PN-ACQ-660

Water Services Willingness and Ability to Pay Study for the Water Authority of Jordan

Prepared for the United States Agency for International Development under
Contract #HNE-C-00-96-90027-00

George Theodory

October 1999

Development Alternatives, Inc.
7250 Woodmont Ave. Suite 200
Bethesda, Maryland 20814

FORWARD

Collaborative Approaches for Resolving Water Issues

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The FORWARD Team

Development Alternatives, Inc., Bethesda MD (Prime Contractor)
Arab Scientific Institute for Research and Transfer of Technology, Ramallah West Bank/Gaza
Camp Dresser & McKee International Inc., Cambridge MA
CDR Associates, Boulder CO
Conflict Management Group, Cambridge MA
EnviroConsult Office, Amman Jordan
Environmental Quality International, Cairo Egypt
Geomatrix Consultants, Inc., Costa Mesa CA
Jordan Institute of Public Administration, Amman Jordan
Management, Planning and Research Consultants, Beirut Lebanon
National Center for Middle East Studies, Cairo Egypt
RESOLVE, Inc., Washington D.C.
Tennessee Valley Authority, Knoxville TN
Training Resources Group, Alexandria VA
Water and Environment Research and Study Center, Amman Jordan

Executive Summary

Background

This study of the willingness and ability of residential and non-residential subscribers in Greater Amman to pay more for water services has been conducted at a time when the Water Authority of Jordan is pursuing a course of private sector participation in system management. In October 1997, WAJ changed its residential and non-residential tariff systems. On average, municipal and industrial tariffs have been increased by 12.5 percent. WAJ is presently transferring responsibility for water delivery, system maintenance, billing and collection, and the rehabilitation of deteriorated networks to a private operator. The study seeks to contribute to a reframing of the relationship between WAJ and its customers and to better inform any efforts to restructure water and wastewater tariffs in the future.

Objectives

The objectives of the study are to:

- Provide information from residential and non-residential customers to design tariff scenarios which are sensitive to income and consumption levels, and other characteristics;
- Help decision-makers anticipate and prepare for the likely reaction of consumers to any tariff adjustments;
- Provide insights on customer service issues to AGWA management who are considering procedural and operational changes;
- Clarify the extent of people's support for private sector participation in the management of water utilities and suggest how issues might be best addressed; and
- Assist the design of public awareness programs that will support government actions on tariff adjustments.

Data Collection Methods

The study was carried out in two phases using complementary methods: focus groups and a statistical survey.

The first phase involved conducting 17 focus groups of residential and non-residential customers representing a cross-section of Amman Governorate Water Authority subscribers before and after the summer 1998 water crisis. The discussions covered a range of topics, including WAJ water services, alternative water sources, water tariffs, water conservation practices, and private sector participation. Most importantly, the results of the meetings

informed the design of the survey research and helped to produce a questionnaire that reflected the interests of both WAJ and its AGWA subscribers.

In the second phase, the results of the focus groups were used to develop two questionnaires with WAJ officials for residential and non-residential consumers in Greater Amman. In all, 1000 residential and 401 non-residential users were interviewed from February to April 1999. The information collected included the following:

- water issues awareness
- water supply
- quality and services
- additional supply sources and storage
- habits and practices
- willingness and ability to pay
- billing practices
- private sector participation
- 1998 water crisis
- characteristics of the interviewee

Major Conclusions

Overall Conclusions

- The public has translated its awareness of Jordan's water shortages into water conservation behavior that is apparent in every aspect of their daily routine. Water shortages are "here to stay," and people have suggested that WAJ should play an active role in expanding water conservation measures.

- Subscribers do not believe that WAJ is responsible for water shortages, but they do blame the Authority for its inability to assure a reliable and consistent delivery schedule which is free of disruptions.

- A satisfactory "continuous" supply for residential subscribers means at least twenty uninterrupted hours delivery two or three days per week with adequate water pressure. For non-residential entities, the currently designated schedule is sufficient.

- Subscribers are relatively satisfied with the quality of network water. Modest attention by WAJ to water taste, purity, and overall potability may significantly increase its support among subscribers.

- Many subscribers believe that WAJ is deliberately negligent and uncaring. They see this attitude expressed in its poor delivery of services. WAJ's unresponsiveness to water supply disruptions and billing/meter discrepancies has diminished its image in the minds of consumers.

- Despite their general disapproval of WAJ's delivery practices, customers remain faithful to the Authority. If WAJ were to improve supply and quality it would be the exclusive

supplier of water for nearly all customers. In that event, the tanker and bottle water markets would largely disappear, with the exception of the largest users and isolated segments of the population.

- One of WAJ's priorities is to deal convincingly with those who can afford the current tariff and future increases but are unwillingness to pay more.

- Most subscribers say they are opposed to the current tariff, although they do not know the current structure, and are unwilling and unable to pay more in the future. This attitude pervades all consumption and income groups and is found among residential and non-residential subscribers. The general lack of support for future tariff increases can be explained in two ways: (a) tariff increases have not historically yielded any tangible improvements in WAJ's services and in many cases services have actually deteriorated, and (b) the majority of subscribers cannot afford to pay more.

- There are indications that some residential respondents are willing to pay more . However, tariff increases would have to be directly linked to the rehabilitation and modernization of Greater Amman's networks and the improvement of customer services.

- Most subscribers support private sector participation, if it leads to improved services without tariff increases, which will affect their cost of living.

- Communication between WAJ and its customers needs attention and improvement. Subscribers do not understand WAJ's plans, procedures, and constraints. They also believe that WAJ lacks the resolve to communicate in a way that will reduce the misunderstandings with its customers.

- Most subscribers do not understand the details of the current tariff system although that knowledge would assist WAJ in making tariff adjustments in the future.

- On average, residential subscribers' willingness and ability to pay for a higher tariff does not exceed JD 3 per billing cycle. Non-residential willingness and ability does not exceed JD 5. For residential subscribers, although JD 3 or even 5 appears to be an insignificant amount, for many users it would mean a doubling of their present bill.

- Residential and non-residential subscribers are not willing to pay more for water if network supplies and services improve. This suggests that supplies and services already meet adequate standards so that their improvement does not warrant an increased tariff or that people are not willing to pay more for the improvements.

- The current quarterly billing system is approved of by the majority of subscribers. Most pay collectors directly, but many also like to pay through banks.

- Subscribers rate WAJ low on its responsiveness to complaints about leakage, billing and meter discrepancies, and supply disruptions. Unless corrected, WAJ will continue to face strong opposition from subscribers.

- Almost all subscribers own storage tanks which provide reserves for three to four days. The ownership of tanks has contributed significantly to subscribers' ability to cope with water shortages and supply disruptions.

- Tanker and bottled water are used by a small "following" of customers, but most of them are not loyal and would shift entirely to network water if it could meet their needs and standards.

- Televised panel discussions, which involve WAJ officials and experts, are the most effective communication medium for subscribers.

Residential Conclusions

- Upper middle and high income subscribers, who are the largest consumers and reside in West and Northwest Amman, are most dissatisfied with WAJ's water supply procedures, quality standards, and customer services and the most opposed to the current tariffs.

- Residents of Central Amman, who are middle and low income subscribers, are the most satisfied with their water supply and WAJ's customer services. They are less satisfied with water quality and pressure.

- Most subscribers are generally dissatisfied with WAJ's maintenance services, complaining about pipe leakage, billing/meter reading discrepancies, and supply disruptions. major difference between customers, should we keep it ?? otherwise clarify that that differences are not major.

- Most subscribers do not "bother" to complain about billing discrepancies.

- Among the many subscribers who are able to pay more for water, a significant number are opposed. Upper middle and high-income earners are among the most unwilling and unable, since inability is not a reflection of real worth but a ceiling on how far people will consider paying for services.

Non-Residential Conclusions

- Schools, hotels, and factories are the least satisfied clients of WAJ concerning frequency and duration of water deliveries.

- Most entities which are unhappy with the frequency and duration of water supply.

- Unhappiness with bill discrepancies is highest among entities which are situated in the southeast, east and northwest, particularly educational, industrial, and health institutions.

- Non-residential subscribers rate WAJ low for responsiveness to their complaints about supply disruptions. Those most negative were health, banking, industrial, and service entities in the east, southeast and northwest of Amman.

- In some cases, willingness to pay depends on the ability of the entity to pass the additional costs on to customers without loosing their business.

- The few entities that are willing to pay more are mostly situated in the center of Amman, followed by the southwest and east. Of the few that have indicated an ability to pay, more are located in the east, southwest and north.

Recommendations on Customer Relations and Public Awareness

This willingness and ability to pay study reveals an interesting dilemma for the Water Authority of Jordan: both residential and non-residential subscribers say they are frustrated and unhappy with WAJ's operations but the vast majority are not willing to pay more for better services. Subscribers appear to be more willing to accept existing conditions, despite their unhappiness with supplies and services than pay more for what it would cost to improve them. An explanation may be that subscribers' budgets are already stretched to the limit, and they have no more disposal income. While this is true for many lower income earners, it is more likely that they do not believe that tariff increases will actually result in improved services, fearing they will pay more and get the same or less.

The widespread indifference of subscribers to WAJ's constraints and their absence of sympathy for its challenges suggest that WAJ needs to communicate quickly and forthrightly with them. The study provided clear indications of customer attitudes. It is less revealing about the actions that WAJ must take to gain some measure of customer confidence. Therefore, the most supportable recommendations are those which use the study's results as the basis for further exploration and design of customer relations and public awareness programs. WAJ is already attempting to make the headquarters building more user-friendly to subscribers with new waiting rooms and colorful and visible signs.

In this changing atmosphere, it is suggested that WAJ consider the following:

- Identify strategies to develop and institutionalize customer service training programs in the Authority which instill in employees attitudes and behaviors to deal promptly and respectfully with customers.

- Determine the target participant audience for the training courses.

- Develop an approach and content for a public relations campaign which promotes and communicates messages. Some options include:

- "Town meetings' which are televised from a variety of locations (urban, suburban, rural) throughout the country.

- Documentaries which allow consumers access to WAJ's operations and plans and which demonstrate the various facets of the water supply and quality control operations.

- Televised case studies which focus on different types of problems caused by consumers' negligence or lack of knowledge, and others.

- A newsletter or other materials included with the bill, which provides relevant information to customers.

- Educational curricula for schools about water resources, uses and practices, quality control, and costs.

- Educational seminars, courses and group discussions.

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Chapter 1
Background, Objectives, and Methodology

1. Background

In April 1997, FORWARD joined with the Ministry of Water and Irrigation (MWI) and the Water Authority of Jordan (WAJ) to develop a workplan for the Analytical and Policy Tools for Costing and Tariffs Program. Water and wastewater cost/tariff models are the main analytical tools for the program. During the development of the workplan, the secretary-general of MWI and WAJ requested that a willingness and ability to pay study be incorporated into the program in order to understand the perspectives and constraints of WAJ subscribers in Greater Amman. These views were to be used for identifying and analyzing different tariff scenarios.

The study was conducted at a time when the Water Authority of Jordan, particularly the Amman Governorate Water Authority (AGWA), was in transition. AGWA and other WAJ utilities are pursuing private sector participation in the management of utility services. Reducing costs and improving collections and revenues should improve the utilities' financial and physical conditions. WAJ is transferring responsibility for water delivery, system maintenance, billing and collection, and the rehabilitation of deteriorated networks to a private operator.

Customer dissatisfaction with services has been a continuing issue for WAJ and MWI. Water quality, level of services, rationing, and water pressure are among their most serious complaints. An already difficult situation worsened in the summer of 1998 when Greater Amman suffered a water supply and water quality crisis. Supplies from the Zai Water Treatment Plan were discontinued for long periods, and major parts of Amman were badly affected. People stopped drinking and using network supplies and turned to tanker and bottled water to fill basic requirements. Since then, MWI and WAJ have launched a major rehabilitation program in Amman to improve the distribution network and the services provided.

This study seeks to contribute to a reframing of the relationship between WAJ and its customers and better inform any efforts to restructure water and wastewater tariffs in the future.

2. Objectives

The objectives of the willingness and ability to pay study of Greater Amman subscribers are to:

- Provide information from residential, commercial, and service customers to design tariff scenarios which are sensitive to socioeconomic status, consumption levels, and other characteristics;

- Help decision-makers anticipate and prepare for the likely reaction of users to any tariff adjustments;

- Provide insights on customer service issues to AGWA management who are considering procedural and operational changes;

- Clarify the extent of people's support for private sector participation in the management of water utilities and suggest how issues might be best addressed; and

- Assist the design of public awareness programs that will support government actions on tariff adjustments.

3. Approach and Methodology

At the inception of the program, MWI and WAJ created a technical working group (TWG) of WAJ staff to work with FORWARD. Its members guided the preparation of the scope of work, helped design the focus groups discussion guide, contributed to the questionnaire design, and approved the sampling frame outline. Secretary-generals of MWI and WAJ and the working group attended interim presentations on the focus group discussions.

The study was carried out in two phases using focus groups and a statistical survey.

3.1 Focus Group Phase

This phase involved conducting 17 focus groups, representing a cross-section of AGWA consumers, to better understand what they, and potential survey respondents, think of current water services and water tariffs. The most important objective of holding the focus groups was to use the results to design the survey research and produce a questionnaire that reflected the interests of both WAJ and its subscribers.

The first set of 14 focus groups was held in April and May 1998, including eight residential and six from commercial, industrial, and service-oriented institutions in Greater Amman. At the request of WAJ and USAID, an additional three focus groups, two residential and one from commercial and service institutions, were held the following October, after the summer water crisis. These follow-up groups were used to confirm whether earlier responses had changed significantly and if new issues had emerged as a result of the crisis, requiring modifications to the questionnaire.

Each focus group had eight to ten participants. Participants were recruited from various geographic districts in Amman and from the immediate outlying areas. Consumption level, type of residence/industry/service, gender, and social grouping were among recruitment criteria.

3.2 Statistical Survey Phase

The second phase used the results of the focus group discussions to design two survey questionnaires, one for residential and the second for non-residential subscribers. Each questionnaire elicited information concerning the following:

- water issues awareness
- water supply

- quality and services
- additional supply sources and storage
- habits and practices
- willingness and ability to pay
- billing practices
- private sector participation
- 1998 water crisis
- characteristics of the interviewee

A sampling frame was based on roughly 248,000 residential subscribers in Amman. A sample of one thousand residential users was chosen to obtain reasonable accuracy. A separate sampling frame was developed for the survey of commercial and service institutions. Among a total population of 26,693 non-residential subscribers in Amman, 400 were sampled for the survey. In both cases, three additional sampling frames were generated to identify alternative subscribers if the first was not available or addresses were not correct.

A pilot survey was conducted in January 1999 in some selected areas in Amman. Based on the pilot, the questionnaire underwent some minor adjustments.

Numerators were trained to hone their interviewing techniques. A training manual explained the new tariff system, subjects covered in the survey, the sampling frame and methodology, and guidelines for coding the Likert scale questions. The survey was conducted in February, March, and April 1999. Data entry and analysis took place in May and June.

The study was conducted with the assistance of two marketing and research firms, Management Planning and Research Consultants (MPRC) of Beirut, Lebanon and Marketing Research Organization (MRO) of Amman, Jordan. MPRC was primarily responsible for data analysis and preparation of the final report. MRO took the lead in conducting the focus groups, carrying out the survey research, and overseeing data entry. The firms shared responsibility for preparation of the focus group discussion guides and development of the survey instruments.

4. Overview of the Report

This main report has four chapters which follow this background section:

- Chapter 2 provides the major results of the 14 pre-water crisis and 3 post-water crisis focus groups for residential and nonresidential users;

- Chapter 3 contains the major findings of 1,000 residential subscribers throughout Greater Amman;

- Chapter 4 has the major findings of 401 operators of commercial and service entities;

- Chapter 5 offers conclusions and recommendations for decision-makers in WAJ and MWI.

Annexes in this volume include:

- A detailed presentation of the focus group and survey methodologies;
- Discussion guides for the residential and non-residential focus groups;
- Whole counts for each query in both residential and non-residential questionnaires.

Chapter 2
Subscriber Focus Group Results

This chapter presents the results of the qualitative phase of the study. It covers the views of both residential and non-residential subscribers who participated in fourteen focus groups prior to the summer 1998 water crisis. It also presents the views of participants in three additional focus groups which were conducted after the crisis in October 1998 to assess its impact on subscribers.

1. Residential Focus Groups

Perhaps one of the most significant outcomes of the residential focus group discussions was the noticeable similarity of the attitudes of participants in the eight groups. The views of the groups did not differ appreciably based on their water consumption, income levels, gender, or place of residence. The questions explored in these focus groups significantly contributed to the design and conduct of the field survey.

1.1 Patterns of Consumption and Use

Information from focus group discussions shows that most Jordanians are aware of the need to conserve water all the time. Participants exhibited a high degree of acceptance of the need to constantly ration water. It was their civic duty to conserve this scarce and vital resource and to safeguard water reserves for future generations:

"We care because, in the end, we are the ones to suffer."

Indeed, most believed that WAJ should become more involved and forward thinking in promoting the concept of water conservation among all citizens in and outside Amman:

"...the Authority should do more to encourage people to save water."

Because of its scarcity, many of the participants are concerned that sufficient supplies of water may not be available for future generations. There are wide speculations about when water supplies will dry up:

"Maybe twenty years" "...till the year 2000"
"It will last another 3 to 10 years"

Many participants even suspected that, in order to insure future supply, WAJ may have already instigated water rationing as a means of prolonging the availability of water supplies in Jordan:

"There is enough water for only a few more years,
that is why it is rationed to make it last longer."

Several participants pointed out that water shortages are not limited to Jordan. Water is a regional concern that requires serious consideration and attention:

"The crisis is not only a Jordanian one, but includes the whole region, the whole Middle East."

Some participants went on to suggest that the next major Middle East conflict could be triggered by regional water shortages:

"...[There will be a] ...water war, in the year 2000 because of a universal shortage of water."

