre-test. Nevertheless, because of certain exigencies imposed on the survey, the inclusion of female interviewers did not occur.

### 3.3 Sample Preparation and Selection

Establishment of a sampling base proved rather difficult since a current record of present households in the Old Quarters and Balbala was unavailable from the 1983 national census. In determining sample size and representativeness, DINAS decided to use geographic or survey maps obtained from Service des Domaines for the Old Quarters. Since such maps were unavailable for Balbala, French army offices were approached for use of recent aerial photographs.

The sampling unit itself was defined as a "block" or "ilot" (literally, islet or small island) delimited by avenues, streets or pathways and comprising an aggregate of households. These sampling blocks were then transposed onto the maps. For sampling purposes the Old Quarters and Balbala were treated separately, given the considerably different conditions of these settlements. Sample size was determined to be, finally, a function of the number of interviewers, workload per day, and available funds. The total number of households which could be interviewed was thus estimated to be no more than 900 for the two settlements combined.

Table 2

Survey Sample Block Selection for Old Quarters and Balbala

Settlement	No. Blocks Established	No. Blocks Selected	Number Households/ Block Selected	Number Households/ Block Completed
OLD QUARTERS	1,740	148 X 3	(= 440)	430
BALBALA	610	82 X 5	(= 410)	408

The sampling mode was based on the total number of blocks, 1,740 for the Old Quarters and 610 for Balbala. Since every house in each block selected could not be interviewed, it was decided to select three households from each for the Old Quarters and five for Balbala.

3.4 In the Field

Two survey teams were formed, each consisting of four interviewers and a supervisor/interviewer. Both teams were initially assigned to the Old Quarters, which were divided by DINAS into north and south zones. For working purposes, one team interviewed in the northern zone, the other in the southern. The same zonal divisions were devised for survey implementation in Balbala.

The survey was carried out over a 30-day period during mid-March to mid-April. Interviewers were assigned to specific blocks and were required to complete six interviews of about one hour each per day. Prior to actual interviewing, the survey team verified the selected sampling blocks through a mini-census of each block. In this way the households to be interviewed were sequenced in a systematic way for efficient use of time in the field.

### 3.5 Data Analysis

All statistical analyses were carried out by DINAS, using the Quadeole statistical program. Initially, preliminary raw data were run in the form of percentage tables for all questions. These were separated for the Old Quarters and Balbala. These are essentially the data reviewed for each of the two settlements appearing in Chapter 4. The raw percentage responses for each question in the questionnaire are presented in a copy of the questionnaire itself, for each of the Old Quarters and Balbala. This material is available on request from the WASH office.

The statistical analyses of the sociocultural survey data are part of the continuing effort of the National Committee to develop the capacity within its constituent organizations to carry out similar surveys in the future.

Therefore, the analyses used here are somewhat preliminary in terms of their sophistication and statistical precision. It is envisioned, for example, that measures of correlation coefficient, levels of significance, and standard deviation will be made for the relevant data as the research process progresses. Nevertheless, the data representing conditions and perceptions of the inhabitants surveyed are not sufficiently numerous to justify a high level of statistical sophistication.

This chapter has been purposely abbreviated in light of the more thorough-going outline of the methodology written by Idriss Sultan of DINAS which appears as Appendix B. Since the survey methodology is of most importance to DINAS itself, the exercise of outlining that part of the report resulted in a very beneficial training and institution-building activity.

### 3.6 Special Note for Urban Planning Purposes

While sub-samples have not been selected here for special statistical treatment, it is possible to select specific blocks or clusters of blocks for that purpose. If urban planners, for example, were to request data on certain sections or sub-sections of the Old Quarters or Balbala, that could be done.

On the basis of the maps and aerial photo used for charting and selecting the blocks whose households were interviewed, DINAS could, at some point, draw out the requested data.



## Chapter 4

### OVERVIEW OF THE FINDINGS FOR THE OLD QUARTERS AND BALBALA

The following are summaries of the preliminary survey tabulations for the Old Quarters and Balbala furnished by DINAS during the period of the WASH consultancy. The data selected for presentation in this review are meant to highlight the major findings of the survey; they are grouped in four sections: water, urban services, health, and community conditions. Each section contains information on the availability of facilities, current practices as observed and reported, and the attitudes and preferences of householders. Data for the Old Quarters and Balbala are presented separately followed by a comparison in the last section.

The survey question from which the data were drawn is indicated parenthetically in the text; for more complete information, request the tabulations of raw data from the WASH Office. It is noted that not all figures total 100 percent.

#### 4.1 Old Quarters

##### 4.1.1 Water

Fifty-one percent of the survey population in the Old Quarters report that water is supplied through a direct connection to the home or by a public fountain. Clearly, most of these households receive water through a direct connection (39.1 percent); a very limited number of households (less than 2 percent) reported use of the eleven existing public fountains in the Old Quarters in part because these have been gradually shut off over the last several months due to health hazards resulting from their misuse.

Most households without a direct connection obtain water by an "external connection" (45.9 percent), that is by linking a hose to a neighbor's tap. Another 11.7 percent report that they rely on a neighbor's faucet for their water supply but do not use a hose connection.

In the Old Quarters households use a single source of water to supply all needs--i.e. drinking, cooking, washing and bathing. A majority (65.4 percent) of those surveyed report that their water supply is not a problem, although 28 percent note that water is not always available. Seventy-one percent keep a reserve of drinking water in the home; over half of these families replace this stock on a daily basis.

#### 4.1.2 Urban Services

##### Garbage Collection

Garbage collection is provided by the District of Djibouti in the Old Quarters where 90.7 percent of the respondents report that this presently free service is available to them. Garbage removal by truck is utilized by 66.7 percent of the survey households; 32.1 percent dispose of their garbage in large communal bins maintained by the city. Garbage trucks service the Old Quarters once per day; most households make use of this service on a daily basis, although 19.7 percent report that trash is disposed of every two days.

Garbage removal by truck is preferred by 81.0 percent of the households; 18.5 percent prefer communal collection bins (container à roulettes/bac à ordures). Survey results demonstrate that householders are not willing to pay for garbage collection; this finding is of interest to urban planners who are proposing consideration of a sanitation tax in order to reduce the government's cost in providing this service.

##### Roads and Drainage

Based on observations made by the interviewers, 74 percent of the households visited are located on non-maintained dirt roadways which are frequently rutted with potholes; 12.4 percent are located on improved dirt roadways and 5.8 percent on paved surfaces. It was reported by 71.6 percent of the respondents that their households had vehicular access.

Drainage of both rainwater and household waste water is closely associated with road conditions. Irregular road grading and lack of storm sewers cause many of the Old Quarters to become flooded during Djibouti's occasional rains; inadequate or non-existent means of eliminating household waste water cause recurring problems on a daily basis; depressions in the street surfaces collect water and become breeding grounds for insects and disease. Thus puddles and/or standing water on roadway surfaces were observed in the environs of almost half the houses polled (49 percent). Only 5.5 percent of the survey households have drainage systems in their immediate vicinity. Improvements in road surfaces (grading/widening/alignment) and the installation of drainage systems have been completed in Quarter 3 and are now underway in Quarter 5. Due to extensive use by households, the drainage canals in Quarter 3 are often blocked by debris; STDD now cleans these areas on a regular basis.

##### Electricity/Telephone Service

Of the households in the Old Quarters, 11.2 percent report that they benefit from public lighting. A reported 80 percent are subscribers to electricity provided by the public utility, the EDD. Only 0.3 percent utilize electricity produced by a shared/co-owned generator. Few households have telephone service (0.7 percent).

The average payment for two months electrical service was 11,021 DF. Households who do not subscribe to the EDD are willing to pay about half this amount (average 5880 DF/2 months) for service.

Households that do have electricity were asked to list the number and type of electrical appliances in use. These findings are significant for future planning of electrical service/conservation practices and interventions in the fields of public health education and household hygiene.

#### 4.1.3 Health

Health is a broad category which includes many factors and, as is obvious, is closely related to the previous discussions of water and urban services. However, this section of the review of the survey findings is mainly concerned with the household level of organization. That is followed by discussions of toilet facilities and sanitary practices.

#### House Structure

In the Old Quarters houses are usually constructed in sheet metal (47.6 percent) tacked over wooden planks (38.0 percent), but 14.2 percent are built "en dur," i.e., constructed of stone or cement. Most floor surfaces are cement (82.7 percent) but 14.5 percent have earthen floors.

Djiboutian houses are typically constructed with open courtyards at the center; based on observations during the survey pre-test, latrines, food preparation areas, and water pipes are often located in close proximity at one end of the courtyard (frequently near the entry way). The courtyard itself is the site of many activities. Rooms are typically located at the sides and the rear of the central area. In the Old Quarters 32.9 percent of the homes have one room, 45.2 percent have two rooms, and 15.8 percent have 3 rooms.

According to some public health experts, an area of 60 m<sup>2</sup> is necessary to maintain salubrious living conditions. In the Old Quarters the physical area of households is reported as:

- ♦ less than 60 m<sup>2</sup>: 31.2 percent
- ♦ 60 m<sup>2</sup>-100 m<sup>2</sup>: 40.1 percent
- ♦ more than 100 m<sup>2</sup>: 27.6 percent

The number of persons per household in the Old Quarters is about seven (average number 6.86 persons).

#### Toilet Facilities

The most common type of toilet facility in the Old Quarters is the pit latrine. This is usually located in the interior of the house and is rarely shared with other households. As observed during the design pretest phase of

the survey, standard latrine construction consists of concrete slabs with "Turkish style" foot blocks set over a pit and enclosed in a small, roofed room. As indicated by the survey, the pit opening is frequently left uncovered.

Table 3

Type of Toilet and Characteristics of Use: Old Quarters

Type of toilet facility	
latrine	92.0
flush toilet	5.9
none	1.1

is it	inside the house? %	shared with other households? %	kept covered? %
YES	99.7	3.1	44.2
NO	0.3	95.1	55.4

During the design/pre-test phase slow or insufficient drainage of latrines was determined to be a problem.

Since several full or nearly full latrine pits were observed in parts of the Old Quarters, a question on the frequency and the method of evacuating the system was included in the survey. For the most part, households that perform this type of maintenance hire trucks to pump out the waste. This service is provided by the private sector at an average cost to the household of 4,935 DF every two years.

Somewhat surprisingly, 71.6 percent of the households surveyed report that they have never had the pit latrine cleaned out. Yet they indicate a willingness to pay almost twice the rate reported by households that have paid for latrine evacuation (9,352 DF). Some residents of the Old Quarters are not responsible for having latrines emptied, since they are renters and this is usually the owner's responsibility. Other residents have not lived in their houses long enough to have the latrine emptied.

Table 4

Form of Pit Latrine Waste Removal

Latrine Waste Removal/Drainage	
	%
pumping by truck	22.8
drainage to another pit	0.8
manual removal	1.6
never drained	71.6
no latrines	0.6
no response	2.6

Household Hygiene

Practices reported by householders demonstrate a concern for personal hygiene and maintaining sanitary conditions. Seventy-seven percent of the respondents report that they wash their hands after using the latrine; 81.5 percent report that they do so after cleaning the latrine. Latrine areas are typically cleaned once (31.8 percent) or twice (44.1 percent) per day. Water, hand brushes, and detergents/soaps are employed in most cases.

Maintaining latrine cleanliness is important since the area is also used for bathing and showering in 97.8 percent of the households surveyed. In summer months many respondents report that they shower three to four times per day.

The small area of many houses and the proximity of the latrine to potable water reserves and kitchen areas are important considerations for ameliorating household sanitary and hygiene practices. The distance between the latrine and water reserve was "more than five footsteps" in only a third of the households; kitchen/food preparation areas were located "more than five footsteps" in only 18 percent of the homes.

Table 5

Distance of Latrine from Water Reserve and Kitchen Areas: Old Quarters

Distance between Latrine and:	Potable Water Reserve %	Kitchen/Food Preparation Area %
not applicable	17.8	9.4
less than one step	9.2	35.3
one to five steps	38.6	35.3
more than five steps	32.9	18.0

The location of the latrine and the fact that more than half the households do not keep the latrine pit opening covered create unsanitary conditions. Odors are a problem, especially from nearly full latrines. The presence and proliferation of flies is a clearly recognized disease vector.

Besides proximity to water reserves, latrines frequently shared a common wall with a kitchen. During the pre-test and the survey observers noted that sometimes these walls are not entirely sealed: they may have holes in the surface, gaps between planking or an open airspace at the top.

Garbage Removal

As discussed in section 4.1.2, most households in the Old Quarters benefit from daily garbage collection. However, the storage of household wastes is still an important consideration for public health planners and educators because most households keep garbage in uncovered containers prior to collection. Garbage is stored outside of the home by more than half of the households polled, but due to the direct frontage of houses onto the narrow dirt roads of the Old Quarters and because of fairly high population density, this practice creates unhealthy street conditions. Uncovered receptacles produce litter and encourage the proliferation of flies.

Table 6

Garbage Container: Location and Characteristics of Use: Old Quarters

<u>Garbage Container</u>	<u>Covered or Not</u>	<u>Days Kept</u>
location:	Is it covered?	No. of days before disposal
	%	%
inside house 32.2	Yes 27.2	1 48.4
outside house 57.7	No 68.1	2 19.7

Storage of garbage is also a concern at the household level. Although garbage containers are located further from water reserves and kitchen areas than latrines, the fact that these receptacles are frequently left uncovered is again a question of sanitary household management which can be addressed by public health authorities.

Few households in the Old Quarters (5.3 percent) report that animals are kept within the compound; thus the presence of animal wastes does not appear to be a major household health problem.

Water Storage and Removal

Although water has already been discussed in other sections of this chapter several points should be noted from the health and hygiene perspective.

The survey was designed to ascertain whether or not households utilized the same or different sources of water for different household tasks. The data for the Old Quarters demonstrate that, for the most part, household water needs are obtained from a single source.

Of the households in the Old Quarters, 71.6 percent keep a reserve of water. It is typically stored for one or two days. Where applicable, respondents report that the stored water is kept covered. This is a very positive finding given the proximity of the water reserve to latrines and garbage containers.

The elimination of waste water is a major problem in the Old Quarter because most households have insufficient or no drainage system. Survey results show that 17.8 percent of the houses in the Old Quarters have waste water collectors; these small cement-lined pits are usually located in front of the house. Since they are often not emptied, water stagnates, thus posing the same health hazard as waste water thrown in the street. In the remaining households the latrine pit is usually the only drainage system. Observation

during the pre-test phase revealed that the latrine pit drainage systems were often overburdened. Survey results support this observation; of the homes that do not have a waste water collector:

- ♦ 28.5 percent use the latrine for disposal of wastewater
- ♦ 23.8 percent throw waste water in the street
- ♦ 14.5 percent use gutters maintained by the District

A process of selection appears to determine where waste water from specific household tasks is eliminated:

Table 7

Types of Waste Water and Methods of Evacuation: Old Quarters

	Waste Water from:		
	Cooking/Food Preparation %	Clothes Washing %	Bathing/Showering %
<u>Where evacuated?</u>			
Street	46.0	21.8	15.8
Latrine	27.6	49.9	65.9
Gutter	10.0	15.8	7.1

4.1.4 Community Conditions

The final part of the survey consists of questions which were posed to the head of household. These questions concern household finances as well as willingness/readiness to pay for improvements and to participate in community efforts. The following data provide background information that will aid interpretation of the responses.

Most heads of household are married and have lived in their present dwelling for more than five years (68.3 percent). On average, there are:

- ♦ 6.86 persons per household
- ♦ 1.28 regular wage earners per household
- ♦ 0.75 children enrolled in public school per household



More than half of the heads of household report that they have received no formal education. Their responses to this question are presented below:

Table 8

Level of Education of Head of Household: Old Quarters

Head of Household/Highest Level of Education	
Koran school	11.8%
Primary school	17.6%
Secondary school (first level)	7.6%
Secondary school (second level)	2.7%
Professional school/training	6.1%
University	0.5%
No schooling	55.8%

In the Old Quarters, 57.9 percent of those surveyed own their homes; it should be noted that home/ownership does not mean that individuals own the land on which their houses are built.

Renters constitute 39.5 percent of the survey population for the Old Quarters; average monthly rent payment is 18,762 DF.

In a question that is closely related to home ownership 55.8 percent of the respondents report that they prefer to stay in the same dwelling with new or improved services; 16.6 percent state that they are willing to move to a new location; 22.8 percent state that they "do not know."

Heads of households were asked what level of monthly payment they could afford if funds were borrowed to construct a house or to make home improvements. Their responses are as follows:

♦ not more than 3,000 DF per month:	17.9%
♦ between 3,000 and 4,000 DF/month:	2.9
♦ between 4,000 and 5,000 DF/month:	8.9
♦ between 5,000 and 6,000 DF/month:	2.8
♦ between 6,000 and 7,000 DF/month:	1.9
♦ between 7,000 and 8,000 DF/month:	2.2
♦ more than 8,000 DF/month:	19.8

Twelve percent stated that it was impossible for them to borrow funds; another 31.5 percent did not respond to the question, a figure which would seem also to include those who felt they could afford little to no borrowing at all.

Based on their current situation heads of household were asked what they are presently willing to pay for specific improvements. Amounts were not stated in this open-ended question; the following averages result from those who responded:

- ♦ 4,055 DF to obtain a better source of water;
- ♦ 3,731 DF to obtain a closer source of water;
- ♦ 15,949 DF to improve toilet facilities.

Heads of household were asked what they paid for specific types of services available to them; and people who did not currently benefit from these services were asked what they were presently ready to pay. A comparison of the average amounts obtained from these two questions is instructive:

Table 9

Comparison of Average Monthly Costs  
for Services and Amounts Ready to Pay: Old Quarters

Service	Average amount paid	Average amt ready to pay
Water	3,813 DF for two months	2,979 DF for two months
Removal of latrine wastes	4,935 DF for two years	9,352 DF for two years
electricity furnished by the EDD	11,021 DF for two months	5,880 DF for two months

The amount that individuals are ready to pay for water is on a par with the actual amount that households with this service pay; however, the average amount paid for electricity is almost twice the amount that non-subscribers are ready to pay. The cost of latrine waste evacuation appears to be substantially less than the amount that individuals are ready to pay for this essential maintenance.

The final questions of the survey were designed to assess willingness to participate in collective efforts to improve water and sanitation facilities.