Clearly, participants believed that water conservation behaviors were a necessary condition for preserving the future well-being of the country.

1.2 Water Availability and Supply

1.2.1 Availability

Participants' knowledge of Greater Amman's water sources was, at best, vague. Speculations ranged from ***"rain"*** to ***"Israel"***, ***"the dams" "Ras Al-Ain"*** to ***"Tabouk, Zeai, Azrak, rivers, dams, and wells"***. Most likely, participants' obvious lack of information concerning the source of their water was derived from their belief that this has always been, and will remain, a government concern. Because of this perception, all focus group participants maintained that water availability and supply problems were interrelated and should not be treated as separate issues.

Some residents reported that they have always been provided with some water:

" There is never a water problem in the area we live in, we don't feel the water problem in Jordan."

In contrast, many others argued that the amount supplied was neither consistent nor sufficient. These participants reported that:

"...tanks are never full."
"We never have enough water."

Some participants received water for many uninterrupted hours during the day:

"In winter, we are continuously supplied"
"The pumping lasts for 24 hours."

However, others claimed that they:

"...don't see water."

"The western part of Amman is favored over other areas and residents of that area receive water supplies about 4 or 5 days a week."

In areas such as Al Safi, some participants claimed that:

"... four inch pipes are open day and night."

Many believed that the agricultural and industrial sectors consumed most of the water supply:

"The Pepsi factory is sucking up all the water."

1.2.2 Supply

The general consensus of what constitutes a ***"continuous supply"*** of water is a two or three-day-a-week supply schedule depending on water pressure. Most participants from the wealthier areas of Amman acknowledged that, they have not suffered significant supply shortages, water shortage problems do exist. A few participants expressed serious misgivings about the water supply system in Jordan. Shortages were mainly attributed **to *"poor water pressure", "infrequent supply", "unreliable water supply schedules", '"unfairness of distribution to some areas"***, and ***"favoritism by WAJ to specific economic sectors".*** *These participants reflected that:*

"The flow of water is weak...and the pressure is low."

and that water:

"...only comes for seven or eight hours and is supplied once a week, sometimes twice and sometimes not at all..."

In addition to inadequate rainfall, many participants blamed recent shortages on the increase of demand for water due to population growth and the large numbers of repatriated Palestinian/Jordanian citizens who left the Gulf in the early 1990s. Greater Amman has become overcrowded, and consumption has exceeded WAJ's available resources. This problem is normally compounded during the hot, dry summer months, due to garden maintenance, activities, personal hygiene, and increased personal consumption.

1.3 Causes of Dissatisfaction

Water scarcity due to Jordan's desert-like climate did not appear to be a source of discontent for the focus group participants. They recognized that their country was not naturally endowed with abundant sources of water. However, for several participants, mismanagement of this precious resource was a cause of great dissatisfaction and frustration. These participants criticized WAJ's management and operational methods. Those who positively viewed WAJ's overall performance regarded its operational management practices as effective and its decisions reliable:

"No, never, we never faced any (pipe) leakage."
"We receive water four times a week." "Good pumping."

Participants who voiced a dissatisfaction with the Authority's overall performance believe that WAJ's neglect of the network system contributed to its dismal performance. Most maintained that, were it not for constant pipe leakage incidents and poor maintenance practices, their water supply would have been significantly enhanced. An example, which was repeated by participants in almost all groups, was that:

"...the main pipe was broken for a month or more."

and that:

"...water networks are destroyed and damaged, and need maintenance and that wasted water exceeds the amount of water used by the citizens."

Furthermore, these participants observed that:

"...so many times, we see major pipes damaged, water flowing in streets for days and still no maintenance, we can say that 80% of water is used for no purpose."

Participants believe that the government would have been in a better position to provide more and better quality water if it paid more attention to the rehabilitation and/or replacement of the dysfunctional water networks in Greater Amman.

Dissatisfaction with WAJ was intense among participants who perceived water networks to be completely neglected. They alleged that WAJ's employees lack proper training especially in the fields of planning and maintenance. These participants considered WAJ to be both responsible and accountable for water waste and subscribers' discomfort; they demanded a more effective and responsive customer service function at WAJ. A few respondents emphasized that civil servants should be trained to become more responsive and efficient:

"Take the maintenance crew, for example, it is considered slow in attending to leaking pipes. We call them 30 times to answer our demands. All they do is pull a piece of wood and that is it."

"After three months, the damage is repeated."

To all participants, maintaining the networks is ***"supposed"*** to be an on-going process:

"There should be a group of technicians responsible for maintenance day and night."

What irritated most participants was that, on more than one occasion, water has flown in the streets at a time when they would be suffering from water supply shortages.

1.3.1 Breakdowns and Nature of WAJ's Response

Few participants reported leakage problems to the Authority. Those who did, remarked on the difficulty of reporting complaints to the Authority; WAJ's subsequent reaction in performing the necessary repairs was equally frustrating:

"I got in touch with the Authority so many times,
I went personally, useless, no answer."

Because of the long wait for repairs, some subscribers felt obliged to handle matters on their own:

"...instead of repairing it they (the Authority) stopped the supply of water.
We complained many times, but it was a hopeless case.
What we did was we bought a pipe and opened the line ourselves."

Many confirmed that:

"We waited so long that eventually we repaired the pipes ourselves."

Many also claimed that deficient pipes contained air and dirt. In some groups, subscribers complained that as water flows, it discharges dirt, rust and residues into their tanks. Still, other participants asserted that both the water and sewerage networks were overloaded and so closely inter-linked that their contents ***"often"*** got mixed, a claim they could not substantiate.

1.4 Alternative Water Supply Sources

Many participants have sought alternative and/or additional sources of water supply. They turned to private water supply companies. Many households bought water from private tankers which regularly visited and delivered water to neighborhoods. Neighbors generally shared a tanker load (around four to six cubic meters). Required delivery time was twelve to forty-eight hours ***"but in summer we have to fight for it."*** Tanker water was a lot more expensive than WAJ's water and, in high demand seasons such as during the summer, prices sometimes soared to JD 4 per cubic meter. Higher prices were a consequence of increased demand triggered by long periods of water shortages:

"For four cubic meters we pay 12 dinars. It is expensive but what can we do?"

When compared to WAJ's water, tanker water was generally perceived by many participants as neither clean nor potable. Some participants avoided using tanker water for drinking purposes, preferring bottled or filtered water:

"Tanker water is not pure water" "It is only suitable
for gardening or animals, it has a bad smell."
"Sometimes it contains red worms."

As another respondent pointed out:

"The water is ok but I have a comment to make on tankers' water. They get it from places where it is not allowed for them to use it as drinking water."

Only a few participants felt that tanker water was:

"... better than the Authority's water and does not contain chlorine or any particles. It tastes well once boiled".

Generally, several participants insisted that alternative private water sources couldn't be considered viable substitutes for WAJ's generally 'healthy' drinking water. The availability of alternative potable water sources, therefore, remains a serious concern to the majority of the population. Substantial shortages in drinking water are often handled by purchasing bottled water, a point made mostly by participants of the middle, middle-upper and upper income earners and by participants who boil tanker water.

Most participants agreed that WAJ should take serious steps in securing one or more additional sources of water supply. Participants suggested included collecting rain water, desalinating salt water, and purchasing water from neighboring countries.

1.4.1 Alternative Water Conservation/Supply Tools

When asked about alternative water conservation techniques, all participants considered water reservoirs to be very valuable tools:

"Since I have a tank, I don't face such a problem."

Tank and pump owners were not as negative about water supply issues, and exhibited less irritation when complaining about water quality and cost issues. Most participants resorted to pumping water from reservoirs when water was in short supply and/or when tanks were empty:

"If our tank ran low, we could pump water from the reservoir."

Other means of addressing water shortage issues included increasing the household's number of water tanks. Participants with roofs and/or basement space normally own two or more additional tanks for emergency purposes:

"I added three 2 cubic meters tanks, and I generally don't have a problem anymore."

In addition to tanks, a few participants indicated saving water in bathtubs; others occasionally shared the same tank space and pump with neighbors to get water to their apartments.

1.4.2 Implications and Observations

Resorting to alternative water sources has several economic implications. Private water supply operators represent an active and productive segment of the business

sector. Several families lived off revenues received from supplying alternative water to needy households. However, using these alternatives posed a heavy financial burden for low and middle income families. Some participants were angry when the issue of purchasing additional water was discussed. They felt that the additional cost they incur in the purchase of supplemental water imposes an enormous burden on them, a burden they may not be able to bear for long.

Although grateful for the availability of alternative water sources, some participants blamed the increase in tanker water cost on WAJ's reluctance and inability to provide adequate water supply. When asked if they were willing to pay higher tariffs for water they did not always receive and had to supplement with purchases from private sources, the answer was a clear ***"No"***.

1.5 Water Quality Concerns

The issue of willingness to pay higher tariffs generated excitement when participants were asked about the quality of WAJ's supplied water. A few participants harbored doubts about the cleanliness of the water, despite constant reassurances from WAJ; some participants expressed dissatisfaction and agreed that the water supplied was neither clean nor healthy:

"... the water is chemically polluted; we don't have confidence in its purity."

These participants reported that it was obvious that the water was not clean, a factor which could be tested through sight, taste and smell:

"If they (WAJ) tell us that the water is pure and not polluted we don't trust them, because we see the impurity with the naked eye. So what would be the result of studies under a microscope?" "My daughter works in a lab. She knows the quality of water we are supplied with and she refuses it completely."

According to these participants, water clarity was routinely assessed to determine if water was potable; if discoloration or particular residues were detected, then the water was deemed unsafe for drinking. None of the participants could differentiate between water purity and potability. To them water purity was necessary, but it was not the only condition for water potability.

"I read once that Jordan's water is not even good for dish washing. How could it be good for drinking?"

These participants also reported that they routinely smelled and tasted the water to determine chlorine levels:

"Chlorine is harmless but changes the taste of coffee and tea, we can feel and taste it."

Many said that they look for a white film which usually forms on teacup rims in order to gauge the level of ***"calcium"*** in the water:

"When we boil water to make tea, the color comes out white- as if we added milk to it."

1.5.1 Water-Related Health Issues

Most participants explained that they could not afford to install a reliable filtration system, and instead relied, at times, on boiling the water, a practice which was both expensive and time-consuming. During discussions on water quality, several participants referred to stories they had either read or heard concerning illnesses and health hazards associated with WAJ's water. Physicians were said to have warned that water has become a cause of diarrhea and constipation:

"The water might be contaminated." "Sometimes the doctor himself tells me that a certain disease might be from water usage"; "The water is not healthy, it causes hair damage."

"I heard that water in the north affects people!" "Yes, we heard it." "I've heard it from several people. Our relatives live in the north." "My daughter had very healthy hair. Now when I brush her hair I can see how much she's losing. The dermatologist said that it is due to water." "So many newspapers mentioned that diseases such as diarrhea and influenza were caused by drinking water."

Claims that Jordan's water is a health hazard were not substantiated by any of the participants. It was suggested that the media (newspapers in particular) have neither adequately clarified nor addressed the issue of water quality or concerns in Jordan. It is believed that this failure has added to the confusion on the subject of water as a health hazard.

1.6 Practices, Uses, and Habits

1.6.1 Quality as a Function of Filtration and Boiling

Participants alleged that poor water quality was mainly caused by WAJ employees' neglect of the filtration system. They believed that it was the responsibility of WAJ's employees to maintain water cleanliness through efficient monitoring and control of the filtration system. They also stated that a determining factor of water quality was the proximity of the customer's home to the pumping station. These same participants claimed that the closer the area was to the pumping station, the better the quality of water. The condition of the pipes grows steadily worse as the water travels further from the pumping station.

Subscribers' views of water quality issues have serious implications to how tariff increases might be perceived by subscribers. The overwhelming sentiment of subscribers was that WAJ's water was not safe to drink and that this concern was detrimental to future governmental tariff policies, which may entail tariff increases.

Female participants who believed that WAJ's water was not safe for drinking took precautionary measures:

"The most important thing for us is to boil it, we have no other alternative"

"I have a filter at home. I filter the water and boil it too. I'm so afraid of water." "I let water settle for 24 hours..." "We buy bottled water all the time."

A few participants took no precautionary measures at all, stating strongly that they felt the Authority's water was potable:

"Otherwise Jordan would have been "plagued" with "epidemics". "...[if the water was bad] there will be epidemics, the whole community will be affected."

Others expressed concern but appeared to have ***"given-up"*** on water purification. Their reply to ***"Do you boil water?"*** was an exasperated:

"Not always - we are fed up" "What can I do - what is the alternative? no alternative - we have to accept it."

A few asserted that, while the Authority's water was not potable, they believed that people have developed immunity to bacteria and other water related diseases:

"We got used to this type of water. We have immunity against it. Maybe if we are supplied with pure water, we might get sick."

Female participants, in particular, expressed concern for the effect of water quality on their children's health. They believed that precautionary measures had to be taken only when children were involved:

"We don't boil, but when my kids were young I used to always bring bottled water- but when they grew up I stopped." "My daughters refuse to give their children Authority water- only bottled or boiled water."

1.7 Billing

WAJ subscribers are normally billed four times per year, once every three months. Most have received their bills quarterly. However, a few participants did not receive their bills according to this schedule. For those living on the outskirts of Amman or in rural areas, bills often arrived several months behind schedule. In some areas, participants reported receiving bills only once a year. Consequently, subscribers complained that billing inconsistencies caused unmanageable financial burdens:

"We don't receive the bill every cycle. Sometimes once every year, sometimes at the end or the beginning of the year." "Not every 3 months."

When asked what billing cycle would be preferable, some of the middle, middle lower and lower participants favored a monthly statement. Monthly bills would be lower, and this would help ease the financial burden on their cash flow and allow them to make regular payments:

"Yes, we want it monthly. This is convenient for us." "Yes, every month of course, because I plan accordingly." "Yes, on a monthly basis, one would

organize his home affairs, and the water consumption would be normal. That is better." "At least we know the average of water spent - we might consume less."

1.7.1 Method of Payment

Preferred payment methods varied according to personal requirements and specific locations. Some felt comfortable with the current practice of the door-to-door collector; others with going to the bank; some thought that paying by mail would be the best option:

"the WAJ collector is better, he is one of the family." "That is the best way", "I prefer the bank." "I'm afraid of collectors, because even among them there is embezzlement."

Advocates of paying via the bank included older subscribers who lived alone and were wary of strangers at their door claiming to be the ***"collector"***. However, for those residing outside Amman or with no easy access to banks, payments through the banks were thought to be very inconvenient.

"Let us say you don't have a bank here, you'd have to pay transportation to go to the bank in order to pay a 3 dinar bill."

1.7.2 Bill Computation

Some participants were very concerned with how water bills were computed and itemized. They expressed extreme mistrust of the calculation process of bills, mainly because they stated that meters were unreliable and dysfunctional. According to them, water meters overstated the quantity of water consumed because they accounted for air pressure. Some participants explained that faulty meter readings were caused by WAJ's use of gas meters instead of water meters:

"These meter machines available in the country are not good because they are all gas meter machines. They are not water meter machines." "It is how you read the meter and how you pump the water. I can't economize on water if the base isn't right. What is read on the meter is not the real consumption of water."

'Fairness' and 'reliability' in the billing process greatly influenced subscribers' opinions and willingness to cooperate with WAJ. Most participants believed that the billed amounts were unjust because the meters incorrectly registered actual consumption. Some participants also believed that collectors did not always accurately read the customer's meter. Many participants believed that WAJ was not properly safeguarding their interests, and its practices were therefore deemed unreliable. Questions frequently asked by participants included the following:

"Why does WAJ maintain defective meters and overcharge users?" "Is WAJ attempting to cover its cost by overcharging?" or "Is the user paying the price of WAJ's mismanagement?"

A few subscribers provided details on what seemed to be a common predicament namely, paying a bill that is in dispute. They spoke of receiving bills *for* ***"ten times"*** the expected amount. Many people reported bills that exceeded JD 100 for meters that were out of order. Furthermore, subscribers alleged that collectors routinely made rough estimates. The participants explained that complaining to a customer service official was useless, since the subscriber was often requested to settle the bill first, and then complain:

"I doubt their (WAJ) truthfulness" "When you receive a bill for 130 dinars, and you go to the authority offices to complain, the first thing they say" "Pay first and then complain." "They don't ever try to help. The citizen is always guilty."

At the core of some participants' unhappiness with WAJ was the latter's apparent lack of adequate customer service. Several participants demonstrated feelings of frustration at WAJ's absence of compassion and the indifference with which their claims for bill miscalculation were treated. Consequently, subscribers stated that they often felt justified in physically readjusting their meter count and hence, their bill:

"I complained when I received a bill for 150 dinars, where in the past it was 7 or 8 dinars. I paid half the amount and refused to pay the second half. The clerk, upon checking the meter, told me that my meter runs extremely fast. They didn't come up with a solution so I lowered the tab which comes before the meter to slow it down like other meters."

Once again, it should be noted that the above views were not shared by all participants. As one participant put it:

"Q: Your problem was solved because you pinpointed it?
A: Yes, because I went there immediately. The old problem is no problem now."

Although a few participants voiced notions that ***"water should be free of charge like in other countries",*** most participants were more supportive of the old tariff system and did not complain about the difficulties of ***"copies"*** with water bills under the old tariff structure:

"Water tariffs have been fair up until now."

Compared to electricity and telephone bills, subscribers found water bills to be much cheaper:

"Water costs less than electricity." "When I pay 30 dinars per cycle and I have 4 tanks, I don't find it too much. I make use of these 4 tanks and more."

1.8 Current and Future Tariff Systems

Most participants read and understood their bills. However, many participants complained about having to pay taxes for services they did not receive:

"Some people don't have a TV set but have to pay 9 dinars every month.

Why? This is unfair."

Questions on whether participants were aware of the newly introduced tariff system were also covered in the focus group discussions. Although most participants were aware of the new tariff system, they did not fully understand the **details** of this system.