Well over half (58.2 percent) of the heads of household say that they are ready to take part in such activities and that they are willing to work with their immediate neighbors; 41.8 percent state that they would not participate.

The fact that many people are not willing to participate in collective efforts can perhaps be explained by certain, shared community attitudes about sanitation.

Responses demonstrate that people consider sanitation a household concern. A clear majority of those polled (81.1 percent) are not willing to share improved sanitary facilities with neighbors; the two reasons given most frequently are that sanitation is a private matter (30.1 percent) and that sharing facilities is not hygienic (28.6 percent). Of those who are willing to share facilities, very few cite financial constraints as their motivation.

In order to identify which community groups might be involved in the construction of facilities for those who are unable to finance improvements themselves, heads of households were read a list of existing organizations (e.g., the local mosque, youth center, health committee, aid society) and asked if they knew of other such groups. Approximately two-thirds of the respondents are not certain whether or not the groups listed would participate in these types of activities. However, when asked if they thought no community organizations existed that might provide such assistance, about the same number of respondents indicated that such groups exist. Very few respondents suggested groups or organizations which were not named in the question.

## 4.2 Balbala

### 4.2.1 Water

In Balbala only 19.7 percent of the households surveyed report that water is supplied by direct connection or public fountain. Compared to the Old Quarters, very few households in Balbala have direct water connections (3.8 percent); many more households rely on public fountains to supply their needs (18.2 percent) but the majority use other means.

Almost half (44.3 percent) of the households surveyed in Balbala depend on water trucks to deliver their supply of water. The "external connection" is again a significant method of obtaining water (26 percent); however, unlike the practice in the Old Quarters, hoses are more commonly linked to public fountains than to a neighbor's tap simply because the latter are in short supply.

Although most householders in Balbala obtain water outside their homes, about half of those surveyed report that the source is fairly close (0-60 meters) and that the trip to and from the source takes no more than 15 minutes. The task of carrying/bringing water to the household is clearly the work of women and girls. Most of the households surveyed (88.2 percent) maintain a reserve of drinking water.

#### 4.2.2 Urban Services

##### Garbage Collection

Only 27.2 percent of the respondents in Balbala reported having garbage collection services available to them. Service by truck is minimal (6.7 percent usage) but 18.3 percent use communal bins maintained by the District. Another 13.4 percent dispose of household garbage in roadside ditches. About 60 percent report that they use "other methods" for trash disposal; based on the physical layout of Balbala and observation this response seems to reflect the current practice of dumping household wastes in available open space.

Of those polled 71.3 percent prefer garbage collection by truck; 23.6 percent prefer the installation of communal bins (container à roulettes/bac à ordures).

##### Roads, Drainage, and Current Practices

There are no paved road surfaces in Balbala; 72.4 percent of the homes visited there are located on non-maintained roads; 18.8 percent of the residences are accessible only by foot path.

Only 39.2 percent of the householders reported that their homes could be reached by vehicle; this is a significant finding since many homes (44.8 percent) obtain their water by truck delivery. It is also a consideration for planning garbage collection services to be provided by the District.

Because of the slope of the Balbala site, drainage of rainwater is not a serious problem; it flows naturally into the adjacent Wadi Ambouli. However, standing water on flat roadways, created by the disposal of household waste water, remains a problem. This condition was observed in the vicinity of 34 percent of the households visited. Roadways are drained by non-maintained channels in 37.4 percent of the observed cases. Only 1.8 percent of the households polled have drainage systems located in their immediate environs.

Household waste water is usually disposed of in the road (48.0 percent); 24.5 percent of the households dispose of their waste water "on the ground"; it is not clear from the survey whether this is done in the interior courtyard of the house (81 percent of the courtyards in Balbala have dirt floors) or in neighboring open space. Only 3.3 percent of the households have individual waste water collectors.

##### Electricity/Telephone Service

Of the householders surveyed in Balbala, 96 percent do not have electrical service. Only 3.2 percent subscribe to the EDD; 0.4 percent receive electricity from a shared generator. Public lighting is available to a negligible 1.0 percent of the households. The most common form of home lighting is by kerosene lamp (68.1 percent); another 23.6 percent utilize kerosene lamps. Virtually no households reported that they have telephone service.

#### 4.2.3 Health

##### House Structure

Balbala houses are typically constructed of sheet metal (55.5 percent) tacked on wooden planks (41.2 percent). Very few homes (2.1 percent) are built "en dur," that is, of stone or cement. Approximately four-fifths of the houses have dirt floors (81.1 percent); the remaining fifth have cement floors (18.1 percent).

As noted earlier, a household area of 60 to 100 m<sup>2</sup> is considered to be the minimal size necessary for healthful living. Balbala house sizes are as follows:

- ♦ 23.1 percent: 30 m<sup>2</sup> or less
- ♦ 17.4 percent: 30-60 m<sup>2</sup>
- ♦ 34.7 percent: 60-100 m<sup>2</sup>
- ♦ 24.6 percent: 100 m<sup>2</sup> or more

Although the area of the house for about a quarter of the Balbala sample is greater than 100 m<sup>2</sup>, one should note that another quarter of the homes included in the survey are extremely small--30 m<sup>2</sup> or less.

The average number of persons per household is 6.19. The number of rooms per household is as follows:

- ♦ 55.2 percent: one room
- ♦ 34.4 percent: two rooms
- ♦ 8.2 percent: three rooms

Almost one-quarter of the householders surveyed report that animals are kept within the household.

##### Toilet Facilities

The most common type of toilet reported in Balbala is the pit latrine. A greater number of these are located outside of the house compound compared to the Old Quarters and a greater percentage are shared by several households. During design phase observation in Balbala several free-standing communal latrines which served adjacent homes were inspected.

Of the survey respondents in Balbala, 16.3 percent say they have no toilet facility available to their households.

Table 10

Toilet Type and Characteristics of Use: Balbala

Type of toilet facility	
latrine	77.7
flush toilet	0.3
none	16.3
other	3.9
no response	1.8

is it?	inside the house %	shared with other households %	kept covered %
YES	82.8	9.2	16.5
NO	17.2	70.1	81.4
NO RESPONSE	X	1.5	X

In Balbala the spatial organization of water reserves, kitchen and latrine is often different than that found in the Old Quarters. Water reserves may be located in roadside barrels, and latrines are sometimes built outside of the home. These factors should be taken into consideration when interpreting the results summarized below.

Table 11

Distance of Latrine from Water Reserves  
and Kitchen Area: Balbala

Distance between Latrine and:	Potable Water Reserves %	Kitchen/Food Preparation Areas %
less than one step	4.9	16.2
between one and five steps	28.5	20.5
more than five steps	41.5	32.4
no response or not applicable	23.1	29.0

Four-fifths of the households report that latrine openings are kept uncovered. Even if latrines are located outside the house or at a distance from kitchens and water reserves it is still good sanitary practice to keep the pit latrine openings covered.

In Balbala 77.9 percent of the respondents reported that their latrines had never been drained or cleaned out. This figure is not as problematic as the results for the Old Quarters for several reasons. First the Balbala site has not been occupied for as long as the Old Quarters; most houses have been constructed in the last two decades. Second, underground water table fluctuations do not affect Balbala. Natural drainage is adequate given the elevation of the site. However, the location of bed rock close to the surface and the rockiness of the area make the construction of deep latrine pits difficult or impossible in some locations. The potential problem of overburdened latrine systems is a major consideration for the future planning of sanitary services in Balbala. As in the Old Quarters, latrines are most frequently the site of personal bathing and showering (83 percent).

## Garbage and Waste Removal

As noted in section 4.2.2, few householders in Balbala benefit from garbage collection services, and many respondents indicated that they dispose of household wastes in a location "other" than those listed on the questionnaire. It appears that most people use available open space in Balbala to eliminate trash; whether these sites are scattered around homes or if communal and informally organized sites exist is not known. However, during the pre-test phase, communal latrines built on top of mounds of debris were observed in one Balbala neighborhood. Given Balbala's continuing population growth and current services and practices, it is important from a public health perspective that future communal dump sites be planned.

Table 12

### Method and Location of Garbage Disposal: Balbala

Location of Garbage Collection	%
Collection truck	6.7
Communal collection bin	18.3
Roadside ditch	13.4
Other	59.7
No response	1.9

Of the householders polled in Balbala, 58.2 percent reported that they store garbage outside of the home; 33.9 percent keep household wastes inside the house before disposal. Most containers (79.3 percent) were observed to be left uncovered.

It was reported that animals are kept within the compound in 23.5 percent of the Balbala households; thus the presence of animal wastes in the central courtyard areas does pose a potential household health problem.

#### 4.2.4 Community Conditions

Reflecting its origin as a squatter settlement which was only recently incorporated into the Djibouti City limits, Balbala lacks many of the urban services that are available in the Old Quarters. Survey questions on community conditions reveal that the socio-economic status of Balbala's residents is substantially less than that of the low-income inhabitants of the Old Quarters.



In Balbala, 70 percent of the heads of household report that they have received no formal education; of those who have had schooling 13.3 percent attended Koran school and 15.1 percent attended primary school. Less than 2 percent have had secondary or professional education.

Approximately half of the heads of household polled in Balbala have lived in their present dwelling for more than five years. The high rate of home ownership (89.9 percent) in Balbala reflects the historical development of this "bidonville" (squatter settlement) over the last two decades. Although most people have constructed their own homes on the site, the land is, again, not privately owned. Only 7.4 percent of the householders surveyed in Balbala rent their homes; about 2 percent have free or temporary lodging.

Approximately half of the respondents prefer to continue living in their present dwelling with improved or new services, while 28 percent are willing to move to new locations. Preferences are clear for most respondents; only 9.1 percent state they "don't know" whether they would move or not.

#### Willingness and Ability to Pay and Participate

When questioned on the amount of monthly repayments of funds borrowed to build or improve housing that they could afford, 41.4 percent of the heads of households did not respond. This figure, considered with the 9.1 percent of the respondents who stated that it was impossible to borrow funds, could be interpreted to mean that close to half of the Balbala residents are not able to afford monthly payments. Of those who did state an amount, one third said that it could not be more than 3,000 DF per month.

Sixty-three percent of the respondents indicate that they are willing to take part in communal efforts to improve water and sanitation facilities. Of these, 44.4 percent say they would work with their immediate neighbors while 11.9 percent say they would support a community-wide effort.

When considering the possibility of sharing sanitary facilities with neighbors, 80.3 percent state that they would not be willing to share; most respondents cite that such a practice is not hygienic (32.6 percent) or that it is a private matter (29.8 percent). Of the 19.7 percent who are willing to share, only 3.9 percent state that inability to finance improved facilities themselves is a consideration.

The question regarding community groups that might participate in efforts to improve water and sanitation facilities for those unable to finance improvements was somewhat inappropriate in the Balbala context.

Many of the organizations listed do not exist in the Balbala community. The local mosque and aid societies were most frequently cited as collaborating in such efforts. When asked to name other groups not included on the list, 91.4 percent said that there were none. This response illustrates the low level of organizational, and in some cases institutional, development in Balbala; this situation is partly a function of the recent settlement of the area and its informal development.

### 4.3 General Comparison of Water and Sanitation Conditions in the Old Quarters and Balbala

#### 4.3.1 Water

While access to water in the Old Quarters is not an issue, its disposal is particularly critical. There, no natural drainage occurs as it does in Balbala. Most household water derives from a sole source in both settlements, though in Balbala access is not nearly as easy. Water use for both communities is quite similar at the household level. How it is supplied and how it is disposed of differ greatly for the two areas. It is disposal which has an impact on community health conditions, especially in the Old Quarters.

#### 4.3.2 Urban Services

Urban services are much more prevalent in the Old Quarters in part because Balbala up until very recently has been an informal (unofficial) settlement. Water service, roads, and drainage are most in demand there from a planning perspective. An overall settlement/resettlement plan should precede the introduction of these elements. Furthermore, in order to be effective, such a plan should be based on a "sound" habitat or settlement policy which addresses such questions as:

- ♦ economic role of "new communities" (such as Balbala) in overall national growth, including relationship to major urban center, rural centers and rural production activities;
- ♦ cost recovery for land, infrastructure, services, and house construction ("getting one's prices right");
- ♦ role of assisted "self-help" participation in low-income settlement projects;
- ♦ displacement, relocation, and rehousing or new housing.

Any new communities and shelter resulting from the development of a national human settlements policy and plan should benefit from the planning guidelines recommended in the following chapter. In the case of the Old Quarters it is a question partly of completing the present urban infrastructure improvement effort already underway. Some of the same policy factors relevant to the development of Balbala are applicable to the Old Quarters, as well. Cost recovery, "self-help", and displacement are just as appropriate to the Old Quarters as to Balbala.

#### 4.3.3 Public Health

Housing in Balbala is generally in much worse structural condition than in the Old Quarters. Many more houses of wood and tin, with dirt floors and no latrines exist in Balbala. Nevertheless, in terms of how interior space is used in facilitating or constraining sanitary conditions, the two settlements are in fact rather similar. Households in both communities are somewhat crowded to begin with. In addition, different household functions are carried out in such close proximity to one another that sanitary conditions are often at risk. Food preparation, latrine and bathing activities, and storing water are often carried out within a meter or so of one another. Such use of space is decidedly a function of custom but, equally significant, the grouping of the above functions around the single water entry point of interior connections (where these exist). The remedy for the condition of single water delivery points' is very easily and economically achieved.

Latrine and waste water disposal in the Old Quarters and Balbala are emphatically dissimilar. Despite the generally much higher standard of urban services in the Old Quarters, the latrine and waste water disposal there is a greater hazard than in Balbala. This condition results from a higher population density and more debilitating environmental conditions in the unimproved parts of the Old Quarters.

The relationship is reversed when it comes to garbage removal, Balbala's situation posing a potential threat to environmental health conditions. At present the tendency there to use open terrain as a disposal point for household garbage is, at present, perhaps, not so hazardous, but with increasing occupation of that terrain it could become so in the not so distant future.

#### 4.3.4 Community Conditions

In light of very different settlement conditions in the Old Quarters and Balbala, the interest of residents in the possibility of moving to an improved housing zone is also variable between the two communities. Balbala inhabitants' somewhat greater tendency may be related to the known availability of space there in contrast to the Old Quarters' lack of space in which to expand. The distinction is in the expression of willingness to change under better known conditions (Balbala) versus a lack of certainty under mostly unclear conditions (Old Quarters). Unless a resident expressly wanted to move from the Old Quarters to Balbala, the choice of whether to move or not is not easy, since in the Old Quarters residents have had greater access to urban services and have neighborhood ties which they may not want to disrupt.

The overall impression for both settlements is that the predominant sentiment is to remain in place. Although influenced by the displacement/relocation practice of providing a "free" lot in Balbala, many inhabitants, it seems, would prefer to stay where they presently live. In the Old Quarters it probably comes down to staying with what they are now able or just able to "afford". In Balbala it may also be the same factor at work; "if it means improved shelter and services, won't that be beyond my means?" In summary, residents of both communities appear to be fairly certain of what they prefer in the way of services and shelter, even under--at best--uncertain conditions.



## Chapter 5

### SOME KEY RELATIONSHIPS FOR CONSIDERATION OF PLANNING GUIDELINES

The following discussion addresses relationships among the data. These questions or needs, in the area of water use and sanitation practices at household and community levels, are of particular concern to:

- ♦ physical planners in the design of infrastructure, shelter, urban services and facilities; and
- ♦ public health and health education planners who formulate programs to reach the inhabitants of low-income areas.

#### 5.1 Key Relationships in the Old Quarters

##### 5.1.1 Water Source and Storage Constraints

- ♦ There is very little perceived difference in problems of water delivery by Old Quarters residents regardless of whether they use a direct connection or an external connection. Those using other sources, e.g., a neighbor's faucet, cited problems of availability more frequently.
- ♦ There is some tendency for residents of the Old Quarters to report more frequent bathing, the closer they are to the water source.
- ♦ Twice as many residents in the Old Quarters with external water connections (branchements extérieurs) store drinking water than the residents with direct connections (branchements intérieurs). Almost all residents using water from a neighbor's tap or faucet (robinet) keep a reserve of water.

##### 5.1.2 Physical Space and Occupancy

- ♦ In general, the larger number of m<sup>2</sup> of a resident's lot, the lower is the tendency to want to move to a new housing zone and the greater the tendency to want to stay with the possibility of improved services.
- ♦ Somewhat over half the Old Quarters households with one room have between three and six inhabitants.
- ♦ Over half of the households in the Old Quarters with two rooms have between five and eight occupants.

- ♦ Almost three-quarters of the Old Quarters lots of 40-60 m<sup>2</sup> have five or more occupants; equally, those with 60-80 m<sup>2</sup> lots have the same number of occupants.

#### 5.1.3 Differences between Owners and Renters

- ♦ Twice as many owners as renters have a direct water connection to their house (branchement intérieur).
- ♦ Renters in the Old Quarters are split almost equally between those willing to move to a new housing zone and those wishing to remain where they are presently with improved services.
- ♦ It is very clear that house owners in the Old Quarters prefer not to move to a new housing zone but to stay where they are presently with improved services.

#### 5.1.4 Willingness to Move to New Housing Zone

- ♦ The regular wage earners in the Old Quarters show a somewhat greater preference to stay in their present house with improved services versus moving to a new housing zone.

#### 5.1.5 Willingness to Pay for Improvements

- ♦ Willingness to pay for water is very limited in the Old Quarters; almost two-thirds of respondents indicated they would prefer to pay nothing.
- ♦ One-quarter of owners in the Old Quarters would be willing to pay more than 8,000 DF per month on a loan in order to make home improvements.
- ♦ It would seem that renters in the Old Quarters have much less incentive to take such a loan for home improvements, though the data are inconclusive.

#### 5.1.6 Willingness to Assist or Participate in Water and Sanitation Improvements

- ♦ There is virtually no distinction between owners and renters in the Old Quarters as to their willingness to participate in local water and sanitation improvement efforts.

- ♦ Of those owners and renters who would be willing to participate, most would prefer to work with immediate neighbors rather than with people of the surrounding neighborhood.
- ♦ In their willingness to share an improved pit latrine with nearby neighbors, owners and renters show little difference--both, for the most part, preferring not to share at all.

## 5.2 Key Relationships in Balbala

### 5.2.1 Water Source and Storage Constraints

- ♦ Problems of the provision of water in Balbala are considerably more important than for the Old Quarters. Regardless of whether the water was delivered by way of public fountains, direct or external connections or tank trucks, about half of the respondents indicated a problem with availability. Other problems concerned the travel time to and from the source, as well as physical fatigue from transporting water.
- ♦ In Balbala, regardless of the source of water, i.e., public fountain, direct connection, external connection, or tank truck, households maintain water reserves.