"The new tariff is difficult to understand."

1.9 Willingness and Ability to Pay

1.9.1 Conditional Willingness

At the core of this qualitative study was the question of whether subscribers were willing and/or able to pay higher tariffs now and in the future. Participants did not exhibit a willingness to pay more for the same amount of water supply and services:

"Unless I'm 100% sure that I'm getting good and efficient services, I would not be ready to pay 1 dinar." "I think that people are ready to pay more if they are sure they will receive better water quality - not to boil nor filter it - and no bottled water."

A few participants indicated a willingness to pay higher tariffs under certain conditions: (a) if WAJ's preventive and corrective maintenance services improved significantly and waste was controlled; (b) if water supply was adequate and reliable, and (c) if water quality reached an acceptable standard. Finally, these participants would pay more if the higher tariffs were reasonable and bills reflected real consumption.

It is worth noting, however, that female focus groups showed a significantly higher degree of willingness to pay for improved water quality than did their male counterparts:

"Men do not worry about water as women do. We are the ones who wash, prepare food, boil water... So we are ready to pay one more dinar every month."

The majority of women in the focus groups were housewives who seemed very willing to pay for improved water quality. Female participants from the wealthier areas, such as Abdoun, expressed a willingness/ability to pay up to 100% more if WAJ significantly improved the water supply service:

"When they increase the price, you can control the amount of water you use. It depends on what you can afford, but it's important to have a complete service. We don't need any more headaches. We want to pay more but be relaxed."

Some rationalized their conditional acceptance:

"This way, we save money instead of buying tankers water."
"Yes I will pay more, better than being sick and paying doctor fees."

For those participants willing to pay more, the Authority had to demonstrate that it is credible and reliable. ***"They have to prove it."*** Moreover, some participants threatened to react negatively, if the tariff increase was too high or not accompanied by a significant improvement in the service. Generally, conditional support for paying higher tariffs, if combined with greatly improved services, was not high. Several participants, mostly male, refused to pay more regardless of the benefits they stood to receive.

"Q: How much are you ready to pay for better services?"
A: "Nothing, absolutely nothing".

To them, adequate supply of potable water was the iright of every citizen. As stated above, some thought that WAJ should provide water free of charge ***"Rain is from God."*** When discussing serious water problems and/or when WAJ advocated tariff increases, the sentiments of participants were expressed in strong words. During the focus group discussions, expressions of these sentiments were received with sympathy and understanding by many participants who were originally more inclined to accept tariff increases.

1.9.2 Ability to Pay

Importantly, for most participants, willingness to pay was dependent on ability or income levels. The higher the income level, the more participants were willing, and therefore, able to pay for the water service. For instance, many participants expressed their (reluctant) willingness to pay more in terms of:

"One to two dinars" "Two to three dinars more", "up to ten dinars ",
"May be 10%" "Half a dinar or one dinar would be acceptable"

"Increases in fils I can afford, but when it becomes in dinars I will start stealing water against my will- because you encourage me to steal, whether public or private."

"Q: How would you steal it?"
"A: I'll break the pipe outside." "There are a hundred ways to cheat in water."

Those indicating willingness to pay more if given better services, better water quality and more adequate supplies, preferred quoting increases in dinars rather than in percentage terms; most likely because the nominal value was easier to relate to when assessing their ability to pay.

"I am ready to pay ten dinars per round (billing cycle)."
"Yes, four to five dinars per round."

1.9.3 The Advantages of Paying More

Generally, there was an atmosphere of exasperation regarding water issues. Most views on the willingness to pay centered on the notion that improvement in water supply will reduce stress levels, and significantly decrease tanker water consumption, physician visits, medicine, filtration, gas for boiling water and other expenses. Rather

than incur these expenses, many subscribers will be willing to pay WAJ for improved services.

A significant negative relation existed between the actual amount of water received and participants' willingness to pay more. Where water was abundantly received, there was less willingness to pay more:

"If you ask the people of Hashemi, who are not supplied with water even once a week, they will be ready to pay one or two dinars more because they are in dire need. But as inhabitants of this area, we are not facing problems, we are satisfied so why should we pay more?"

1.9.4 Side Effects of Higher Tariffs

Participants unanimously expressed serious concerns about the negative impact that tariffs would have on the economy. Participants worried that they would face increased costs on a variety of products and services as a result of the new tariff. Some participants' acceptance to support increased water tariffs was not an expression of a willingness to pay, but more an admission to the futility of resisting the inevitable. It was explained that, after all, tariff increases represent government policies which people can not reject:

"Whatever happens, nothing will change, we are obliged to pay."

Many participants, however, appealed to WAJ to accept settlement of the increased amount in twelve-month installments:

"The extra amount added should be divided over 12 months so that the consumer will be able to pay."

1.9.5 Information about the Current Tariff

It was apparent from focus group discussions that WAJ had conveyed little information to subscribers regarding the new tariff.

"Maybe they are in need of money"
"Maybe they want to repair or modernize the pipes."
"Maybe we have to pay for Tabariya expenses."

Notably, this perceived inaccurate and inadequate WAJ briefing on the reasons behind tariff increases intensified participants' mistrust in and suspicion of the Authority.

1.10 Views on Private Sector Participation

When asked about their knowledge of any plans regarding the transfer of management to a private operator for water services, participants' responses were neither definitive nor clear. Most were 'somehow' aware that a foreign company was in the process of assuming WAJ's responsibilities. Some even speculated that the

government plans to invite a German company to operate and manage the water service In Jordan:

"I heard that a German company has been given the contract for the next 25 years", "We read in the papers that the water authority has been sold to a German company.'

Participants did not express surprise at the prospect of WAJ becoming seeking private sector participation. This was due to the fact that the government has already begun to privatize some government controlled service sectors such as electricity and telecommunications. Participants' experience with the newly privatized electricity and telephone sectors was positive despite the fact that they reportedly paid more for such services. Strong opposition to private sector participation was lead by younger males who based their opposition primarily on ideas of nationalism. Though WAJ's services had been somewhat unreliable, these participants didn't approve of the idea that a private foreign, rather than a local/Arab, company should be given the opportunity to reap the benefits of increased tariffs:

"I think the only one responsible for the water should be the government. The government is responsible for its people." "The private (foreign) management wouldn't care about me." "Something in privatization touches the person in his daily life. I'm against privatization of water. "Foreign investment means non-Arab. It is okay for me the Arab, but I can't accept non-Arabs."

For most of the participants, private sector participation meant tariff increases; for some, it meant job losses. During discussions, participants continually expressed doubts about the level of concern a foreign company would have for them and their families. It was stated that an Arab company would be preferred because it might be more understanding of the lifestyles and struggles of the Jordanian people.

"I don't mind paying 20% more to my country (government or national company) ...but I'm not willing to pay more for a foreign company that will exploit me."

Importantly, female groups expressed strong and unreserved support for the idea of private sector participation. Receiving quality water far outweighed any feelings of nationalism. Supporters of private sector participation efforts by WAJ alluded to their positive experience with the recently privatized electricity and telecommunications services sectors. These participants stated that they expected water tariffs to increase and for services to become more customer friendly:

"We felt the difference when a private company took over the communication sector; we are currently receiving better services than before. So we are optimistic about receiving better services when a private company will be in charge of the water sector."

To most participants, private sector participation meant better water quality, more frequent supplies, friendlier services, better networks and less leakage:

"I mean new water networks, plastic pipes, better water quality."

"The private company will have more funding, more studies, etc... Also seminars, ads, commercials..." "We believe that the foreign company to takeover will appoint the right man in the right place."

All groups believed that the private operator should be monitored and supervised by WAJ:

"The investors' main aim is to make more profit. They don't care about us. There should be control."

1.11 Communication and Public Awareness

When asked about which medium was best for communicating information about WAJ, most participants favored television. Many participants spoke favorably of a recent TV water rationing campaign. These campaigns were appreciated and encouraged:

"Yes on TV: washing cars, gardens: watering, children playing with water and leaving the tap open." "Through newspapers, TV, conference, circulars, but mainly during news: TV is the easiest means, not everybody reads newspapers." "The one available most is the visual media (TV) not written media (papers), because not every body can read."

"Public halls" and ***"schools"*** were also cited. Furthermore, many participants requested open dialogue between the Authority and the public regarding water rationing and water quality issues, disputes and tariffs. Participants expressed concern for the future and a desire to be included in the decision-making process, which ultimately affects them and their families:

"Open dialogue between the government and TV announcer, as well as a phone line live on TV to connect people with them."
"[We want] direct dialogue with the public audience by professionals to discuss supply problems and quality of water."

1.12 Conclusions

Clear indications emerge from the group discussions pointing to serious gaps in the relationship between subscribers and WAJ. The overall mood of most subscribers reveals mistrust in and unhappiness with WAJ as a service deliverer.

Nearly all participants agree that Jordan faces a serious water shortage which will not go away. Most, however, suspect that WAJ's management practices are responsible for causing supply disruptions, water quality problems, maintenance inefficiencies, meter reading and billing discrepancies and other related customer service problems.

WAJ's failure to repair or upgrade networks has been the immediate cause for pipe leakages and low pressure pumping. Further, the unfairness of WAJ in distributing water is considered the main reason for the deprivation of some regions in the greater Amman area. The participants from these regions accused WAJ of treating the

wealthy with great favoritism. Water is always supplied to wealthy regions and repair work is efficient all the time.

Most subscribers feel that complaining to WAJ about pipe leakages, meter and billing discrepancies gets them nowhere. Consumers believe they are overcharged in many cases because of faulty meters. Similarly, many participants did not think that WAJ is not concerned with the quality of water and, therefore, the health conditions of its subscribers. Water in many cases is not potable and poses a health hazard to younger people, especially children. Filtration and boiling of water are measures undertaken by several subscribers in an environment where water conservation practices govern the behavior of most users.

Several participants indicated a preference for monthly billing; the main reason being that monthly billing carries a smaller charge than the quarterly one and allows consumers to budget their monthly expenses more efficiently. As for payment methods, there was no particular preference to any single mode of payment. Some agreed that they prefer to pay the collectors, others the banks, and a few the post office or through mail.

The current tariff system was not understood by most participants. Their views about the system, however, were negative because many participants experienced significant hikes in their bills. Supporting a system they don't understand and then having to pay more for it, was just too much for these participants. Discussions were characterized by a high degree of excitement and anger.

When the question was asked of participants' willingness and ability to pay more for future tariff hikes, the upper middle and high income participants showed conditional willingness and ability levels. To most, unless WAJ was able to demonstrate that its services will significantly improve and water supplies will not be disrupted, there was no intention to support a future hike. As for ability, a 10% hike per billing cycle was tolerated. For some high income participants, they indicated an ability to pay 20% or 30% more on their bills if the 'misfortune' of having to ***"wait all night for water"*** is discontinued. The rationale offered for their willingness to pay more was mainly related to the fact that continous water supply would reduce the expenses they incur in buying water from alternative water sources. The other, rather subdued reason, was that subscribers were resigned to the fact they will have to (anyway) pay what WAJ requires or else stand to loose whatever supply they receive.

Any tariff increases in the future would mean a higher cost of living for the public. Accepting to pay more did not mean that subscribers approved the concept. In fact, some made it clear that they will ***"fight off"*** an increase because water is an "intrinsic" right of every citizen. Others threatened to ***"mess up"*** the meters if WAJ went ahead with the increase. All in all, the 'mood' of the discussion on a higher tariff was not positive or promising.

Private sector participation for WAJ was not common knowledge to most subscribers. Despite the opposition of younger men to the involvement of a foreign operator, most participants supported the concept. Women were especially supportive because a private company meant that their children will always have a good supply of healthy,

clean water. The experiences of some participants with other privatized government services were encouraging and motivating.

Subscribers described televised panel discussions with officials and experts as the most effective means of communication. Seeing these officials/experts and being able to call them on the telephone was a satisfying notion to most participants.

2. Non-Residential Focus Groups

Users of water in the non-residential sector have varying needs and requirements of WAJ. Commercial institutions such as banks, retail shops, offices and most governmental non-governmental agencies have little need for water. Service organizations such as schools, hospitals, hotels, car wash stations and beauty saloons offer water as a service to customers. Farms, nursery gardens, agricultural and industrial plants require water to do business. Consumption levels are lowest among commercial establishments which can, when needed, support their water supply needs through alternative resources.

The Perceptions and attitudes of non-residential water users are driven by different motives from those expressed by residential users. The issues, however, remain the same. There was little disagreement among the various participants about WAJ's services.

2.1 Introduction

All participants in the non-residential focus groups regarded water as an essential element in running their businesses:

"Nobody can live without water." "As a factory owner, water is the basic element."

2.1.1 Water Resources Availability

Unlike residential participants, many non-residential participants believed that Jordan had enough water sources to meet current and future needs:

"...water is enough" "We have dams to last us 100 years." "But the water will never run out." "As for well water, it is all over the south. If they made good use of it, that water will last Jordan for ever"

A minority, however, believed that Jordan's water sources were scarce. Some claimed that water availability has already reached dangerously low levels and they did not expect their future needs to be met:

"No doubt, the problem already existed." "It is a serious problem." "In the year 2010, there won't be any water in Jordan. I read this report in a magazine"

One participant warned that water disputes might be the cause of a future conflict in the Middle East region:

"If there are any wars to break out, water is the reason."

2.1.2 Water Sources and Supply

Participants' knowledge of water supply sources ranged from ***"rain water"*** to ***"recycled water in the town of Mahatta (station)", "I don't know", "Dams", "King Talal Dam", "Streams, wells, rivers like Yarmouk or the Jordan River".*** This lack of uniform information was also accompanied by an apparent lack of interest in the notion itself. Participants, however, were aware of the need to economize on the use of water. Rationing was accepted as a partial solution, which was a necessary but not sufficient answer to the problem:

"...but the authority must also encourage conservation"

"Whenever that water commercial appears on TV for water rationing,
I start laughing, my wife and kids ask me why,
I tell them because there is no water to economize on."

Perceptions of WAJ's deivery varied according to the participants' type of business. For representatives of businesses such as car wash, stations, yogurt factories or hair styling salons, where water constitutes a vital component of the production process, supply was said to be insufficient and in need of regular additions:

"Everybody suffers from the same problem."
"The Authority water meets less than half our needs."

For businesses, where the use of water is marginal, such as offices or retail stores, supply was considered adequate:

"It is a commercial market. We use water to clean the toilettes,
things like that, employees use. But there is always water",
"We, shop owners, do not have a problem, we only use little water."

Inadequate supply was attributed by many to weak water pressure that hindered water from reaching the tanks.

"The Authority water does not come often, when it comes,
the pressure is too weak", "The Authority water in the industrial city
used to let the water in once a week, and only for two or three hours per week."

Many complained about the lack of WAJ's adherence, in terms of duration and frequency of supply, published in a supply schedule. This proved irritating, especially for participants who depended on water for production. It was explained that the lack of water was not crucial for office cleaning, which may be easily postponed, but vital for the successful and profitable operation of a marble factory:

"The schedule says we will give you 12 hours of pumping twice a week.

Usually we only get two to three hours and then the pressure is too weak", "The schedule says that we will get water on Wednesday and we arrange things accordingly, the schedule is little respected."

Daily supply, according to the vast majority of participants, was not necessary. To most, high-pressure to allow water to reach tanks and a two or three-day-per-week supply schedule was adequate; especially if such a supply is regular and uninterrupted. Most agreed that:

"Three times a week is fine."

2.2 Water Quality Concerns

In addition to the supply issue, discussions on water quality also evoked a variety of responses. For establishments that used water for washing or cleaning purposes only, quality was not essential. Drinking water was routinely boiled and/or filtered or bottled water was bought.

Many participants tested water quality by using a pill called TBA which, when dropped in water, changes color by reacting to the chlorine level. The higher the chlorine level, the better the water quality. Participants claimed that many tankers add chlorine to their water, and that the Authority often checks tankers to make sure chlorine is added:

"The water proved to be not suitable for drinking." "There is a pill called 'TBA', put it in the water, shake it for a while and it turns violet. This shows that the water is clean. It has chlorine in it and it is pure. If the water doesn't change the color or if the color turns blue, then the water is not good."

As in the residential study, relying on the senses is the most common method used for determining the quality of water. Most participants smell and taste the water to check the chlorine level, and look at it to assess its clarity. They also determine water quality by observing the frequency with which water filters are changed. Opinions concerning the quality of WAJ's water were mostly negative. Several believed that WAJ's water was dirty, unhealthy and sometimes polluted with sewerage.

"From the taste of water." "From the calcium that we see, from whatever we see in the tanks, it is very obvious. I put an American filter at home, the engineer told me that within a year and a half I should change it. In 3 months it stopped dripping water." "The residue is unbelievable." "The filter clogs."

Furthermore, it was alleged that the chlorine content varied with the on the recipient's proximity to the main pumping station. Many complained about the unacceptable level of residues found in water. It was explained that water residues damaged machines, like dishwashers and laundry equipment, and that dirty water caused them to wear out faster and to require frequent maintenance and costly spare parts:

"Sometimes when we boil the water in a kettle, the calcium is too much. In 2 days you have to clean." "Get a glass and fill it with water from the authority, keep it a few days, and see the residue. You will find something white." "Water is very dirty." "He removes the meter regularly, and don't ask about the stones and dirt found there. I wait for water to settle then I drink."

Only a few participants commented on the quality of drinking water. For most industrial, commercial and institutional users, whether WAJ's water was potable had little to do with the production process. This was also the case with the food industry, such as bakeries and restaurants, where some claimed that water was sterilized in the cooking process:

"We don't test the water, we put the hose and keep filling because in the end we will put them in the oven. That is a way of sterilization."

Importantly, many participants did not separate business concerns from those pertaining to their households. In some cases, their concern for how water affected their families took precedence over concerns for the quality of water in their businesses:

"Water here is dirty and not clean. The water was cut off, not at work but at home. I have to mention it. When the water came, we took samples, we found sewerage water in the sample." "Every day on the radio there are complaints about the water." "The death rate of liver patients in Amman is very high."