### 5.2.2 Physical Space and Occupancy

- ♦ Generally, households include five or six people. Forty percent of the households in Balbala occupy houses of 20 to 60 m<sup>2</sup>. Half of the households are in lots of 60 m<sup>2</sup> or more.
- ♦ Just over half of the one-room houses in Balbala have anywhere between five and nine occupants; a third of the two-room houses also have between five and nine occupants.

### 5.2.3 Differences between Owners and Renters

- ♦ The owner/renter distinction which is important in certain cases in the Old Quarters is unimportant for Balbala mainly because only 7.4 percent of the householders in Balbala are renters.

#### 5.2.4 Willingness to Move to New Housing Zones

- ♦ As for the Old Quarters, a relationship exists between size of the lot and willingness to move: the smaller the lot, the greater the willingness to move to a new housing zone; the larger the plot, the greater the tendency to prefer staying in the same place with improved services.
- ♦ An important distinction between house owners in Balbala and the Old Quarters is that in Balbala there is a considerably greater willingness to move to a new housing zone.

#### 5.2.5 Willingness to Pay for Improvements

- ♦ More than one-third of the owners in Balbala express an interest in borrowing for purposes of home improvement or new housing but only at very low monthly repayment rates.
- ♦ Almost half express no willingness or an incapacity to borrow at all.
- ♦ As for the Old Quarters, an overwhelming majority of residents in Balbala are unwilling to pay for an improved source of drinking water or a closer source of water.
- ♦ Willingness to pay anything for improved pit latrines is negligible in Balbala.

#### 5.2.6 Willingness to Assist or Participate in Water and Sanitation Improvements

- ♦ Regardless of home ownership or renter status, almost two-thirds of the residents in Balbala express a willingness to participate in local water and sanitation improvement efforts.
- ♦ As in the Old Quarters the preference would be to cooperate with immediate neighbors, followed by residents of the larger neighborhood.
- ♦ As in the Old Quarters, residents of Balbala demonstrated little interest in sharing latrine facilities; there was no difference between owners and renters in this respect.



5.3 Some Suggested Planning Guidelines for Urban Services, Public Health, and Health Education

The following guidelines are offered to urban services, public health, and health education planners in assisting them in thinking through the implications of the sociocultural study for their short- and long-term project needs. Since many of the topics have been discussed earlier in the report, these summarized guidelines are intended to be suggestive of the overall research and planning process that one might follow for specific planning actions and programs. For purposes of clarity and brevity, these guidelines are presented in tabular form.

An exercise such as the one presented in Figure 3 could be effectively applied to sub-samples of the Old Quarters and Balbala for more detailed planning purposes. This could perhaps be requested on an as-needed basis by urban services, public health, and health education offices, once DINAS has organized its data retrieval system for such purposes.

Figure 3

SUGGESTIONS FOR PLANNERSTABLE 1: SOURCES AND STORAGE OF WATER

SECTORS CONCERNED	SUGGESTIONS	ANCIENS QUARTIERS	BALBALA
DISTRICT DUL/SANITATION ONED	- Improvement proposals	- Gradual conversion of cost recovery system for insite connections as conditions improve and as ownership becomes more common	- Improved water outlet system with automatic valve closing: one per 50 households at a maximum distance of 100 m from the house. Including: * a fixed monthly payment * a concrete slab cover and drainage of fixed tank.
	- Objectives	- Water cost recovery from all citizens - Use of appropriate technologies	
S.H.E.	- Improvement proposals	- Several faucets on a single connection or requirement of a safe distance from food preparation area or from toilets (latrines)	- Same remarks. In addition: inspection (and authorization) of tank-trucks which distribute water - Control of containers - use of buckets in latrines
	- Objectives	- To teach sanitation principles on food/excreta in an urban environmental with very small living spaces - To control water quality in tank-trucks and in households	

It should be noted that the Education Ministry could include in its programs the rules of a domestic and community cleanliness, as well as sanitation and health principles; the problem would be submitted to representatives of the Education Ministry.

Figure 3 (cont.)

SUGGESTIONS FOR PLANNERS

TABLE 2: SEWAGE DISPOSAL

SECTORS CONCERNED	SUGGESTIONS	ANCIENS QUARTIERS	BALBALA
DISTRICT DUL/SANITATION ONED	- Improvement proposals	- Construction of mixed-use drains (run-off and household water) - Settling tanks - Disposal in sanitation collectors - Absorption on the spot by plants and evaporation	- Same elements with integration in drinking water distribution network and in storm-drains - Settling pools, soak pit
	- Objective	- To set up the above public infrastructure and to teach how to use and maintain the private and public collection and local absorption systems	
S.H.E.	- Improvement proposals	- Local health committee to sensitize and train the residents in system maintenance and in sanitation and water use problems	
E.S.	- Objective	- To organize women so that they can overcome the sanitation and water use problems	

Figure 3 (cont.)

SUGGESTIONS FOR PLANNERS

TABLE 3: HOUSEHOLD WASTE

SECTORS CONCERNED	SUGGESTIONS	ANCIENS QUARTIERS	BALBALA
DISTRICT DUL/SANITATION ONED	- Improvement proposals	<ul style="list-style-type: none"> <li>- Strengthening the current systems of collection by trucks and installation of new tanks and containers</li> <li>- Segregation hard/organic materials</li> <li>- Systematic sweeping of tertiary roads by the local population</li> <li>- Collecting of markets by sellers/polluters</li> </ul>	<ul style="list-style-type: none"> <li>- Control of unplanned dumps</li> <li>- Maintenance of official dumps</li> <li>- Introduction of collection by trucks</li> </ul>
	- Objectives	<ul style="list-style-type: none"> <li>- Setting up a tax on waste collection</li> <li>- Establishment of a development policy</li> <li>- Sensitization of neighborhood committees to waste collection</li> </ul>	
S.H.E.	- Improvement proposals	<ul style="list-style-type: none"> <li>- Separation of hard/organic materials in waste in the house - storage outside the house</li> <li>- Education for sanitation in public collection sites</li> <li>- Gathering dry waste in markets or in community sites</li> </ul>	
	- Objective	<ul style="list-style-type: none"> <li>- To sensitize women and children in schools and in local communities</li> </ul>	

Figure 3 (cont.)

SUGGESTIONS FOR PLANNERS

TABLE 4: INSTALLATION OF LATRINES

SECTORS CONCERNED	SUGGESTIONS	ANCIENS QUARTIERS	BALBALA
DISTRICT DUL/SANITATION ONED	- Improvement proposals	(Marked preference of the community for family sanitary installations) - To recommend the system with a periodically emptied pit - To prohibit filter-well	- To recommend simplified pits - To allow a septic tank with filter and absorbing drainage when the plot reaches 100 m2.
	- Objectives	- To promote and to encourage the use of public toilets wherever the small size of the lots does not permit the establishment of a sanitary and sufficient latrine system. - To build public toilets next markets, mosques and other places where crowds congregate - To train administrative officers to promote appropriate technologies	
S.H.E.	- Improvement proposals	- To cover the pit openings and to observe the "safe health distances" - To teach the principles of latrine maintenance	
	- Objectives	- To use women's and schools' organizations for the purpose of creating awareness of domestic responsibilities in that field - To eliminate uncontrolled defecation near houses - To inspect and follow-up individual facilities	

Figure 3 (cont.)

SUGGESTIONS FOR PLANNERS

TABLE 5: SPACE REQUIREMENTS FOR HOUSEHOLD HEALTH

SECTORS CONCERNED	SUGGESTIONS	ANCIENS QUARTIERS	BALBALA
URBAN SERVICES DISTRICT ONED INSERST DUL/ASSAINISSEMENT	- Improvement proposals	- Outlets for rain water and household waste water on the street - Outside sites for individual garbage cans and public collective tanks - Minimum size of plots: 100 to 150 m2 - Assistance to self-construction	
	- Objectives	- Development and intersectoral dissemination of multidisciplinary technological information - Training of administrative officers in this area	
S.H.E	- Improvement proposals	- To train female managers in household sanitation - To disseminate the message among local communities	
	- Objectives	- Use of structures: mother and child health, Mother and Child, ... - To identify and to establish organizations in which women are directly concerned with house sanitation and with everything connected with it - To organize radio and TV program in order to disseminate information among the population - To assign responsibilities to the Education Ministry	

## Chapter 6

### IMPLICATIONS OF THE SOCIOCULTURAL RESEARCH PROCESS FOR DJIBOUTIAN PLANNING AND TRAINING PURPOSES

One of the major elements of this and the earlier WASH consultation has been to assist in a collaborative manner to develop a sociocultural research process. The purpose of developing such a process is so that planners can more effectively reflect important sociocultural practices and attitudes in the design of low-income urban water and sanitation programs. Another major purpose of the consultation has been to assist in the further development of social science research and analysis. This is especially so where these can be directly applied to pressing socioeconomic and environmental health conditions of low-income urban conditions.

#### 6.1 Benefits to the Planning Process

Based on the sociocultural research process developed under the leadership of the National Committee on Water, Sanitation and Health it is clear that successful interventions at the household and neighborhood levels in the areas of water and sanitation require considerable intersectoral planning and coordination. The establishment of the National Committee itself was a major step in creating a context for dialogue between the GROD sanitation services and hygiene. The Committee's mandate to conduct the sociocultural study and the participation of representatives of its member organizations in discussing the implications of the survey data and how they might be used in planning demonstrate an awareness of the importance of the household level in designing effective programs and plans.

The Committee's activities, in staging the survey and the discussion of its implications, were an effective means of reinforcing its goal of coordinating efforts to improve water and sanitation services and conditions in Djibouti City generally, but more specifically in its low-income settlements.

#### 6.2 Benefits to the Sociocultural Research Process

As mentioned earlier, one of the major goals of the WASH consultants' assistance was to support institutional development. One aspect of that support was to assist DINAS in designing, implementing, and analyzing the sociocultural survey.

Training support provided during the design phase included DINAS' integral participation in the design of the questionnaire and conduct of a pre-test of the instrument. The complexity of factors involved in sociocultural research became clear. These included selecting and training interviewers, translating the survey questionnaire into local languages, and determining an appropriate sampling methodology. Although certain constraints limited the extent to which all of these factors could be accommodated, the organization and implementation of the full-scale survey by DINAS personnel was a valuable training exercise.

In order to assist in more detailed computer-generated analysis of the survey data, WASH provided the Statistical Package for the Social Sciences (SPSS) with instructional materials in French. Since the Committee has expressed interest in the extraction of area-specific planning data, and as more sophisticated statistical analysis is carried out, it is expected that DINAS will utilize the SPSS. The SPSS is on permanent loan to DINAS from USAID.

The research process, throughout the design, organizational, and analytical stages, benefited greatly from the participation of the ISERST Sociologist. His part in providing a linkage to the National Committee and its constituent members, especially DINAS, demonstrates the critical role of the social researcher in the planning process.

The progress in developing a collaborative effort between Djiboutian planners and social researchers in the attack on water and sanitation conditions of low-income urban inhabitants is the most encouraging sign.



**REFERENCES**



## REFERENCES

- World Bank, Groupe Huit, SEDES. 1983. Projet de Développement Urbain de Djibouti. République de Djibouti, Présidence de la République, Ministère des Travaux Publics, de l'Urbanisme et du Logement.
- Becquart, D. et C. Bouchaud. "Djibouti: Politique de l'Habitat du Développement Urbain," Première Phase. PDUD, CNUEH (Habitat), Ministère des Travaux Publics, de l'Urbanisme et du Logement, Mars 1988.
- WASH Field Report No. 214. "Design of a Sociocultural Study of Household Water Use and Sanitation Practices in Djibouti City." (Final Report) John P. Mason, assisted by Catherine Cutbill. April, 1988.



APPENDIX A

**Officials Interviewed**



## APPENDIX A

## OFFICIALS INTERVIEWED

<u>N A M E</u>	<u>T I T L E</u>	<u>O R G A N I Z A T I O N</u>
Mr. HASSAN ROBLEH	Chef, Services Techniques du District	Ministère de l'Intérieur
Mr. F. GAUDEBERT	Architecte/Urbaniste Sces. Tech. District	Ministère de l'Intérieur
Mr. DJAMA MOHAMED ALI	Statisticien	DINAS
Mr. IDRIS ALI SULTAN	Statisticien	DINAS
Mr. GERARD CHENAIS	Conseiller Technique	DINAS
Mr. DENVILLE F. ISMAIL	Adjoint de Programme	USAID
Dr. AHMED MOHAMED HASSAN	Directeur	Education Sanitaire
Dr. CHRISTIAN BAILLY	Médecin-Chef,	Scs d'Hygiène et d'Epidm.
Mr. AHMED ALI	Chef de Projet	PDUD
Mr. WILLIAM ROUNDS	Chef de Mission	Louis Berger, Inc. (PDUD)
Mr. ABDOURAHMAN DOUALEH	Directeur	DINAS
Mr. MAHMOUD AHMED AWALE	Chef, Assainissement/VRD	Ministère des T.P.
Mr. ALI YOUSOUF GUEDDI	Directeur Adjoint	ONED
Mr. GUEDDA MOHAMED AHMED	Sociologue	ISERST
Mr. ABDOURAHMAN FARAH	Chef, Section Energie Renouvelable	ISERST
Mr. FARAH ALI AINAN	Chef, Projet de Maîtrise de l'Energie	ISERST
Mr. JEAN-YVES GARNIER	Spécialiste en Conservation de l'Energie	ISERST
Mr. JOHN EAGAN McATEER	Chargé d'Affaires	U.S. Embassy
Mr. JACQUES GARDRINIER	Géomètre Expert	Service des Domaines
Mr. C. BOUCHAUD	Architecte/Urbaniste (Groupe Huit)	PNUD/Habitat





APPENDIX B

**Notes on the Methodology**

by

Idriss Ali Sultan

DINAS



## APPENDIX B

### Notes on the Methodology by Idriss Ali Sultan, DINAS

#### SOMMAIRE

##### INTRODUCTION

##### PREMIERE PARTIE : PRESENTATIONS ET GENERALITES

##### 1.1 BREVE PRESENTATION DU COMITE EAU HYGIENE ASSAINISSEMENT

##### 1.2 DIFFERENTES INSTITUTIONS INTERVENANTS DANS LE SECTEUR EAU HYGIENE ASSAINISSEMENT

##### 1.2.1 Districts de Djibouti

##### 1.2.2 Ministères des Travaux Publics de l'Urbanisme et du Logement

##### 1.2.3 Service du Domaine et de l'Enregistrement

##### 1.2.4 Service d'Hygiène et d'Epidémiologie

##### DEUXIEME PARTIE: METHODOLOGIE DE LA COLLECTE DES DONNEES DE L'ETUDE SOCIO-CULTURELLE

##### 1.1 PHASE CONCEPTUELLE ET PREPARATOIRE

##### 1.1.1 Elaboration du questionnaire

##### 1.1.2 Le plan de sondage

##### 1.2 PHASE TERRAIN - EXECUTION DE L'ENQUETE

##### 1.2.1 Recrutement et formation du personnel de l'enquête

##### 1.2.2 Collecte des informations

##### 1.3 DEPOUILLEMENT DES INFORMATIONS

##### 1.3.1 Codification des questionnaires

##### 1.3.2 la saisie

##### 1.3.3 Traitement des données

##### 1.4 Difficultés rencontrées

##### TROISIEME PARTIE : ANALYSE DES DONNEES RECUEILLIES ET RESULTATS DE L'ENQUETE

##### CONCLUSION

## INTRODUCTION

Cette étude s'intègre dans le cadre de la décennie internationale de l'eau potable et de l'assainissement (D.I.E.P.A). Elle a été soulignée lors du séminaire nationale qui s'est tenue à Djibouti du 18 au 22 octobre 1987.

Elle tente de :

- fournir un certain nombre d'informations sur les conditions de vie des ménages des anciens quartiers et

Balbala.

- de décrire la population concernée afin de déterminer ses problèmes essentiels et de connaître ses souhaits et désirs.

Le présent document s'articule en 3 parties :

- Dans la première partie nous décrivons le cadre de ce travail et le rôle des différentes institutions concernées par l'eau, l'hygiène et l'assainissement.

- La 2e partie traite la méthodologie utilisée pour la collecte des informations.

- La 3e partie traite l'analyse descriptive des données recueillies.

Enfin une synthèse des résultats et les directions dans lesquelles le comité eau hygiène.Assainissement pourraient axer ses interventions dans les anciens quartiers et balbala.

NOTONS QUE LA TROISIEME PARTIE ET LA SYNTHESE SERONT TRAITÉ PAR UN CONSULTANT DE W.A.S.H ET LE SOCIOLOGUE DE L'I.S.E.R.S.T.

## CHAPITRE I : CADRE DE L'ETUDE SOCIO-CULTURELLE

La nécessité de réaliser une étude socio-culturelle relative aux secteurs eau, hygiène assainissement a été soulignée lors des travaux du séminaire de OCTOBRE 1987. Cette étude a été retenue comme une recommandation d'importance capitale et comme une des priorités dont la réalisation présente un intérêt particulier au développement du secteur eau, hygiène assainissement.

Le suivi des résultats des travaux du séminaire a été confié à un comité provisoire composé des représentants des services concernés par les problèmes d'eau d'hygiène et d'assainissement.

### 1.1 Brève présentation du comité nationale eau, hygiène, assainissement.

Le comité provisoire qui avait pour but la suivi des recommandations du séminaire s'est élargi, il est devenu le comité nationale eau, hygiène assainissement.

Ce comité n'est pas encore officiel, un projet d'arrêté a été déposé par le Ministère de l'Intérieur des Postes et Télécommunications pour sa création.

Le CNEHA a pour but :

d'élaborer une politique, des stratégies et un plan d'action pour l'ensemble du secteur eau, hygiène assainissement.

Le Ministre de l'Intérieur des Postes et des Télécommunications par son représentant le Commissaire de la République a vu la nécessité d'une telle étude.

Toutes les institutions impliquées par l'étude sont représentés au sein du comité entre autre :

- Le District de Djibouti
- Le ministère des Travaux Publics de l'Urbanisme et du Logement.
- l'I.S.E.R.S.T.
- le Service d'Hygiène et d'Epidémiologie
- l'Office Nationale de l'Eau de Djibouti.