As in the residential study, it was generally believed by many that the Authority's water had negative repercussions on health:

"My wife's gallbladder was full of stones and sand. Why? From the water."
"90% of diarrhea and vomiting is caused by the water."
"Yes, a friend of mine, his daughter caught a virus from the water."
"My 2 daughters went sick in a month.I sent them to the doctor 3 times. I asked the doctor what the reason is.
He said that it is from the water. Boil the water before you drink it."

During discussions, participants generally exhibited mistrust in the Authority and its claim that water is potable and had no negative health effects:

"No, we do not expect anything from them. If you wait for them, it is a hopeless case." "If the Ministry of Health goes to the Authority, it will close it down." "Yes, it is not safe. I don't want to exaggerate but I swear it is not safe." "Ever since my daughter got a virus, I use bottled water for her."

2.3 Causes of Dissatisfaction

Participants agreed that the Authority ignored their protests and complaints regarding water quality:

"They have engineers but they are always asleep. If they inspect the water and find it dirty, they just go away." "They don't do any treatment."

They held the Authority responsible for water waste caused by aging water networks. All participants considered the system to be in dire need of substantial improvement if not complete replacement. They claimed that water was wasted on a daily basis due to the poor conditions of aging pipes:

"When the water comes, you'll find the water running in the street", "They also say that water is going down through the earth. The pipes are worn out." "In [first] world countries, the net is renewed every 15 years."

Almost all participants expressed anger and despair towards the attitude of Authority employees; a common complaint was their lack of responsiveness and dismissive behavior. Many complained that employees at WAJ simply did not perform their jobs:

"First, if they are having breakfast, they will answer you after an hour, or they will put you on hold – so you'd automatically get a busy line – or when the line opens, somebody will tell you something, 10 minutes later somebody else will tell you something else." "The pipe breaks. They fix it. It breaks again. They fix it for 30 thousand times. This means there is something wrong." "Every 3 or 4 times, they answer once. We are going, we are coming, we are on the way..." "They have to work 24 hours."

2.4 Alternative Water Supply

Respondents explained that water supplements were proportionate to their particular organizations' needs. Businesses that relied mainly on water for operation, such as car washes and yogurt factories, depended heavily on tanker water which, for some, was used more regularly than the Authority's water:

"Once every week we buy water." "I can't depend totally on the authority's water. The water must be available, when a customer comes to wash his car, if I depend on the authority's water I won't work."

Conversely, businesses that have marginal water requirements, such as offices and retail shops, reported a much lower dependency on tanker water:

"We, shop owners, do not have a problem, we only use a little water."

The majority of participants reported that tanker water costs are substantially more than the Authority's water. For light users, this seemed to be more frustrating when full fees were charged regardless of the quantity required to fill participants' tanks:

"He says my fee is 30 dinars whether he fills one meter or 30 meters, it is the same."

Some non-residential respondents said that they routinely share the costs of acquiring tanker water:

"Sometimes you order a tank, and you pay 30 dinars for it, even if you don't want all of it. I saw it at my neighbors, either the hairdresser or the doctor. They order a tank and share the cost."

However, tanker water proved to be less expensive for participants who needed large quantities of water. In contrast with Authority charges of a flat JD 1.500 per cubic meter, tanker water suppliers use a regressive rate system: the cost of water decreases as the quantity increases. Consequently, some large quantity purchasers buy their tanker water for less than JD 1 per cubic meter.

A couple of participants who relied solely on tanker water reported maintaining the Authority's idle meter connection only because it is illegal to disconnect it. At least one participant reported disconnecting the meter and resorting fully to tankers:

"In our company we disconnected the meters because the supply was so weak. We buy all our water from tankers now, it is cheaper than the authority water."

Resorting to alternative water supplies could have negative effects on both the Authority and Jordanian subscribers. Importantly, the quality of tanker water is not always subject to Authority control and may, therefore, have negative health consequences. Moreover, the Authority could suffer financial losses if most entities ultimately turn to alternative sources. This loss of revenue could, in turn, push prices up even further for regular WAJ customers. It was alleged during discussions that tanker water could, at the end, become more affordable than Authority water. Importantly, most non-residential participants claimed that tanker water was cleaner than Authority's water:

"Of course, because the tank owners get their water from known wells." "The tank water is cleaner," "Some tanks are cleaner than the Authority."

2.4.1 Water Storage

Discussions concerning water storage facilities prompted a variety of responses, which were largely based on business size and the quantity of water usage. General storage tank capacity varied from four to eight cubic meters, though a few participants had tanks and reservoirs with a capacity of more than 70 cubic meters. One commercial shop owner stated that he did not need more than one to two cubic meters:

"In our bakery, we have two tanks, each of two cubic meters. That is enough."

While a car wash owner said he required 70 cubic meters and was still suffering from shortages:

"In the factory we have a reservoir of 40 cubic meters, but we still need to buy water from tankers."

2.5 Billing

Because salaries are typically paid at the end of the month, the vast majority of participants preferred receiving the water bill on a monthly basis. It was explained that this would allow them to plan accordingly and to eliminate the need to save for deferred payments:

"Monthly, it's much better. I'd rather pay it month by month than pay it one whole sum every three months." "The burden will be less."

Most non-residential participants preferred settling water bills through banks:

"The bank is the best."

2.5.1 Bill Computations

Discussions about water bill computation evoked complaints and serious misgivings. It was widely believed that water meters incorrectly record the quantity of water consumed by accounting for air seepage. As in the residential study, some claimed that the meters were originally meant for gas rather than water pipes:

"I bought a new meter (zero start)." "My friend suffered from a problem. The Authority changed his meter and that of his neighbors. Now he pays his neighbor's bill and the neighbor pays his bill." "The consumption might be the same but the price differs from bill to bill." "It is installed the wrong way. Of course the clerk does not read it. It is estimated." "When there is no water, the meter keeps running, even when there is no water. So you start getting the bill double or more, and you actually don't consume that much water." "The problem remains with the meter machine because of the air counts." "Let us say I get the bill and it reads 57 cubic meters. Ten or fifteen of these cubic meters are of air. You pay for air as much as you pay for water."

All groups complained that they had at some point or another been overcharged and that their claims were met with a ***"pay first and complain later"*** attitude from WAJ employees. Participants elaborated on the many incidents where a water bill revealed striking variance from the previous one. The difference, it was explained, would be so large as to warrant a complaint. WAJ would insist that the bill is settled first regardless of how large it is. Bill discrepancies were widespread and all focus group were consistent in their complaints about this issue:

"They told me pay first then complain. I said I'm neither going to pay nor complain." "They said pay and then complain. I did. So they told me they will start deducting from each bill. You don't get your money back. The bill came, without any notice that a deduction has been done – nothing. I appointed a lawyer but nothing happened." "Our consumption is 30 dinars per cycle. Last cycle it was 200 dinars."

In response to a question on how much of the total office expenses goes to water bills, office owners indicated that it was about one to two percent; for factory owners, it was anywhere from 20 to 95 percent of their overall expenses:

"Very high, 60% of the expenditures. What is our water consumption? around 50%." "40%." "In our nature of work, we use electricity more than water. So it is basically around 3%." "30%." "As factories, 40% of costs." "At the salon it is 30%." "To me it is 40%." "To me it is 95%." "To me it is 80%."

2.6 Current and Future Tariff Systems

Most participants were aware that a new tariff system existed. Most of the heavy users knew exactly what the change was and how it affected their current bills. Consequently, they were more concerned about the possibility of a new tariff system than about other issues:

"You are saying two meters per week, that is eight meters per month. So that is 24 meters per cycle times 1.5 dinars so your bill should be around 40 dinars." "The commercial is different from the residential. They charge 1.5 dinars per meter."

Many participants indicated receiving at least one bill under the new tariff system. Notably, most small and medium sized users reported that their bills had substantially increased. One respondent claimed an incredible 350 percent increase.

For these subscribers, the "new" tariff system was viewed less favorably for two main reasons: First, the new JD 1.500 flat tariff far exceeded the rate applied by the previous linear system, where consumption costs were calculated according to low and medium usage. Second, a minimum, per three-month cycle charge, was levied against each organization regardless of how little was consumed:

"The old was better, no doubt." "My latest bill was 35 dinars - the average before was 12 or 14 dinars." "We used to pay 4 dinars now it's 12 or 13."

A few large-volume users, however, reported that their bills remained unchanged or decreased under the current tariff system. They felt that they had benefited from the JD 1.500 flat tariff. Under the previous tariff system, the bulk of their consumption was priced at a much higher rate than the current flat tariff:

"It depends on the consumption. Those who consume a lot of water like me, benefit from 1.5 dinars per meter. If I consume 100 meters, that is 150 dinars." "The new tariff is better. I consume a lot of water."

A few participants claimed to have not noticed any changes with the new tariff. Based on their level of consumption, the new tariffs somewhat matched that of the previous tariff system:

"We did not feel the difference."

Participants who received higher bills under the current tariff system for the same consumption levels, expressed confusion and anger. Most indicated that their previous bills were affordable compared to other costs, but considered the new charges to be excessive:

"Maybe to help pay for repairs and better services, but I have not noticed any change." "They want to replace the old nets. That could be a reason. Also privatization and the scarce water resource."

Some participants claimed that the Authority was receiving foreign grants; this didn't justify any increase in tariffs. They believed that the grants were enough to cover all necessary repairs, therefore eliminating the need to impose additional charges on subscribers:

"That is a wrong principle. I know that they received 57 million dollars support from Germany to improve the net."
"I wonder to whose pocket the 57 million dollars went."
"The purpose of this new tariff is not to serve the people more but to serve them less. The purpose is to economize."

However, many respondents felt that they had no other alternative but to pay the new tariffs:

"What choice do we have, if we don't pay they will disconnect the water."

As stated above, some high volume users have started to exploit alternative supply sources. It was reported that the frustration of dealing with the Authority and increasing prices prompted them to exit the system and rely on tanker supplies instead:

"If right now we can't pay, then how can you ask us to pay more later. If we don't pay, they will cut the water. I'd rather buy water."
"Cancel the meter machine and get tanks."

They realized that regular purchasing of bulk quantities of tanker water allowed obtaining water at much cheaper rates than Authority tariffs.

"Anybody who makes a deal with those tank owners gets a good price. The price of two or three dinars per meter is for somebody buying water for once a month. But I get it for 950 fils." "In our company we disconnected the meters because the supply was so weak. We buy all our water from tankers now it is cheaper than the authority water." "We will probably increase our usage of tanker water and use the Authority water only for washing."

When those participants elaborated on the attractiveness of dealing with alternative sources, this prompted other participants to inquire about the cost and procedures of buying tanker services:

"Yes, I ask for big amounts. That's why the price I get from them is much less than of the Authority water." "I want to examine the cost of using only tanker water."

2.7 Willingness and Ability to Pay

Initially, the notion of paying additional increases was totally rejected by most participants. Little was communicated to them by WAJ regarding the purpose of the recent increase; the idea was refused outright:

"We have already paid the increase for God's sake." "They have already taken the increase." "No I'm not because I've already paid." "We are getting support. We are getting support. The government is paying nothing from its pocket." "I'm not willing to pay because it is very expensive. I use it for washing purposes only."

Most felt that the first increase was sufficient enough for the Authority to implement needed repairs and the improvement of services. Many were reluctant to express any willingness to pay more, and they seemed to resent the question by the moderator. They believed they were already paying more than enough, and improvements in services and quality should be implemented using the current tariff:

"Another increase? What?" "I am not willing to pay a penny more." "No, leave it like this, we'll drink diesel." "That is a citizen's right, to drink clean water and get all the services, in return for the amount he already pays." "Nobody can afford it." "One can hardly make it." "If right now we can't pay, then how can you ask us to pay more later. If we don't pay, they will cut the water. I'd rather buy water." "Anyway, like this we can't afford to pay. That is the maximum."

However, when options were explored, and the initial angry reactions died down, participants were more open on the subject. Willingness to pay more was closely linked to and conditionally dependent on better services, cleaner water and more adequate supply. The amount of increase participants were willing to pay varied between one and twenty percent:

"I'm willing to pay any increase that the government puts in return of lifting all the taxes on the bill, why would I pay the university tax, the sewerage tax..." "It needs control. The pumps should be controlled. I'm willing to pay not 1.5 dinars but two dinars if you supply me with water – continuously – for drinking, for washing, for the toilette, etc." "I'm ready to pay the difference in return to clean water." "Let's say 10%, 5% or 1% or in the form of a tax." "In return of pure and clean water, that would save me a lot of money."

The non-residential participants expressed tariff increases in terms of percentages, instead of dinar values:

"10% is OK. If I normally pay 10 dinars and now I pay 11, that is OK." "10 to 20%." "The same thing, 20%." "...1 to 5% suits me fine."

Participants agreed that the 'what-affects-one-will-affect-all' mandate will be put into effect in order to meet future increases of tariffs. Given that the increase was generally implemented by all business owners, many simply indicated that they will pass the tariff increases onto their consumers:

"It is not a question of whether we are able to pay - if the costs increase I will charge my customers more." "We have already increased the cost of the car wash." "I don't know if I would be able to pay, we will need to reduce other expenses and our use of water." "The consumer will take it all." "We used to charge two dinars for each car wash, now we charge 2.25 dinars. What can I do?" "Commercial didn't make that difference. If it increases, I'll increase the charge on people."

Participants who agreed to pay more based their decision on a cost-benefit basis: If the increase enhances water quality and services and they can recover the extra charges without loosing business, then the advantages would outweigh the disadvantages. As previously stated, concern about business and household water usage could not be separated. Most participants agreed to pay more because this would save on health care expenses.

2.8 Views on Private Sector Participation

For most participants, the concept of private sector particiption was fully understood:

"You won't pay for the renewal of the water infrastructure. It will come as a donation from the German government." "Yes, there is a German project, in millions."

For some reason, all participants kept referring to a ***"German company"*** as the one, which will manage and operate the water service in Jordan. Participants' perception of privatizing the Water Authority was influenced by their impressions of the government's experience in privatizing electricity and telecommunications. Those who now pay higher phone bills believe that private sector participation will unquestionably bring about an increase in water prices. Those who have now a better appreciation of the better and ***"friendlier"*** services of privatized government agencies expect to enjoy similar privileges with a private water company:

"Like the Telecommunication Company. In the past, you would call them up if your line goes down and they wouldn't listen. You'll call for 20 times. Now it is an operator, fast service." "OK, this water authority- Remove this staff and replace it with a staff from the private sector. The water will come everyday and in good quality. The complaints will disappear."

The majority of participants regarded opening the Water Authority to the private sector as a positive step. They exhibited little apprehension about the procedure, secure in the knowledge that, if the operator was to generate any profit, it would have to provide its subscribers with better services and modernized water distribution networks. Non-residential subscribers voiced their opinions by asserting that a private operator will ultimately improve their situation:

"A private company should give you the right answer." "Better, we will have more trust in everything." "The employee is more true and honest." "The service will be a lot better", "the government employees cover for each other. In the private company, if an employee does not do his job right, they kick him out." "In all honesty, the more we privatize, the more we improve the quality", "I support 100% all the services to be turned into private sector."

A minority, however, objected to the idea of involving the private sector, expressing concerns about potential increases in tariffs:

"I think the management of water should remain with the government." "As an owner of a commercial shop, I'm against privatization. I like it the way it is." "That is an increase. As a result, there will be an improvement. But the citizen has no income to pay for increases. That's a general issue." "He's right. Privatization means an increase when I have a limited income, where would I get this increase from?"

2.9 Communication and Awareness

"Television and newspapers" were cited as the best medium to communicate WAJ plans on the current tariff system and other water related issues. It was felt that using these two tools, the Authority could transmit important information to a high proportion of subscribers.

2.10 Conclusions

Like their residential counterparts, non-residential participants blamed WAJ for its inefficiency and ineffectiveness in managing and operating the water supply services. Most participants agreed that water supply, quality and maintenance services suffered because of the ineptness of WAJ's employees. Supply was insufficient because of disruptions caused by the network, pipe leakages and low pressure at the pump station. Quality was poor because WAJ's engineers didn't perform their duties adequately and skillfully. Meter reading and billing discrepancies were common because WAJ's collectors and accounting department employees committed errors and miscalculations. To these participants, WAJ was the cause of water waste, malfunctioning of equipment in factories and production firms, and the loss of business for them.

Unlike residential participants, however, different non-residential participants were affected in different ways and to varying degrees. Commercial institutions, like offices, banks, and retail shops had no great need for water and, therefore, were minimally impacted. Conversely, factories, hospitals, nursery gardens, and car wash

stations suffered profusely either because they didn't receive an adequate supply to conduct business and because they had to incur enormous costs due to the purchase of tanker water.

All participants were aware of the current tariff system and expressed different opinions regarding its financial impact on them. Clearly, the impact depended on how much is being consumed and how the previous and current tariffs were computed. In the previous system, tariff charges were based on low, medium and high consumption levels. Once the consumer goes beyond a particular consumption level, the tariff changes upwardly and applies only to the cubic meters consumed within that new range (level). In the current system, the subscriber pays JD 1.500 per cubic meter. So subscribers who continued to consume the same amount may now be paying less or more money, based on their consumption level. These subscribers are now either happy or unhappy with the current system. It is safe to assert that a significant proportion of consumers, are now paying significantly higher amounts and are very unhappy with the current system. Of all expenses paid by subscribers, the water bill represented on the low end, 1-2%, and on the high end 20-30%, depending on the type of entity. Most participants indicated a preference to the previous tariff system.

The willingness of participants to pay more was conditional and restricted. They wanted taxes to be canceled so that they pay more for water. When asked how much more, 10% was a frequent response.

Ability was not an issue and didn't play a role in determining how much more to pay. Many middle and high level users confirmed that all extra tariff increases will be passed on to their customers. They were unwilling to pay WAJ without charging their customers the equivalent amount. Of course, commercial institutions had no issue with the current tariff because it did not affect their budgets in any noticeable way.

Private sector participation was overwhelmingly supported because participants' experience with some of the government's privatized services was positive. The most appealing quality of a privatized service was its "customer friendly" culture. All were looking forward to a friendlier experience with the water service delivery operator. As for the best communication medium which can be used by WAJ, television and newspapers ranked highest. As for the television, the non-residential participants provided similar reasons to those offered by the residential groups. They favored television because they could relate to officials on a personal basis. Newspapers, however, were equally important because most managers and executives read the paper daily to follow-up on the business news of the country.

3. Post-Crisis Residential and Non-Residential Focus Groups

3.1 Residential Subscribers' Mood during the Crisis

During the summer of 1998, Jordan experienced a severe water pollution crisis. This crisis resulted in WAJ's decision to postpone the study's field survey for several months.

In an attempt to assess the mood of residential and non-residential subscribers during the crisis, three post-crisis focus groups were conducted immediately after the crisis subsided. Participants in these groups represented a wide variety (two residential and one non-residential groups) of subscribers who consumed different levels of water and resided in the target population area. The following is a brief review of the discussions in all three groups.

Understandably, most participants spoke with frustration and mistrust in WAJ as an operator of water services in Jordan. The mood of the discussions was negative and emotions high.

Most participants agreed that the most important cause of the crisis was WAJ's negligence and poor performance. Other less important causes, such as the poor water quality at the source and/or a defunct filtration technology system, were also mentioned as possible contributors to the crisis. Regardless of the cause, however, participants put the blame on WAJ for not advising them early enough in the crisis to boil and/or filter the polluted water they were receiving at their homes or businesses.

When describing problems relating to the water source, participants agreed that Israel was intent on providing Jordan with dirty water from lake Tabaris, a breach of its water supply agreement with the government. Where WAJ has failed was in detecting and determining the quality of water when it arrived at the pump station and ***"doing nothing about it"***. Participants insisted that water:

"Had a stinking smell, its color was yellowish and floating objects were seen..."

Participant's focused on how WAJ couldn't "see or smell" the water before it got into their homes or businesses.

3.2 Authority's Intervention

After about two weeks from the start of the crisis, WAJ began to play an active role in managing related problems. WAJ's intervention was on three fronts: controlling tankers' water distribution as far as quantities and costs were concerned; providing support to the health sector in order to protect the latter's hygienic requirements; and providing advise on how to deal with water quality control by subscribers. Though unnecessarily delayed, WAJ's intervention was seen as ***"effective and helpful to us..."***. Participants blamed the two weeks intervention delay in causing them several hardships. They did, however, recognize WAJ for its effective handling of the crisis at its later stages.

3.3 Impact on Subscribers

3.3.1 Residential

The main impact or residential subscribers was cost. Subscribers had to incur additional costs to secure substitute water sources. Participants claimed that ***"cost of tanker and bottled water increased horrifically"*** during the crisis. For many,

they were forced to buy ***"tanker water at 20 dinars for every 6 cubic meters..."*** instead of the normal JD 10-12.

Bottled water became scarce, and as result, a lot more expensive than the usual. All of these additional costs amounted to ***" 100 to 300 dinars of extra expenses during the crisis..."*** for many of the participants.

The soft drink business also flourished. Many bought more soft drinks to augment their drinking needs in the hot summer months. Prices of soft drinks, however, were not affected by the crisis.

3.3.2 Non-Residential

Similar to their residential counterparts, non-residential subscribers developed dependence on tanker and bottled water during the crisis. The financial impact on these participants varied based on the type and size of the entity they represented. In most health organizations, WAJ's water supply was significantly reduced to ***"say one or two times a week or none..."***. A few industries had to close down because water supply was not suitable to their needs and they couldn't afford alternative supply sources. A few entities such as car wash stations had to buy their own tankers to provide themselves and others with water. Banks and other small commercial entities bought bottled water for drinking purposes and increased their acquisition of tanker water for ***"floor washing and toilets..."***. Surprisingly, some small restaurants who couldn't afford alternative water supplies continued *to* ***"serve Authority water to customers..."***.

The increase of cost in tanker and bottled water to most non-residential entities stood at ***"30-60 dinars*** *(for offices);* ***10-30 dinars*** *(for banks);* ***and 1000-1500 dinars*** *(for hospitals)..."* during the crisis.

Obviously, both the residential and non-residential subscribers suffered, in addition to cost, extreme inconvenience. Several were taken by surprise and were not prepared to manage the crisis adequately.

3.4 Impact of Bill Cancellation

WAJ cancelled the water bill for the months during which the crisis occurred. Most participants agreed that WAJ's bill cancellation strategy was a step in the right direction. This action absorbed some of the anger because it allowed subscribers to compensate, though partly, for some of the added expenses. While most businesses claimed that they didn't abuse the use of ***"free water"***, many residential participants declared they did. Non-stop ***"watering of garden..."*** was a habit picked up by these participants. A few subscribers, both residential and non-residential, insisted, however, that they ***"conserved water with all our hearts..."***.

In the health arena, participants representing hospitals declared that they witnessed an upsurge in emergency cases, which were related to the unhygienic nature of water. Though unsubstantiated, few participants reported that these emergency cases were heaviest during ***"the first four weeks of the crisis..."***. When asked if the crisis was over, most agreed that it was ***"under control but not over..."***.

3.5 Attitudes towards the Current Tariff

Attitudes towards the current tariff were similar to those expressed by participants in the pre-crisis focus groups. Among the non-residential participants, industries and some service organizations suffered the most from the tariff increase. Chrome and paint factories as well as hairdressers/car wash stations felt the tariff increase. In the case of some of these participants, the tariff increase was passed over to their customers. Other entities, which used water for cleaning or drinking, were neutral because the current tariff did not impact their budgets significantly.

Entities in the non-residential sector, according to participants, have, in the most part, experienced an average of 15-30% increase in their bills; a few claimed that it was a lot more.

Residential subscribers who consumed larger quantities of water felt negatively about the current tariff. All others indicated indifference, especially those who did not realize that ***"these prices was a new tariff..."***.

3.6 Attitudes towards Higher Tariff

Most participants considered any higher tariff as a form *of* ***"taxation on water..."***. They all agreed that ***"water shouldn't be taxed"*** and the current tariff should ***"be the absolute limit"***. If new ***"higher tariffs are introduced... we will object very seriously"***. Willingness to pay more in the non-residential sector was anything from ***"no problem, we consume very little"*** (banks); to ***"we will charge all extras to the customers"*** (car wash stations); to ***"we will shut soon"*** (industry); to ***"we will not pay more because we can't charge patients"*** (hospitals); *to* ***"we refuse to pay more"*** (hairdressers); and to ***"we will pay 60 dinars instead of 50 dinars"*** (schools).

In essence, the willingness to pay more depended on whether the entity can recover the additional cost ***"without loosing business..."***. Those who were able to recover the new cost were more willing to respond favorably to WAJ's higher tariff request than those who were not.

3.7 Private Sector Management

When asked if they felt WAJ should be privatized, some support was offered to the concept. Many felt that improved quality and service are necessary but not sufficient conditions for privatization or increased cost. There was objection to a ***"French company"*** and an insistence that if ***"we can't avoid privatization... then more than one company should be chosen"*** to encourage competition. Locals should be **"hired in these organizations"** after being trained properly. A few expressed a strong wish for WAJ to ***"institutionalize accountability"*** within its management structure and to **"continue to manage water services"**. In any case, almost all participants voiced the need for WAJ *to* ***"exercise controls over the private company"***, regardless of its foreign or local identity.

3.8 Conclusions

Generally, the views of participants in the three groups were similar to those views presented in the previous two sections (pre-crisis residential and non-residential focus groups). Important as it may be, the emotional outburst against WAJ during the crisis does not seem to have left lasting scars in the minds of participants. Their trust in a government-run water service, however, remains strong. If WAJ became accountable for its actions, then services would improve and a healthier attitude by subscribers will emerge. To its credit, WAJ was able to absorb the shock of the crisis once it intervened substantially.

Chapter 3
Residential Survey Results

1. Introduction

This chapter presents an analysis of the findings of the willingness and ability to pay survey conducted in February, March, and April 1999. For the most part, these findings focus on residential subscribers' opinions and justifications for supporting, or not supporting, current and future increases in water tariff rates. Additionally, the findings shed light on the public's awareness of the general water situation in Jordan, highlight their perceptions and attitudes towards WAJ's water supply, water quality and customer services issues and focus attention on subscribers' views on the privatization of water management and operations.

The findings and analysis section includes information about respondents' satisfaction levels with WAJ's water supply, water quality and customer services. It will also outline subscribers' water-related habits and practices, views on WAJ's billing system, attitudes towards the current tariff system and disposition towards a rise in future tariff rates.

The chapter is presented in two parts. The first analyzes the degree of subscribers' satisfaction levels with water supply, quality and customer services; as well as habits and practices. The second investigates the degree of subscribers' willingness and ability to pay current and future tariff rates.

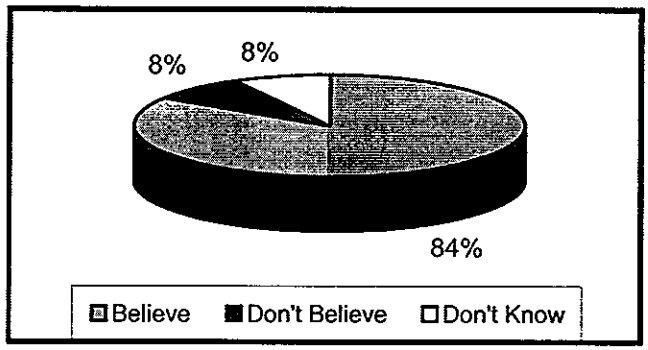
It is important to note that information provided in this chapter attempts to measure and analyze subscribers' views and perceptions. Unlike the previous chapter on the focus groups, data here presents the reader with a succinct understanding of "who thinks what and how". The core of this analysis is an understanding of the views of consumers, at various income levels and in different geographical locations, regarding water services and possible support of WAJ's future actions. Understanding the views and attitudes of is essential for WAJ as it drafts new policies and procedures.

2. Residential Subscriber Attitudes Towards Water and WAJ

2.1 Jordan's Water Shortage

Respondents exhibited a high level of awareness concerning the problematic status of the water situation in Jordan (Figure 3.1). Of the 84% who believe that there is a water shortage problem in Jordan, the majority, (64%), is convinced that the situation is critical but manageable. To most, (80%), 'little rainfall' was the main reason given for the existing water shortage problem, followed (in this order of importance) by 'waste by users', 'a fast growing population' and the 'Authority's mismanagement'. Moreover, a large number of respondents, (44%), speculated that Jordan's water shortage problems may become far more severe in the coming 20 years.

Figure 3.1
Subscribers Belief in a Water Shortage in Jordan
(n=1000)



2.1.1 Observations and Implications

The high level of subscribers' belief that Jordan's water shortage problem is critical, coupled with a common understanding that it is mostly due to natural factors, should encourage WAJ to launch a comprehensive educational and orientation campaign addressing the issue of water shortage. WAJ should seek the active support of the public in solving the negative impact of long-term water shortages. Despite the fact that few subscribers believe that WAJ should be blamed for its mismanagement of the water service, most, however, recognize that Jordan faces a larger problem which is not going to disappear. Managing this problem requires a determined effort by all concerned in order to ensure adequate water supply for future generations.

Combating water shortages requires a strategy which involves subscribers as active partners in safeguarding this resource, an extremely critical one for the livelihood of future generations. Public opinion seems prepared to support WAJ's calls for conservation and tolerance.

2.2 Satisfaction Levels

The data in the study has yielded a distinctive pattern with regard to water supply, quality, and customer services. It has also provided some insight into subscribers' habits and satisfaction levels with the sewerage system. Differences in subscribers' satisfaction levels appear to be a function of, and may be directly related to, varying consumption levels, income, and geographical or residential locations. Generally, the higher the consumption levels, and more affluent and geographical location of subscribers, the lower is subscribers' satisfaction levels with supply, quality and services; and the opposite is true.

2.2.1 Water Supply

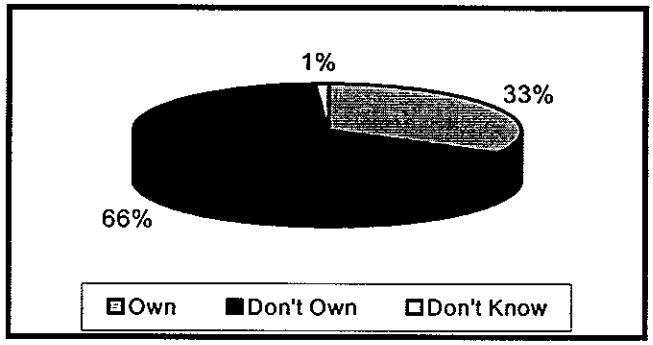
In this study, water supply means frequency, duration and availability. The majority of respondents believe that a continuous or optimal water supply scheme would entail a three-day-per-week replenishment schedule. Importantly, during the summer, 54% are scheduled to receive WAJ's water twice per week; while 56% actually receive water as designated (twice a week). Only 11% receive water three times a week. During the winter, 48% of subscribers are scheduled to receive WAJ's water twice per week; a similar number actually receive water as scheduled. Only 22% receive water three times a week. During the summer, the frequency of water supply is 20 or more

uninterrupted hours for 36%; 10-12 hours for 21% and 16-20 hours for 12%. During winter, supply of water is 20 or more uninterrupted hours for 52%; 10-12 hours for 13% and 16-20 hours for 11%.

For the majority of subscribers, adequate water pressure is a necessary prerequisite for insuring a satisfactory level of supply. Only 52% of consumers are satisfied with WAJ's pressure; the south, east and north show the highest satisfaction levels (75%, 64% and 61% of subscribers respectively). The lowest number of satisfied subscribers are in the west (37%), northwest (41%), southwest (47%), the center and outside Amman (50% each), and the southeast (59%).

Because of low water supply pressure, some 34% of subscribers have purchased their own pumps to increase pressure and allow water to reach their tanks (Figure 3.2).

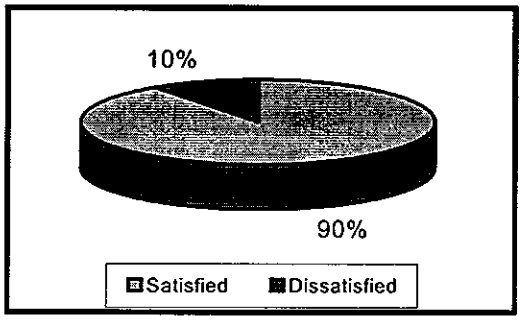
Figure 3.2
Ownership of Pumps
(n=1000)



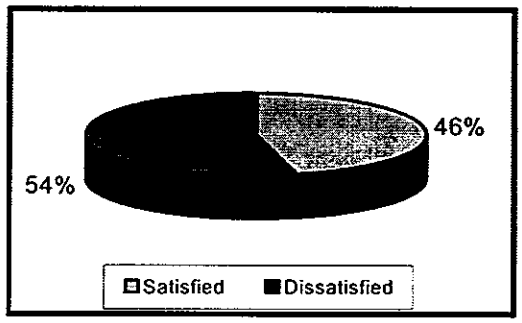
The degree to which customers get enough water from WAJ differs between the winter and summer months. Provided there are no disruptions, 90% of subscribers assert that the quantity they receive during (a rainy) winter season is relatively sufficient for their needs; the percentage drops significantly to 46% of subscribers during the summer season (Figure 3.3). This clearly means that if WAJ adheres to its schedule of distribution and ensures no network related disruptions, subscribers will be satisfied during the winter months.

Figure 3.3
Satisfaction with Water Sufficiency according to Season

Winter
(n=1000)



Summer
(n=1000)



2.2.2 Satisfaction with Frequency and Duration

In examining subscribers' satisfaction with the frequency and duration of supply, the researchers focused on addressing satisfaction and dissatisfaction levels according to subscribers' consumption levels, income, and residence.

According to Subscribers' Consumption Levels

Satisfaction levels with WAJ's frequency and duration of water supply are moderate to low (Table 3.1). Theoretically, frequency and duration mean specified days and hours per week based on WAJ's water schedule for the summer and winter seasons. Subscribers' satisfaction or dissatisfaction levels are expressed on the basis of whether water is being supplied according to WAJ's distribution schedule.

About 55% of subscribers are satisfied with the frequency and duration of water supply. Noticeably, subscribers who are most dissatisfied with frequency and duration are those consuming 61-70m^3, 71-80m^3, and >/= 130m^3. The most satisfied category of consumers are subscribers who consume </= 10m^3 (62% are satisfied with frequency and 64% with duration).

According to Subscribers' Income

Satisfaction and dissatisfaction tendencies are related to income. Upper, middle-upper and middle income subscribers are most dissatisfied with frequency and duration (Table 3.2). About 53% of high-income subscribers are satisfied with frequency and duration in comparison to 63% in the low-income group.

Table 3.1
Subscribers' Satisfaction with Supply Frequency and Duration According to Water Consumption

N=1000		Supply Frequency		Supply Duration	
Consumption Categories (cubic meters)	% of Total	Satisfied	Dissatisfied	Satisfied	Dissatisfied
</= 10	15%	62%	35%	64%	33%
11 – 20	14%	55%	39%	56%	36%
21 - 30	19%	59%	35%	63%	30%
31 - 40	16.5%	49%	41%	48%	42%
41 - 50	11%	54%	38%	59%	34%
51 - 60	9%	50%	43%	49%	46%
61 - 70	5%	43%	50%	41%	54%
71 - 80	3%	33%	60%	33%	60%
81 - 90	2.5%	50%	42%	40%	42%
91 - 130	3%	54%	42%	51%	45%
>/= 130	1.5%	42%	50%	42%	50%

Table 3.2
Subscribers' Satisfaction with Supply Frequency and Duration According to Income

N=1000		Supply Frequency		Supply Duration	
Income Level	% of Total	Satisfied	Dissatisfied	Satisfied	Dissatisfied
High	7%	53%	39%	53%	36%
Upper Middle	22%	46%	47%	48%	45%
Middle	50%	54%	40%	56%	38%
Low	21%	63%	33%	62%	34%

The data in Table 3.2 confirm that low level consumers (</= 40m^3), who generally belong to the low income group, are the most satisfied with frequency and duration. All others are not. Water needs and requirements of low income families are far less than those of the upper and middle-upper income categories.