Le service technique du district sert de lieu de rencontre du comité et assure sa coordination. Ainsi les réunions de travail sont tenues chaque dimanche matin à 10 H au siège provisoire.

### FINANCEMENT DE L'ENQUETE

L'étude socio-culturelle exigeait l'obtention d'un financement.

Le coût prévisionnel comprenait deux parties :

la première partie concernant la réalisation de l'étude socio-culturelle a été financée par le budget nationale. Le coût a été de trois millions de FD.

la deuxième partie est relative au renforcement des capacités d'exploitation de la Direction Nationale de la Statistique à mener les enquêtes en milieu urbain. Le coût estimatif est de quatre millions de FD (voir le tableau en annexe).

1-2 Institutions urbaines concernées par le secteur eau hygiène assainissement.

Les institutions concernées par l'étude sont nombreux. Nous décrirons de façon assez brève les services techniques liés directement aux secteurs concernés. Leur mission doit être rappelé pour qu'on puisse classer les informations qui seront issues de cette étude suivant le service concerné.

#### 1-District de DJIBOUTI

Les tâches du District de DJIBOUTI par l'intermédiaire du service technique de la voirie assurent les services publics de la ville, (nettoyages et collecte des ordures) et veillent au respect des règlements d'hygiène et de voirie .

Leurs compétences s'étendent aux arrondissements et concernent essentiellement l'entretien de la voirie et la collecte des ordures ménagères. Il existe une section "ordures ménagères et nettoyage de la voirie" qui est chargée spécialement de:

- la collecte des ordures ménagères
- de la décharge publique
- nettoyage des rues et espaces publics
- ahumation des indigents

#### 2-MINISTERE DES TRAVAUX PUBLICS DE L'URBANISME ET DU LOGEMENT

La subdivision assainissement intervient dans cette étude et ces attributions se définissent comme suit :

- contrôle technique et administratif des réseaux unitaires et eaux pluviales existants
- entretien de ces réseaux
- études ponctuelles des projets et réalisations d'ouvrages sur demande de direction des T.P travaux exécutés par des entreprises sélectionnés après appel d'offres.
- vidange des fosses sceptiques des bâtiments administratifs non raccordés au réseau.
- en extra : service des interventions nécessités en cas d'inondations.

#### 3 - SERVICE D'HYGIENE ET D'EPIDEMIOLOGIE

Ce service qui dépend de la Direction Technique de la Santé a pour mission :

- il est chargé de la surveillance des maladies transmissibles autres que la tuberculose et de veiller à l'exécution des mesures sanitaires conditionnées par la situation épidémiologie,
- il participe de plein droit au contrôle de l'exécution des prescriptions concernant l'application des mesures d'hygiène, selon la législation en vigueur, et est responsable du contrôle sanitaire aux frontières,
- il gère les crédits ouverts aux articles et paragraphes du Ministère de la Santé qui concernent le Service d'Hygiène et de l'Epidémiologie.

DEUXIEME PARTIE: METHODOLOGIE UTILISEE POUR LA COLLECTE DES DONNEES DE L'ETUDE SOCIO-CULTURELLE

1.1 PHASE CONCEPTUELLE ET PREPARATOIRE

1.1.1 ELABORATION DU QUESTIONNAIRE

l'étude socio-culturelle a été élaborée en plusieurs étapes avant que la DIRECTION NATIONALE DE LA STATISTIQUE ne prenne en main l'enquête .

La phase de l'élaboration du questionnaire a été confié à une mission de Water and sanitation for health (Wash).

Le consultant wash devait mettre sur pied un instrument pour l'étude socio-culturelle. L'instrument a été testé sur le terrain.

Avant la fin de la mission consultant de WASH le questionnaire de l'étude socio-culturelle était pratiquement prêt pour l'exécution de l'enquête.

Le questionnaire a été divisé en deux parties :

- La première partie était destinée à la femme la plus responsable aux yeux des membres du ménage..

- La deuxième partie concernait le chef de ménage lui-même.

Cette division se justifie clairement par le fait que la femme la plus responsable s'occupe quotidiennement de la gestion de l'eau du ménage. Traditionnellement la femme djiboutienne s'occupe exclusivement de l'eau et de l'assainissement

C'est la raison pour laquelle elle devrait être l'unité d'information dans cette enquête.

Afin d'obtenir des informations qui ont un lien avec le revenu , il a fallu contacter le chef de ménage qui prend généralement les décisions économiques. Ainsi pour connaître les préférences des habitants pour telle ou telle installation, la capacité et la volonté de payer pour tel ou tel service, le chef de ménage constitue l'unité d'information privilégiée.

La préparation du questionnaire a fait l'objet des réunions du comité eau hygiène assainissement avec la collaboration du consultant WASH dont le but de la mission était de mettre sur pied ce instrument.

Cette préparation a exigé des essais et des tentatives diverses pour aboutir finalement à la version définitive.

Le questionnaire a été mis au point en même temps que son guide de remplissage compte tenu des langues parlées à Djibouti. Le questionnaire a été traduit en somalie, afar et arabe.

Un questionnaire finale comportant 9 parties a été élaboré pour permettre de consigner les observations de chacune des unités statistiques interrogées

- 1- Environnement immédiat du logement
- 2- Certaines caractéristique du ménage ( partie concernant la femme la plus responsable)
- 3- Composition du ménage
- 4- Approvisionnement en eau et évacuation des eaux usées
- 5- Les sanitaires
- 6- Les douches
- 7- Les ordures ménagères
- 8- Equipement du ménage et combustible pour la cuisson
- 9- Opinions générales et Capacité de ménage à améliorer certaines installations.-

L 'I.S.E.R.S.T a formulé le souhait d'adjoindre au contenu du questionnaire un volet relatif à l'énergie. Cette requête a été accueillie favorablement par le comité et le consultant de WASH. Toutefois par crainte d'un alourdissement de l'instrument, nous avons inclus un volet léger sur l'énergie .



Un questionnaire finale comportant 9 parties a été élaboré pour permettre de consigner les observations de chacune des unités statistiques interrogées

- 1- Environnement immédiat du logement
- 2- Certaines caractéristique du ménage ( partie concernant la femme la plus responsable)
- 3- Composition du ménage
- 4- Approvisionnement en eau et évacuation des eaux usées
- 5- Les sanitaires
- 6- Les douches
- 7- Les ordures ménagères
- 8- Equipement du ménage et combustible pour la cuisson
- 9- Opinions générales et Capacité de ménage à améliorer certaines installations.-

L 'I.S.E.R.S.T a formulé le souhait d'adjoindre au contenu du questionnaire un volet relatif à l'énergie. Cette requête a été accueillie favorablement par le comité et le consultant de WASH. Toutefois par crainte d'un alourdissement de l'instrument, nous avons inclus un volet léger sur l'énergie .

### 1.2.1 PLAN DE SONDAGE

Dans une enquête par sondage où il s'agit d'obtenir des informations numériques valables pour toute une population en n'observant qu'une fraction de cette population, il convient d'isoler la portion de l'univers qui doit être soumise à l'enquête.

Nous aborderons 2 volets.

- celui de la taille de l'échantillon, c'est à dire son importance par rapport à l'univers qu'il doit représenter

- celui du choix des éléments constitutifs de cet échantillon, étant donné que ce choix doit réserver à chacun des éléments une même probabilité ou du moins une probabilité connue et non-nulle de figurer dans l'échantillon.

1°) unité de sondage et base de sondage

l'un des problèmes majeurs rencontrés au cours de cette étude fut de trouver une base de sondage. La base de sondage est le document (liste, répertoire, fichier) où sont consignées individuellement les unités qui constitueront l'échantillon. Il a été impossible de disposer d'une liste actualisée des ménages des anciens quartiers et balbala. Comme les quartiers de la ville de Djibouti sont découpés en blocs de logements, c'est à dire un ensemble d'habitation délimité par des rues, avenues ou sentiers. Nous avons donc créé une base de sondage qui est les cartes géographiques ou photos aériennes des zones de l'enquête et l'unité de sondage a été le bloc d'habitation ou îlots délimités sur ces cartes. Nous nous sommes adressés aux différentes institutions qui établissent et mettent à jour les cartes. Ainsi la section "cadastre" du service du domaine et de l'enregistrement nous a fourni les plans d'alignements des anciens quartiers. Les plans de balbala n'existaient pas ce qui nous a poussé à utiliser une photo aérienne fournie par l'Armée Française. Le cartographe du BCR (Bureau central de recensement) a complété cette photo pour y faire figurer le maximum de détails permettant de reconnaître sur le terrain les "îlots" ou "bloc" échantillon.

En prenant en compte les différences fondamentales qui existent entre balbala et les anciens quartiers en ce qui concerne l'eau, l'hygiène et l'assainissement, nous avons différencié l'échantillon de balbala à celui des anciens quartiers. Sur le plan technique les mêmes méthodes ont été utilisées mais les résultats seront présentés de façon distinctes.

2°) la taille de l'échantillon

Prenant en compte :

- la précision satisfaisante d'estimation,
- le nombre prévu d'enquêteur (10)
- le travail journalier de chaque enquêteur
- les moyens financiers réduits

On a estimé une taille de l'échantillon égale à 900 ménages. Soit 5 ménages par jour/par enquêteur \* 6 enquêteurs \* 30 jours = 900 ménages pour balbala et les anciens quartiers.