According to Subscribers' Residence

Geographically, subscribers in the affluent northwest and west are the least satisfied with water frequency and duration (Table 3.3). About 39% of subscribers in the west are satisfied with the frequency and 41% with the duration. In the northwest, 43% are satisfied with frequency and 44% with duration. Most other regions show moderate to moderate-low degrees of satisfaction levels. It is important to note that geographical affluence cannot be strictly defined on the basis of specific geographical boundaries. With the exception of two or three areas, one can expect a significant overlap of varying income levels within and among the various regions in the study's target area. Obviously, the west where most of the high and upper middle subscribers reside have complained most about frequency and duration. To most of them, their high water bills justify adequate services by WAJ. These consumers feel that they contribute significantly to WAJ's revenues and should, therefore, be treated preferentially.

Table 3.3
Subscribers' Satisfaction with Frequency and Duration According to Geographical Location

N=1000		Supply Frequency		Supply Duration	
Geographical Area	% Of Total	Satisfied	Dissatisfied	Satisfied	Dissatisfied
Northwest	23%	43%	49%	44%	48%
North	16%	61%	35%	64%	33%
East	5%	62%	36%	64%	36%
Southeast	13%	60%	36%	62%	36%
South	11%	70%	28%	71%	25%
Southwest	8%	57%	38%	59%	37%
West	15%	39%	45%	41%	42%
Center	2%	68%	32%	68%	32%
Outside Amman	7%	55%	45%	56%	41%

Observations and Implications

Improved water pressure will undoubtedly enhance the water amount received and hence the satisfaction levels of consumers. This is especially true when one realizes that about 70% of subscribers receive water 2-3 days a week. For all consumers, it is of paramount importance that water, which is supplied to their homes, actually reaches their taps and water tanks. Arrival of water at homes plays a defining role in securing subscribers' support to WAJ. Clearly, a higher frequency of supply, for example three days, and an enhanced duration of 20 or more uninterrupted hours for all subscribers will greatly enhance satisfaction levels. Today, the situation is significantly more favorable to middle-upper and upper-income subscribers because they are able to install heavy-duty pumps. These pumps allow water to reach their tanks. Perceptions of water sufficiency, therefore, are influenced by whether or not water reaches the consumer regardless of the method used to get it there.

The variance in subscribers' dissatisfaction levels among the middle, middle-upper and upper income groups are insignificant. Satisfaction levels of those living in the south or center (mainly low and middle-income earners) are significantly higher than those of subscribers in the higher income groups. Here, consumption needs are low and interest in frequency and duration is less of a priority.

Those who seem to suffer most are middle income consumers (61-70 cubic meters). These consumers' needs are relatively high but their financial means are relatively low. Not all of them can afford the purchase of pumps.

Affluency, whether income or geographical, is mostly associated with higher consumption levels and a greater need for water availability. Larger houses (or villas), with plentiful gardens, require a higher and more consistent water supply frequency. Any disruption in WAJ's distribution program is usually viewed negatively by subscribers of affluent areas because it impacts their standard of living and introduces additional costs to cover supplemental water supplies.

2.2.3 Satisfaction with Quality

Quality is assessed on the basis of color, purity, taste and potability of water. The majority of subscribers, (73%), have indicated they are satisfied with color, purity, taste and potability of WAJ's water[1] (Figure 3.4).

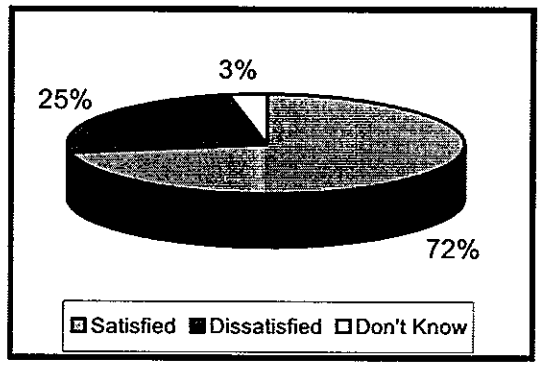
The following is a presentation of subscribers' satisfaction levels with quality according to consumption levels, income, and geographical locations:

According to Subscribers' Consumption Levels

Table 3.4 shows that consumers of 130 cubic meters or more are the least satisfied with quality. Their approval ratings of quality is moderately low especially when compared to other consumer categories (about 52% approve of quality).

[1] It is important to note that this field survey was conducted after the occurrence of the water crisis in 1998. Respondents were asked to consider their satisfaction with watercolor, purity, taste and potability before the crisis occurred. This might explain the relatively high satisfaction rate with quality as well as the difference in satisfaction rates expressed by subscribers.

Figure 3.4
Satisfaction with Color, Purity, Taste and Potability
(n=1000)



Moderately low approval ratings are also given by consumers of 61-70 cubic meters. For these consumer groups (consuming between 61-70 cubic meters and >/= 130 cubic meters), the quality factors which contribute most to their low satisfaction levels are water purity (only 54% and 50% of subscribers are satisfied respectively), taste (58% and 50%, respectively), and potability (54% and 50% respectively). Consumers of 61-70 cubic meters can afford least filtration systems (middle income families). Those consumers of 130 cubic meters or more are least satisfied because their consumption levels are high and because they pay relatively high fees for water.

On average, however, more than one-third of the population is unhappy with water quality. Unhappiness of subscribers is highest with water color, purity and taste. Water potability receives slightly higher ratings. Clearly, the status of pipes (rust and residues) may be the cause of these quality issues.

Table 3.4
Subscribers' Satisfaction with Quality According to Consumption Levels

N=1000		Color		Purity		Taste		Potability	
	% of Total	Satisfied	Dissatisfied	Satisfied	Dissatisfied	Satisfied	Dissatisfied	Satisfied	Dissatisfied
</= 10	15%	76%	23%	70%	28%	72%	26%	75%	24%
11 - 20	14%	74%	23%	71%	26%	74%	23%	76%	23%
21 - 30	19.5%	75%	25%	73%	26%	74%	25%	74%	19%
31 - 40	16.5%	74%	24%	65%	30%	73%	23%	72%	23%
41 - 50	11%	80%	19%	73%	25%	79%	20%	81%	18%
51 - 60	9%	81%	18%	70%	27%	76%	21%	80%	18%
61 - 70	5%	70%	30%	54%	32%	58%	37%	54%	32%
71 - 80	3%	69%	27%	67%	27%	69%	27%	66%	27%
81 - 90	2.5%	75%	21%	67%	25%	71%	26%	71%	21%
91 - 130	3%	72%	27%	72%	27%	72%	24%	72%	18%
>/= 130	1.5%	57%	43%	50%	50%	50%	50%	50%	35%

According to Subscribers' Income

Table 3.5 shows that consumers who belong to the high and upper middle are the least satisfied with quality. Here again, we notice that subscribers' satisfaction is least with purity (59% and 58% of subscribers respectively), potability (60% and 61% respectively) and taste (63% and 61% respectively).

Table 3.5
Subscribers' Satisfaction with Quality According to Incomees

N=1000		Color		Purity		Taste		Potability	
Income Level	% of Total	Satisfied	Dissatisfied	Satisfied	Dissatisfied	Satisfied	Dissatisfied	Satisfied	Dissatisfied
High	7%	67%	31%	59%	37%	63%	34%	60%	34%
Upper-Middle	22%	66%	33%	58%	37%	61%	35%	61%	32%
Middle	50%	80%	19%	75%	22%	79%	19%	79%	18%
Low	21%	87%	21%	71%	27%	75%	22%	80%	16%

According to Subscribers' Residence

Table 3.6 shows that residents of the affluent northwest and west, along with subscribers in the Center of Amman, are generally less satisfied with quality than are subscribers in other regions.

Noticeably, residents in the Northwest, West and Center are least satisfied with purity (67%, 60% and 44% of subscribers are satisfied respectively) and taste (58%, 68% and 56% respectively). For subscribers in the Northwest and West, potability does not receive high approval ratings (66% and 58% are satisfied respectively).

Table 3.6
Subscribers' Satisfaction with Quality According to Residence

N=1000		Color		Purity		Taste		Potability	
Geographical Area	% of Total	Satisfied	Dissatisfied	Satisfied	Dissatisfied	Satisfied	Dissatisfied	Satisfied	Dissatisfied
Northwest	23%	71%	27%	67%	30%	68%	28%	66%	28%
North	16%	79%	20%	71%	25%	79%	20%	77%	18%
East	5%	79%	19%	70%	26%	77%	20%	77%	18%
Southeast	13%	86%	13%	82%	27%	83%	16%	90%	7%
South	11%	82%	18%	78%	20%	82%	14%	84%	14%
Southwest	8%	72%	28%	58%	36%	72%	28%	68%	27%
West	15%	62%	35%	60%	37%	58%	37%	58%	38%
Center	2%	56%	44%	44%	51%	56%	44%	88%	12%
Outside Amman	7%	82%	17%	75%	25%	80%	20%	85%	13%

2.2.4 Observations and Implications

The fact that large consumers from high and upper middle income groups and regions are the least satisfied with the quality of WAJ's water supports the urgency for WAJ to promptly address these groups. In the end, these are the groups which will be affected most by, and can afford, a rise in water tariff rates. Often, water purity and color are affected by the quality of the pipes rather than the water source. Rust particles and other minute residues could cause discoloration and taste. WAJ's maintenance programs should aim at improving the degree of water purity and taste through a program of maintenance which aims at cleaning pipes and/or replacing defunct and old pipe segments. This would eventually improve the image of potability. Improving these three essential factors (purity, taste and potability) may also enhance subscribers' satisfaction levels and help WAJ unleash a momentous campaign aiming at securing the support of those segments of the public. Fortunately, quality is not seen by subscribers as a major issue by nearly two thirds of the population. As it stands today, WAJ needs to put in place a few quality control corrective measures to help it reduce or perhaps eliminate any important causes of dissatisfaction.

2.3 Sewerage System

2.3.1 Connection to the Sewerage System

About 90% of the residences surveyed are connected to the sewerage system. The remaining 10% use septic tanks to discharge sewerage. About 27% of septic tank owners usually discharge their tanks once every 6 months; 17% discharge their tanks more than once every month; and 15% never discharge their tanks. Tank sizes range from less than $4m^3$ to more than $24m^3$; 50% of septic tank owners, however, do not know the size of their tanks. None of the septic tank owners have or use a treatment/recycling system.

2.3.2 Satisfaction with the Sewerage System

Out of the 895 residences connected to the sewerage system, only 8% claim that they have faced problems with their sewerage network. Problems included blockage (60%); flooding (39%); odor (24%); not enough capacity (22%); and poor system maintenance (20%). The majority of the subscribers, (90%), however, are satisfied with their connection to the sewerage system. Only 40% of the connected residences responded to questions on the blockage repairs issue. Here again, the majority (77%) was satisfied with this service. Of the 286 who did complain about flooding problems, 77% are satisfied with the level of responsiveness to their complaints. Satisfaction with the sewerage maintenance system was high for 68% of the 371 subscribers who complained about it. Clearly, WAJ must maintain tight controls on issues relating to flooding of sewerage. Complaints were made about the mixing of sewerage with pipe water when leakage in the latter occurs. Generally, however, problems with sewerage connections are under control and require little more attention.

2.4 WAJ's Customer Services

The function of 'customer services' plays a critical role in directly influencing subscribers' attitudes and perceptions because it reflects negatively or positively on WAJ's management style and its seriousness and commitment towards customers.

In this situation, subscribers firmly believe that effective customer services should be provided fully and without reluctance. The results of this survey indicate that subscribers' satisfaction levels with WAJ's customer services are moderate to low. Subscribers have expressed anger, frustration and helplessness when responding to questions about customer services. Most of the subscribers indicated that getting good services is a "non-negotiable" right of the consumer. WAJ cannot attach any conditions to the provision of services. In this study, customer services include those activities which address WAJ's responsiveness to billing discrepancies and meter reading practices, maintenance of water pipe leakage and supply disruption occurrences.

2.4.1 Billing and Meter Reading Services

The Billing System

An overwhelming majority of respondents (96%) has reported that they are billed by WAJ once every three months. In response to a question on how frequent they would like to receive their bills, 74% of the respondents indicated a preference to the current billing system; 26% preferred monthly invoicing.

The majority of subscribers (some 85%), however, prefer to have the bill delivered to their homes by collectors. About 44% of subscribers prefer to pay their bills directly to collectors, while 40% prefer to pay them through banks.

How is WAJ Perceived Regarding Billing Discrepancies?

Of the total population sample of 1000 residential users about 45% have, at one point or another, complained to WAJ about different issues of billing discrepancies. About 50% of these subscribers are satisfied with how WAJ responded to billing discrepancies (Figure 3.5).

Figure 3.5
Satisfaction with WAJ's Responsiveness to Billing Discrepancies (n=453)

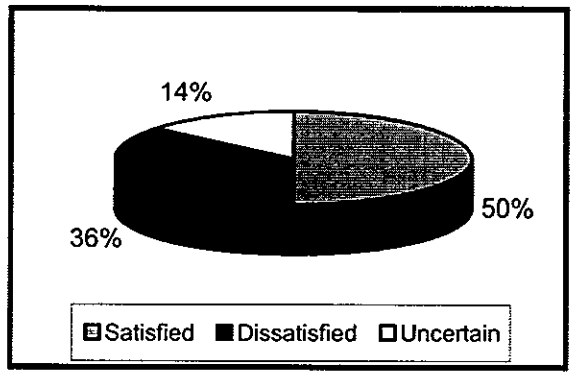


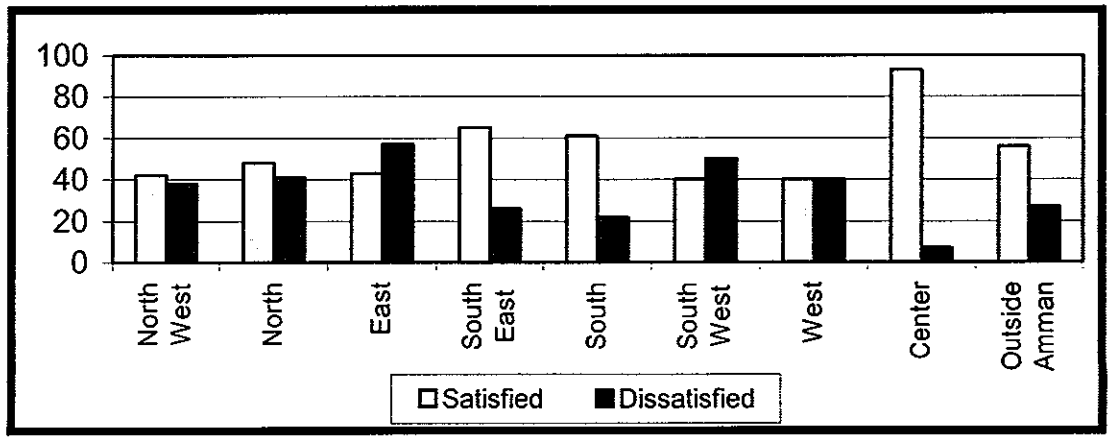
Figure 3.6 shows that satisfaction with WAJ on this issue is least with subscribers who reside in the west and southwest (40% each of subscribers are satisfied). this is followed by residents in the northwest (42%), the east (43%), the north (48%), outside Amman regions (56%), the south (61%), the southeast (65%%), and the center (93%).

Naturally, regions which have higher consumption levels receive higher bills and, therefore, experience more incidents of discrepancies. This, perhaps, explains why affluent regions, such as those in western Amman, have been more exposed to discrepancies and, as a result, experienced lower satisfaction levels with WAJ's billing services. Noticeably, where low-income level consumers resided, satisfaction levels were highest (center and south).

For 68% of subscribers, the bills they receive are accurate and reflect the actual amount of water they consume. These represent middle and lower income level subscribers. However, a significant 28% of middle upper and upper income levels reported that WAJ overcharges them for the water amount they actually consume. Interestingly, and despite the perceived 'discrepancies' in the billing system, 76% of the entire population sample have never complained to WAJ regarding either their exaggerated bills.

Clearly, billing discrepancies are higher for higher consumers and vice versa. WAJ's corrective measures in this area should aim at middle-upper and high-income subscribers who reside in West Amman.

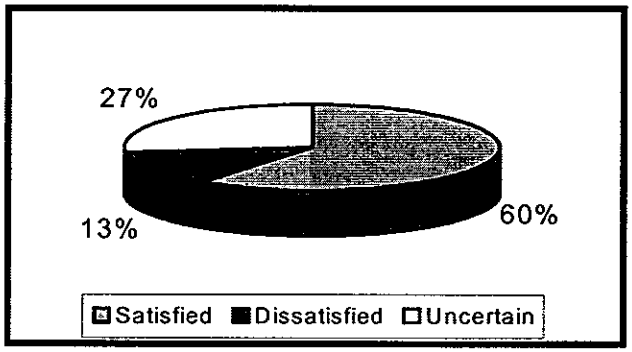
Figure 3.6
Satisfaction with WAJ's Responsiveness to Billing Discrepancies According to Residence
(n=453)



2.4.2 Meter Reading Practices

A similar satisfaction pattern emerges for subscribers' views on the meter reading issue. Of the total sample, 60% of subscribers have indicated satisfaction with WAJ's meter reading precision. Of the remaining 40% of subscribers, 13% are not happy with WAJ's meter reading practices and 27% are uncertain (Figure 3.7).

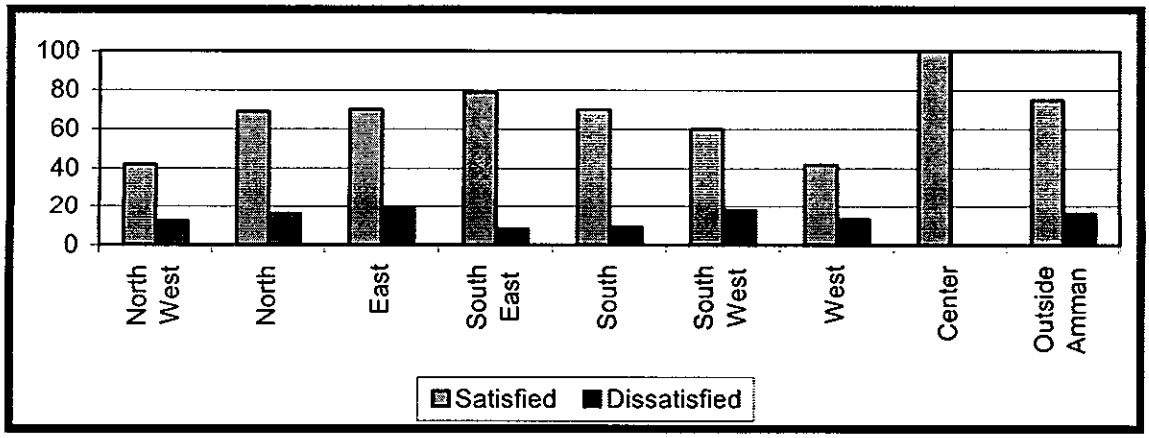
Figure 3.7
Satisfaction with WAJ's Meter Reading Practices
(n=1000)



The least satisfied subscribers reside in the west and northwest. Only 42% of subscribers in each of these regions are satisfied and express a sense of trust in WAJ's meter reading practices. Subscribers in other regions are less suspicious of WAJ's meter reading practices. About 60% of subscribers in the southwest have indicated satisfaction; 69% in the north; 70% in each the south and east; 75% outside Amman; and 79% in the southeast (Figure 3.8). An impressive 100% of subscribers in the center of Amman trust WAJ's meter reading practices.

Here again, middle and low income families, residing in less affluent areas, are less suspicious of WAJ's meter reading practices. Those residing in the affluent areas and experience large charges have less trust in collectors' meter reading practices.

Figure 3. 8
Satisfaction with Meter Reading According to Residence



2.4.3 Observations and Implications

It is recommended that WAJ maintain the current quarterly billing system. Serious attempts, however, should be made by WAJ officials to ensure accurate meter reading and billing. All measures should be taken to guarantee that meters are working properly and that they are accurately read by collectors. This is a very significant trust building measure which should be initiated immediately. Moreover, any concerns that customers have with their bills should be promptly and effectively handled by WAJ. In fact, all subscribers should be encouraged to report any discrepancies in their bills. Reading meters accurately and addressing subscribers'

complaints on bills are measures which would reflect transparency and care for customers. In the long run, these practices could improve WAJ's bill collection results and significantly enhance subscribers' satisfaction levels. The fact that two-thirds of the population have had problems with their bills but never complained to WAJ about them is significant.

Care has to be given to West Amman and its subscribers who receive large bills; the well-to-do segment of the population seems to require the most attention. A clear satisfaction pattern emerges differentiating those who belong to the middle-upper and upper income subscribers and all others. Well-to-do subscribers residing in affluent regions are very unhappy about WAJ's billing and meter reading practices; all others are generally satisfied. Here, the higher the consumption level of consumers, the lower is their satisfaction with billing and meter reading issues; and the opposite is true.

WAJ may want to consider institutionalizing alternative payment modes. Payments through collectors, banks and the post office, to name a few, present viable modes of payments. Subscribers should feel little or no burden when they make their quarterly payments of water bills. They should be able to pay in ways that are most convenient to them.

2.5 Maintenance of Water Pipes and Leakage

2.5.1 Pipe Conditions

Despite the negative mood of subscribers, the majority of respondents have indicated satisfaction with the quality and condition of pipes in the target area. Nearly 59% or of subscribers are generally satisfied with pipe conditions, whereas 16% of subscribers are dissatisfied with the quality of water pipes. The remaining 25% are partly satisfied (Figure 3.9).

Figure 3.9
Satisfaction with Quality of Pipes
(n=1000)

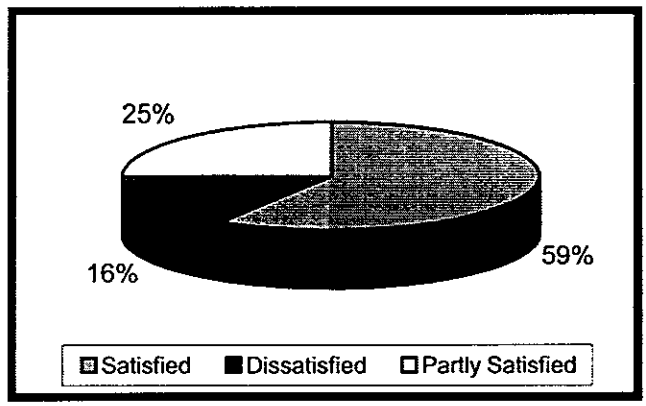
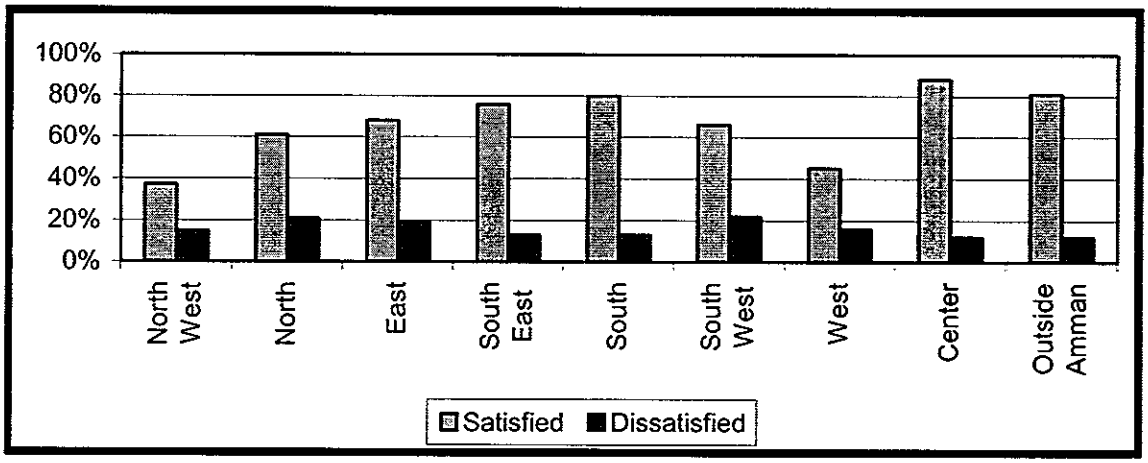


Figure 3.10 shows that the lowest number of satisfied customers with the conditions of the pipes reside in northwest, west and north Amman (subscribers who are satisfied with pipes account for 37%, 45% and 61% of their respective populations). Here again, subscribers in the center of Amman have shown the highest level of satisfaction (88%). An interesting finding appears in the south, where 80% of subscribers are satisfied with WAJ's pipe conditions.

Obviously, the quality of pipes represents a much more pressing higher concern to affluent income level than to middle or low-income subscribers. These results support previous analyses that water quality, partly caused by antiquated pipes, is seen as a major problem by the middle-upper and upper income subscribers residing in the Western regions.

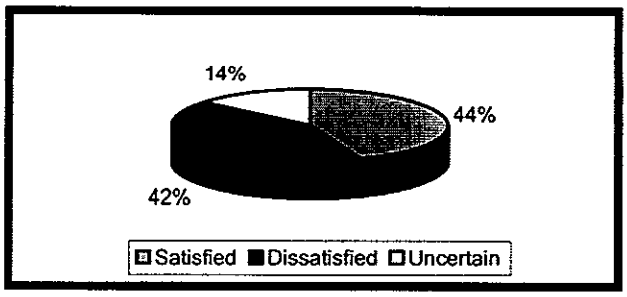
Figure 3.10 Satisfaction Levels with WAJ's Water Pipes According to Residence



2.5.2 How does WAJ Respond to Maintenance Calls Regarding Pipe Leakage?

Of the total population sample only 47% responded to the pipe leakage maintenance issue. Figure 3.11 shows that about 44% of subscribers' are satisfied with WAJ's responsiveness to maintenance calls for the repair of pipe leakage.

Figure 3.11
Satisfaction Levels With WAJ's Maintenance Of Pipe Leakage
(n=467)



The lowest number of satisfied subscribers is in the east (25% of subscribers satisfied), followed by the northwest (28%), the southwest (34%), the north (43%), and the west (47%). Higher levels of satisfaction are shown in the south and southeast (53% each), followed by outside Amman (59%) and the center of Amman (73%) (Figure 3.12).

In the minds of the majority of subscribers, WAJ's efforts to monitor pipe leakage leave a lot to be desired; a matter which they believe should be addressed promptly. Subscribers have accused WAJ of neglecting their maintenance calls and responding with little or no enthusiasm to pipe and leakage problems. The east seems to be most neglected; the south and center showed far less interest in pipe related issues for reasons which may be caused by their lack of interest.

2.5.3 How is WAJ Seen as a Problem Solver of Supply Disruptions?

Only 462 of respondents (less than one-half of the target population) responded to this inquiry. Of these respondents, about 44% are satisfied with WAJ's responsiveness to their calls for help when water supply is disrupted (Figure 3.13). Some 41% of the remainder are dissatisfied, claiming that they do not receive adequate responses from WAJ. According to them, water supply issues are usually not resolved in a reasonable period.

Figure 3.12
Satisfaction with WAJ's Responsiveness To Leakage According To Residence (n=467)

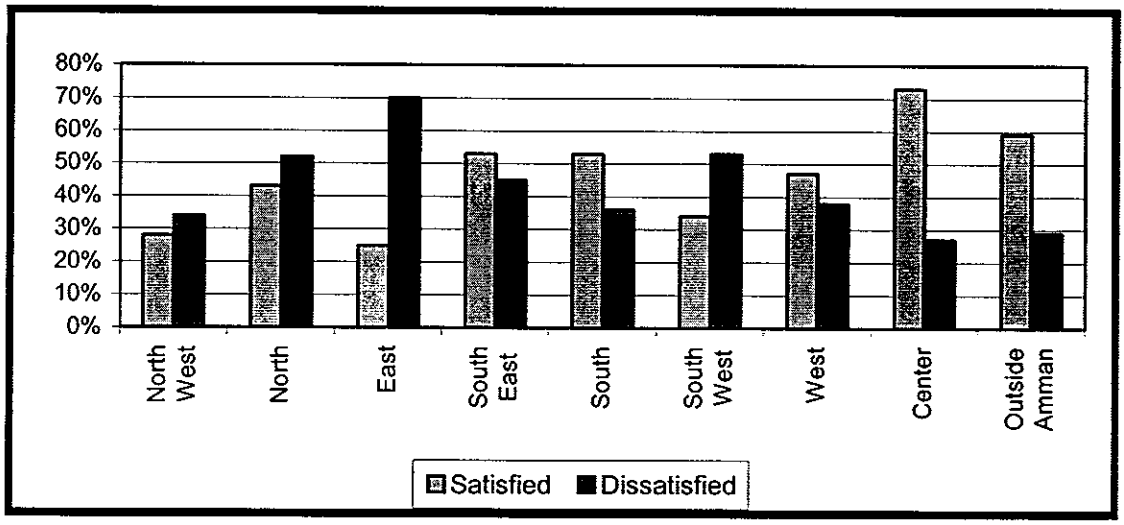
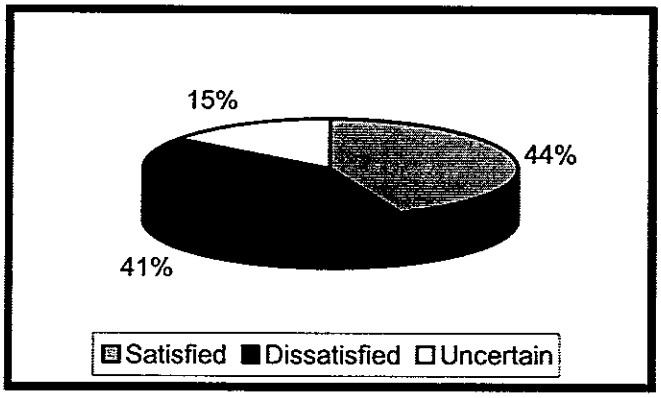


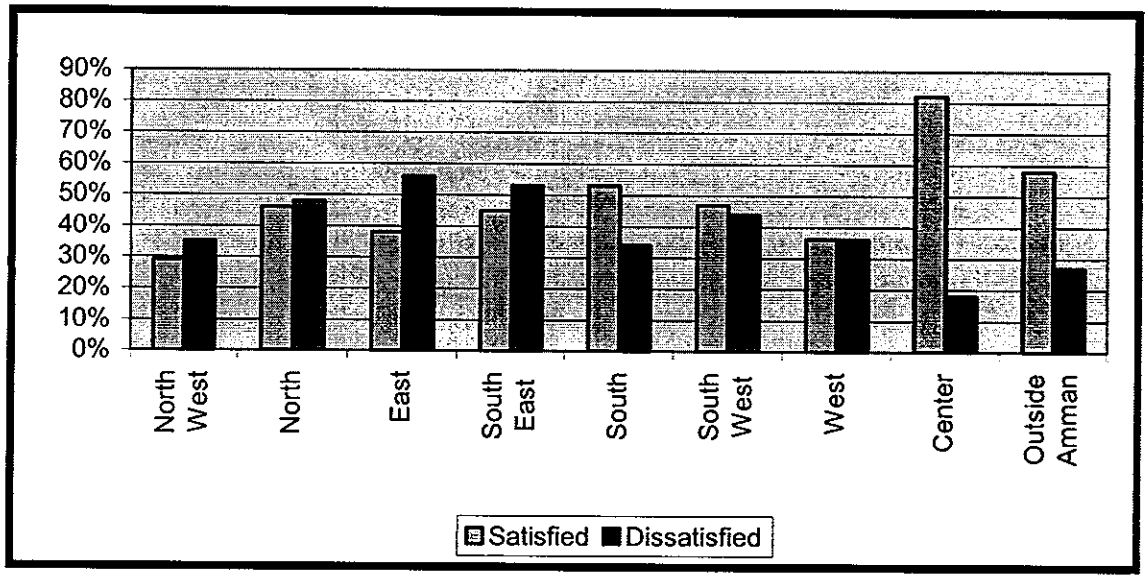
Figure 3.13
Satisfaction with WAJ's Responsiveness to Supply Disruptions (n=462)



Only 29% of subscribers in the northwest have indicated satisfaction with WAJ's responsiveness, followed by 36% in the west, 38% in the east, 45% in the southeast, 47% in the southwest, 53% in the south, 58% outside Amman, and a strong 82% in the center of Amman (Figure 3.14). These findings indicate a serious problem of water disruptions all across the target areas. WAJ, here, is seen as uncaring and ineffective in resolving disruption issues. Like billing and meter reading

discrepancies, WAJ's poor responsiveness rate to disruptions has caused a negative attitudinal stance among a sizable segment of the population.

Figure 3.14
Satisfaction with WAJ's Responsiveness to Complaints About Supply Disruptions
(n=462)



Subscribers in the center of Amman, which includes only 2% of the target population, are happiest with WAJ's services. The center has experienced fewer incidents of supply disruptions; perhaps due to the small number of residents in the area who generally belong to middle and low income levels.

2.5.4 Observations and Implications

Clearly, the current relationship between WAJ and its customers can be improved. At least half of subscribers blame WAJ's management for poor customer services. This is a serious concern which, fortunately, can, through improved management practices, be addressed effectively and successfully.

In subscribers' minds, water supply shortages which are due to uncontrollable natural causes is one thing; WAJ's inability to avoid unnecessary disruptions of water supply is another. Water supply, a critical 'source of livelihood' and 'a government responsibility', should be accorded WAJ's undivided attention and care. To most subscribers, excuses offered by WAJ for poor customer services are unacceptable, including those focusing on WAJ's financial difficulties. There is little doubt that subscribers' attitudes, motives and behaviors have been mainly influenced by what they perceive to be 'fair' and 'unfair' treatment by WAJ.

Obviously, one can draw a direct link between subscribers' support of and receptivity to government policies in the water domain, and the degree to which they are satisfied with WAJ's customer services. Subscribers' negative perceptions, justifiable or not, are at the crux of the current misunderstanding which exists between WAJ and its customers. Ameliorating and cementing this 'fragile' relationship between WAJ and its clientele would, undoubtedly, require WAJ to restructure its customer services

function and then let it be seen behaviorally that the 'customer is always right'. In the customer services area, WAJ requires to reflect a completely revitalized image which shows that it 'cares'.

Middle-upper and upper income consumers present the most significant challenge for WAJ. Though they represent a numerical minority, subscribers here are a significant source of revenue to WAJ. Their dissatisfaction with WAJ is enormous and can, consequently, be harmful to WAJ's image.

2.6 Alternative or Additional Water Supply Sources

2.6.1 Tanker Water

Tanker water supply is undesirable but necessary for most users of this source; it is costly but convenient. Only a minority of participants (28%) augments their water supply needs by buying tanker water from private operators. Tanker water is mainly purchased for household usage. Of the 279 participants who buy water from private companies, an average of 71% buy water once or twice per month during the summer season. The purchased quantity does not usually exceed $3m^3$ to $6m^3$ per month. The majority of subscribers, (86%), do not buy tanker water during the winter season.