Soit 5 ménages par jour/par enquêteur \* 6 enquêteurs \* 15 jours = 450 ménages pour balbala.

3°) les unités de sondage et probabilités de tirage

Un plan de sondage à deux degrés a été adopté:

Au premier degré

Comme unité de sondage primaire nous avons pris le "bloc" de ménage ou "îlots" qui ont été délimités sur les plans des quartiers. Il a été déterminé 1740 îlots au total.

## 2e degré

Les unités secondaires de sondages (USS) sont les ménages (3 ménages par îlots dans les anciens quartiers et 5 ménages par îlots pour balbala). Comme les fonds alloués à l'étude ne permettent pas d'enquêter tous les ménages des îlots sélectionnés au 1er degré, il a fallu adopter ce plan de sondage à deux degrés. D'autre part nous avons supposé qu'au premier degré les "blocs" de ménages étaient assez bien repartis dans la zone de l'étude. Par contre à l'intérieur d'un îlot donné les ménages présentent les mêmes caractéristiques en ce qui concernent l'eau l'hygiène et l'assainissement.

### b) probabilités de tirage

Soit  $P_{1j}$  : la probabilité de tirer un ménage  $j$  dans l'univers

$M$  : le nombre d'îlot que compte la population

$m$  : le nombre d'îlot de l'échantillon

$N_1$  : le nombre de ménages dans l'îlot  $i$

$n_1$  : le nombre de ménages tirés dans l'îlot  $i$

$P_{11}$  : la probabilité de tirer un îlot ou le taux de sondage

$P_{21j}$  : la probabilité de tirer le ménage  $j$  sachant l'îlot  $i$  tiré

$$P_{11} = m/M$$

$$P_{21j} = n_1/N_1 \quad (n_1 = 1, 2 \text{ ou } 3)$$

Les tirages étant indépendants :  $P_{1j} = P_{11} * P_{21j}$  soit

$$\text{soit } P_{1j} = m/M * n_1/N_1$$

Notons que le coefficient de redressement est égale l'inverse de la probabilité de tirage .

## TIRAGE SYSTEMATIQUE

Le choix effectif des unités - échantillons en donnant à chacune des unités de l'univers une égale probabilité d'être choisie se fait par tirage systématique. Après avoir délimité la zone de l'étude, nous avons numéroté les îlots des anciens quartiers 1 à 1470 - le tirage systématique consiste à prendre pour unités - échantillons les  $n$  unités dont les rangs sont en progressions arithmétique à partir d'une unité prise pour base de cette progression. Nous avons pris comme raison de la progression le quotient de la division.

$N/n$  sont  $1470/470=10$

Avant de commencer le tirage, nous avons "couper" la base de sondage comme on coupe un jeu de cartes avant de jouer et ceci pour que le point de départ du tirage soit tiré au sort.

Nous avons obtenu l'îlot n°1. Le même procédé a été utilisé pour l'échantillon de balbala. Nous avons recensé 640 îlots et par tirage systématique nous avons tirés 83 îlots.

Au second degré:

Dans chaque îlot tiré un recensement préalable a permis de constituer une liste des ménages. Il a été effectué par les enquêteurs au cours de l'enquête.

Pour reconnaître et délimiter l'îlot et les ménages, l'enquêteur se faisait accompagner d'un contrôleur qui possédait une carte de la zone.

La fiche de recensement permettait de saisir le nom du chef de ménage, la taille du ménage et une adresse de l'habitat.

Au second degré, les ménages ont été tirés au hasard dans chaque îlots retenues selon la table des nombres au hasard.

Dans chaque îlot, tiré, il fallait retenir 3 ménages au hasard pour les anciens quartiers et 5 ménages par îlot pour balbala. La raison étant qu'à balbala zone à relief le déplacement serait plus important pour les enquêteurs si on augmentait le nombre d'îlot tiré. L'extrapolation des résultats de l'échantillon à l'ensemble des anciens quartiers est assez aisé (l'inverse de la probabilité de tirage).

Ce échantillonnage a permis de réduire le coûts puisque il fallait enquêter un nombre constant de ménage et non tous les les ménages de l'îlot, il a permis aussi détailler l'enquête sur toute la zone d'étude.

## 1.2.1 PHASE TERRAIN - EXECUTION DE L'ENQUETE

### 1-1-2 RECRUTEMENT ET FORMATION DU PERSONNEL DE L'ENQUETE

Dix enquêteurs dont 2 contrôleurs ont été recrutés pour cette enquête. Pendant une semaine les enquêteurs ont reçu une formation qui avait un double but.

1- Une formation générale sur les enquêtes  
- les principes de la méthode des sondages et les réponses qu'il convient de faire à ce propos à quelques objections et remarques courantes.

- la façon de se présenter chez les personnes visités.

2- Une formation spécifique à l'enquête socio-culturelle..

a) objectifs de l'ESC et les résultats généraux à attendre.

b) Le questionnaire

les enquêteurs devaient se familiariser aux questions, il fallait mettre au point les définitions des mots utilisés ainsi que les traductions faites en langues nationales.

c) lecture des cartes géographiques des anciens quartiers et balbala.

d) Lecture des tables des nombres au hasard.

e) Organisation à respecter lors des travaux sur le terrain.

1.2 PHASE TERRAIN-Execution de l'enquête recrutement et formation du personnel de l'enquête.

Etant donné que l'unité d'information principale était la femme, il a été conseillé qu'il y ait des filles enquêteurs - cette exigence utile n'a pu être réalisée pour 2 raisons:

d'abord le faible candidature du personnel féminine.

Et après la difficulté du terrain et la chaleur à balbala est une zone à relief et qui exige un effort physique important.

e collecte des informations

1°) organisation des travaux sur le terrain

a) répartition des enquêteurs sur le terrain

Il a été formé deux équipes chacune comprenant 1 contrôleur et 4 enquêteurs.

La ville a été divisée en deux parties dans le sens de la hauteur nord-sud.

Chaque équipe a été chargée d'une partie.

b) Principe général de l'organisation sur le terrain . chaque matin l'équipe devait se retrouver à un endroit précis à une heure fixe.

Le contrôleur devait affecter à chaque enquêteur le travail de la journée soit 2 ilots ( 6 ménages )..

L'enquête démarrait vers 9h30 dans les différents ilôts. Les contrôleurs ayant fixés le rendez vous récupéraient les documents après vérification et remettaient au superviseur de l'enquête.

Le lendemain matin le travail reprenait en partant du point de rendez-vous de la veille au soir.

Notons que la première journée de l'enquête a été consacrée aux mini-recensements des ilôts tirées. Ainsi il a été constitué un stock d'ilot, qui permettait de déclencher l'enchaînement de l'enquête.

### 3°) La journée suivante

Trois enquêteurs effectuaient les interviews des 2 ilôts alors que le 4e et le contrôleur effectuait le mini-recensement de 3 ilôts chacun.

Le contrôleur montre 2 ilôts à chaque enquêteur en fournissant tous les documents nécessaires.

#### Définition du ménage.

Le ménage est défini en fonction de la manière dont les personnes pourvoient individuellement ou en groupe, à leurs besoins alimentaires et autres besoins vitaux un ménage peut-être :

a) un ménage composé d'une seule personne c'est à dire une personne qui pourvoit à ses propres besoins alimentaire et autre besoin vitaux .

b) un ménage multiple c'est à dire un groupe de deux ou plusieurs personnes qui pourvoient en commun à leurs besoins alimentaires et autres besoins vitaux. Les membres du groupes peuvent, dans le mesure variable mettre en commun et avoir un budget commun. Les ménages occupent généralement en totalité ou en partie, une unité d'habitation ou même plusieurs.

### 1.3 DEPOUILLEMENT - EXPLOITATION DES INFORMATIONS

Par exploitation des données, il faut entendre l'ensemble des opérations qui ont permis, en partant du document de base élémentaire, le questionnaire, d'arriver à la présentations des informations permettant d'en faire l'analyse.

#### 1.3.1 Codification (chiffrement) des questionnaires.

Le chiffrement du questionnaire est l'opération qui consiste à traduire, en utilisant des codes établies à cette fin, les reponses littérales ou numériques en indications chiffrées qui faciliterons les tris. Pour faciliter le chiffrement et éviter le recours à des codes séparés, nous avons fait figurer les numéros de code sur le questionnaire lui-même. C'est ce qu'on appel un questionnaire pré-codé. Mais pour certaines questions ouvertes, nous avons établis une nomenclature qui exigeait une récodification du questionnaire. Un manuel d'instruction de chiffrement a été élaboré à cette occasion et un agent de chiffrement a effectué ce travail pendant 3 semaines.

Notons aussi qu'il a fallu adapter les opérations du chiffrement au logiciel de traitement (quadeole) pour faciliter le traitement informatique des données.

#### 1.3.1 saisie

Il s'agit du processus qui a permis de transférer sur des supports informatiques les informations chiffrées portées sur les questionnaires .

Le traitement informatique des données de l'enquete à été réaliser grâce au logiciel QUADEOLE .

QUADEOLE est un logiciel d'analyse puissant.

### 1.3.2 TRAITEMENT DES DONNEES

Il consiste à sortir les tableaux les informations sur les caractéristiques à analyser. Cette phase a été réalisé grâce à QUADEOLE .