Some 52% of subscribers who buy tanker water are satisfied with its quality in terms of color, purity, taste and potability. Dissatisfaction is greatest with the price of tanker water and the 'waiting period' associated with delivery and supply. Significantly, 97% of the tanker customers have asserted that they would stop buying water if WAJ was able to provide adequate water supply and quality, especially during the summer months.

2.7 Bottled Water

The consumption of bottled water seems to be relatively low. Only 14% of subscribers buy bottled water. Consumption is usually less than five liters per week per subscriber during the winter season and 10-15 liters per week per subscriber during the summer months. Bottled water is mainly used for drinking, though some use it for cooking; a minority uses it for washing vegetables. Once again, the majority of respondents who use bottled water, (96%), are willing to stop doing so if they were sure that WAJ can provide water of good quality.

2.7.1 Implications and Observations

Subscribers who buy tanker and/or bottled water are generally unhappy about doing that. They do so to supplement their household cleaning and drinking water needs. These subscribers mainly belong to the middle-upper and upper income groups and reside in most of the regions under study. Clearly, most of the tanker and bottled water subscribers are not faithful to these alternative sources. On the whole, WAJ remains the preferred supplier of water.

With about 30% of the population buying tanker water, WAJ and the government should examine the economic implications to the potential demise of this market (i.e. tanker water). This is especially true in the event WAJ (or a private operator) gains the confidence of subscribers and is able to convert most of them into exclusive users of its water. The case is also true with bottled water where some 15% of the population currently caters to this alternative source.

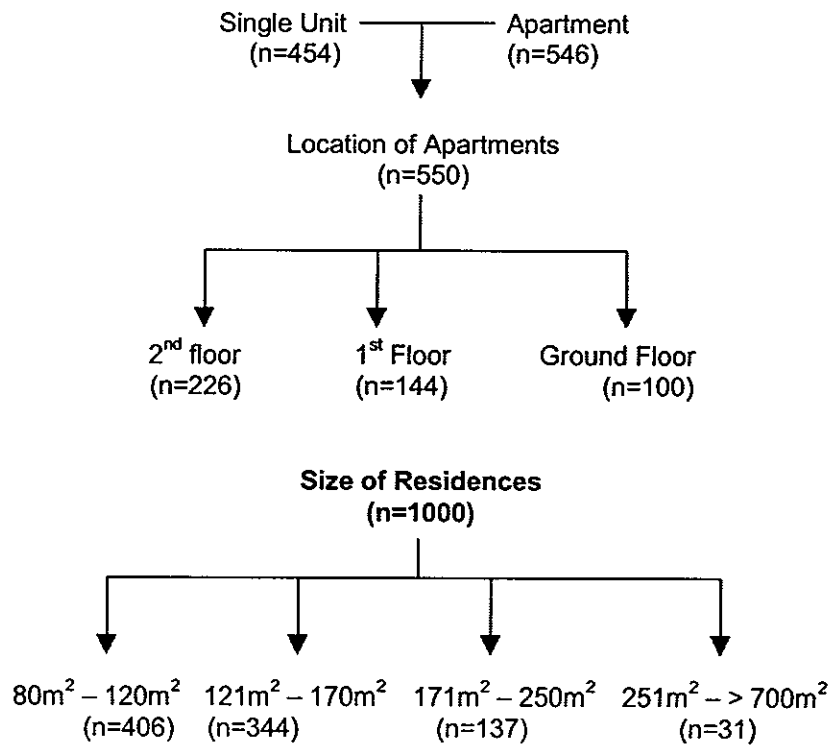
2.8 Water Storage

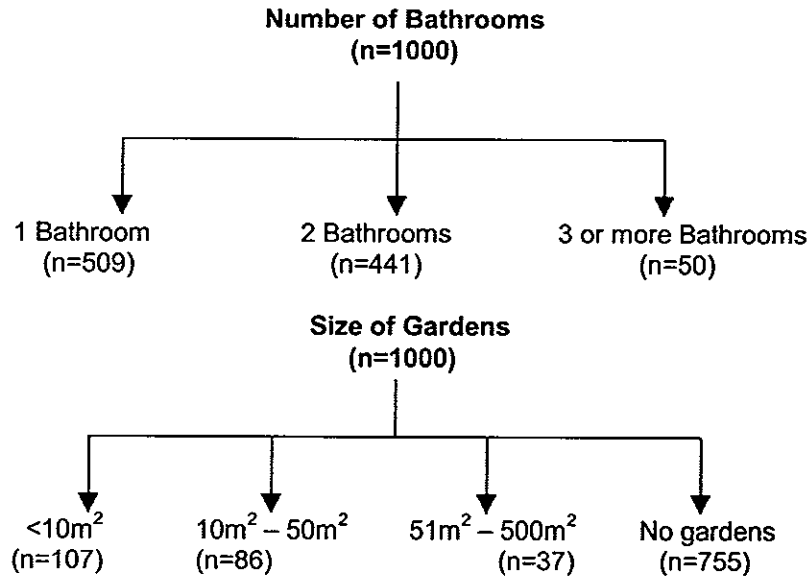
2.8.1 Subscribers' Dwellings

An important determining factor for the number of storage tanks available for a particular household is usually the size and type of the residential unit. Of the population sample, 45% live in single unit houses, while the remaining 55% reside in apartments. About 41% of the apartments are situated on the second floor; 14% are on the first floor; and 10% are on the ground level (Figure 3.15). Sizes of houses and apartments range from less than 80 to more than 700 square meters. The majority of residential units, about 41% are sized between 80– 120 square meters; some 34% are between 121-170 square meters; about 14% are between 171-250 square meters; and some 3% range from 251 to more than 700 square meters.

Over 50% of the dwellings feature one bathroom; some 44% feature two bathrooms. About 52% include two bedrooms; some 28% include three bedrooms. About 98% include one kitchen. The size of gardens ranges from less than 10 to around 500 square meters. About 11% of respondents own gardens of less than 10 square meters in size; 9% own gardens sized between 10-50 square meters; and some 4% own gardens sized between 51-500 square meters· About 76% of the respondents do not own a garden.

Figure 3.15
Type of Residence
(n=1000)



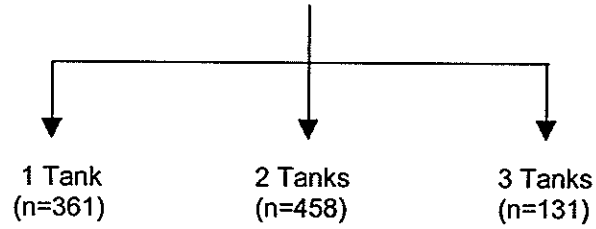


2.8.2 Availability of Tanks

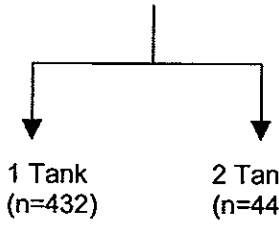
Nearly all respondents, (99%), have water storage tanks placed in their homes. Of these respondents, some 46% have two water tanks; about 36% have one tank; 13% have three tanks; 3% have four tanks; and 1% have five or more tanks (Figure 3.16). Most tanks, especially those in single houses, are located on the roof: some 44% of subscribers have two water tanks on the roof, while about 43% have one tank on the roof. About 12% of subscribers have one tank on the ground level, while 2% have two tanks on the ground level. Some 3% of subscribers have one tank in the basement, while about 1% has two tanks in the basement. The maximum combined storage capacity for all tanks is between 2 and 3 cubic meters per household (for 57% of the subscribers), followed by a maximum of $4m^3$ per household (for 20% of the subscribers). Most of the respondents, (77%), have no underground water wells. Of the remaining 23%, 97% own one well. Capacity of wells ranges from </= $3m^3$ to >/= 15 cubic meters per household. The majority of respondents, (92%), do not collect rainwater.

Nearly every home in the target area has invested in the purchase of one or more tanks; a water storage strategy that has paid off significantly. The type and size of the housing unit did play a role in the subscribers' minds regarding the number of tanks it required. The larger the housing unit was, the more the number of tanks it had. Respondents' water storage capabilities have contributed positively to their ability to cope with water supply shortages. Large houses owned three or more tanks while small apartments had one tank. The fact, however, that most tanks are placed on roof tops, necessitated the presence of sufficient pressure to allow water to reach higher elevations. As demonstrated in previous sections, the issue of pressure represented a serious problem to many subscribers and money able consumers purchased their own pumps to enhance water availability.

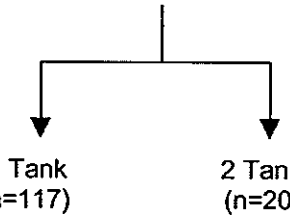
Figure 3.16
Number of Tanks Owned
(n=994)



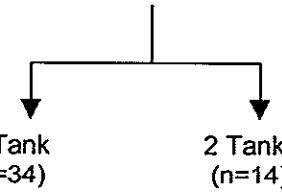
Tanks on Roof



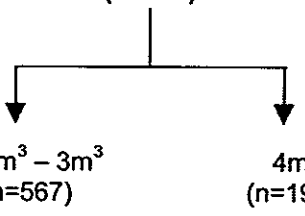
Tanks on Ground Floor



Tanks in the Basement



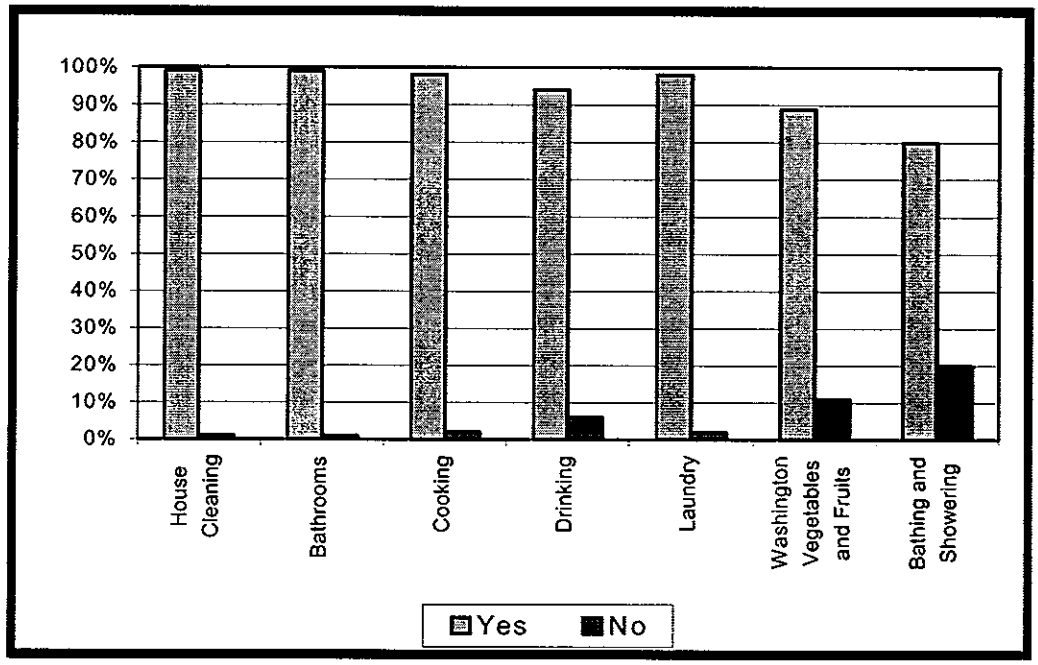
Maximum Combined Capacity of Tanks
(n=994)



2.9 Water Uses, Habits, and Practices

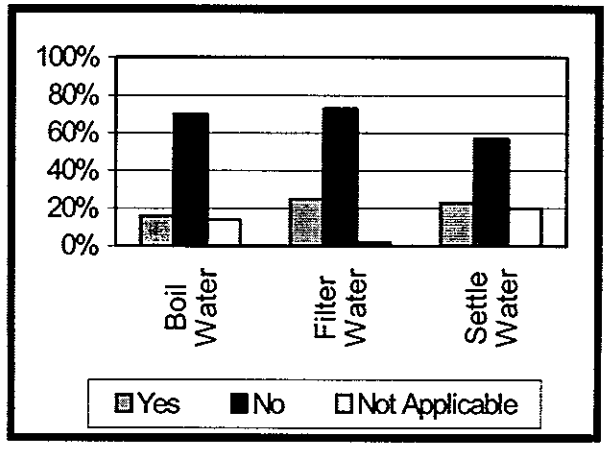
WAJ's water is used for a variety of purposes. House cleaning, cooking, drinking, washing fruits and vegetables, bathing and showering are uses cited by almost all respondents (Figure 3.17).

Figure 3.17
Subscribers' Uses of Water
(n=1000)



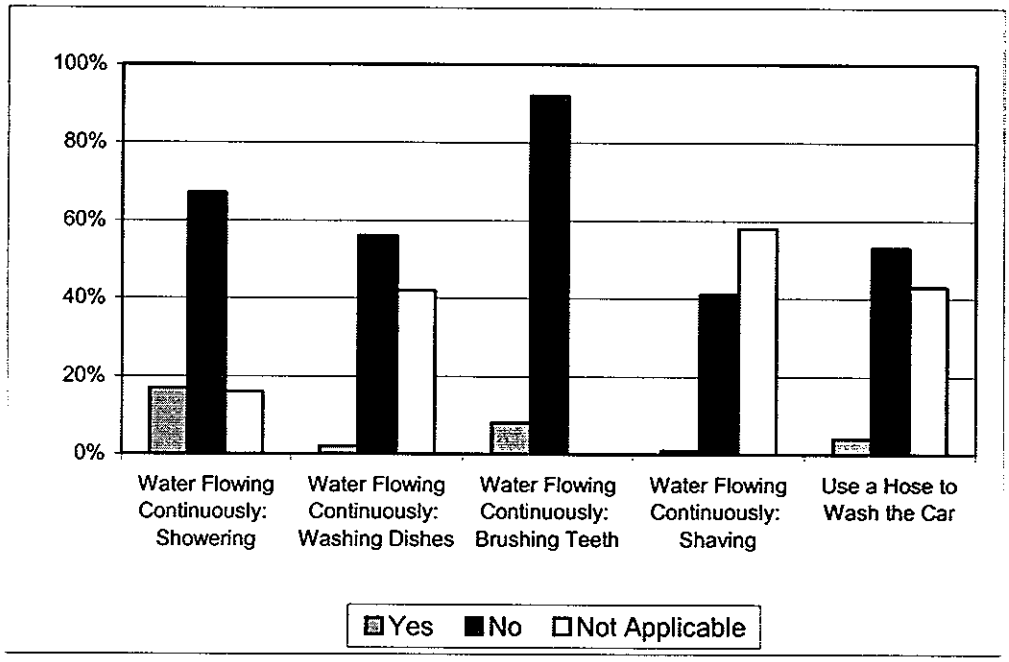
As indicated in the section on water quality, a majority of subscribers considered water quality to be acceptable. Accordingly, nearly 72% of those interviewed have insisted that they neither boil nor filter the water they receive from WAJ (Figure 3.18).

Figure 3.18
Subscribers' Water Habits and Practices



Those who do boil water, however, report that they use boiled water mainly for drinking; some for cooking; and a few for washing fruits and vegetables. The most commonly used filtration systems are the sand and ceramic filter systems. Both systems allow subscribers to use water for drinking and cooking purposes. Importantly, respondents' habits and practices reflect a high degree of awareness of the need to conserve water and support WAJ's conservation policies. Moreover, most respondents maintain that they do not normally leave water flowing continuously when taking a shower, brushing their teeth or washing the dishes (Figure 3.19).

Figure 3.19
Subscribers' Uses, Habits and Practices with Water



Subscribers' conservation behaviors seem to reflect their understanding of and firm belief in the fact that Jordan faces a critical water shortage situation. Water behavior and practices confirm earlier findings which ascertain that consumers genuinely believe that water resource may be depleted in the future. Furthermore, findings here support the conclusions arrived in the focus groups. Most participants subscribe to a 'water culture' that is based on a strong belief in conservation.

2.10 Water-Related Health Problems

Health problems allegedly caused by WAJ's water appear to be a concern to some subscribers. About 18% of the respondents claim that at least one member of their family has experienced water related health problems. Subscribers have also reported that a neighbor, other relatives or friends have, at one time or another, experienced water-related illnesses. The most common water related health complaint is diarrhea, followed by stomach aches and hair loss. When asked how they knew that WAJ's water caused these health problems, only 28% of the subscribers responded to this question. Of those, 73% stated that a doctor diagnosed their illness as water related; 20% indicated that they "heard from others" that their illnesses were water related. Only a small number of subscribers (1%) stated that laboratory results indicated that their illnesses were water related.

The majority of respondents reportedly take no precautionary measures when drinking WAJ's water. It is worth noting, however, that the percentage of subscribers reporting some type of illness due to water is relatively significant. WAJ must determine if, in fact, it will need to launch a national campaign which can instill in subscribers, especially those in the lower and middle income groups, new behaviors which may help alleviate or reduce the occurrence of water related health problems which are associated with water use.

3. Willingness and Ability to Pay

3.1 Awareness of and Attitudes about Current Water Rates

Awareness and understanding of the current tariff system is markedly low for the general survey population. Only 28% are aware of the details of the current tariff system. Data obtained in the survey supports the fact that awareness of the current tariff system varies according to subscribers' level of consumption, income level, and residence.

3.1.1 According to Consumption Levels

Figure 3.20 shows that the highest level consumers (>/= 130m^3) are the most aware of the current tariff system. Conversely, low and medium level consumers show minimal degrees of awareness.

Opposition to the current tariff rate is strongest among high-level consumers due to their perception that the rate is unfair. Alternatively, lower level consumers are more supportive of the current tariff system because it has little or no negative impact on their budget (Figure 3.21). Here again, the higher one's bill is, the greater is his/her awareness of the tariff system. Accordingly, high level consumers who pay higher fees have developed a keener interest in understanding the current system than say, consumers of the low and medium levels.

Figure 3.20
Awareness of the Current Tariff System According to Water Consumption

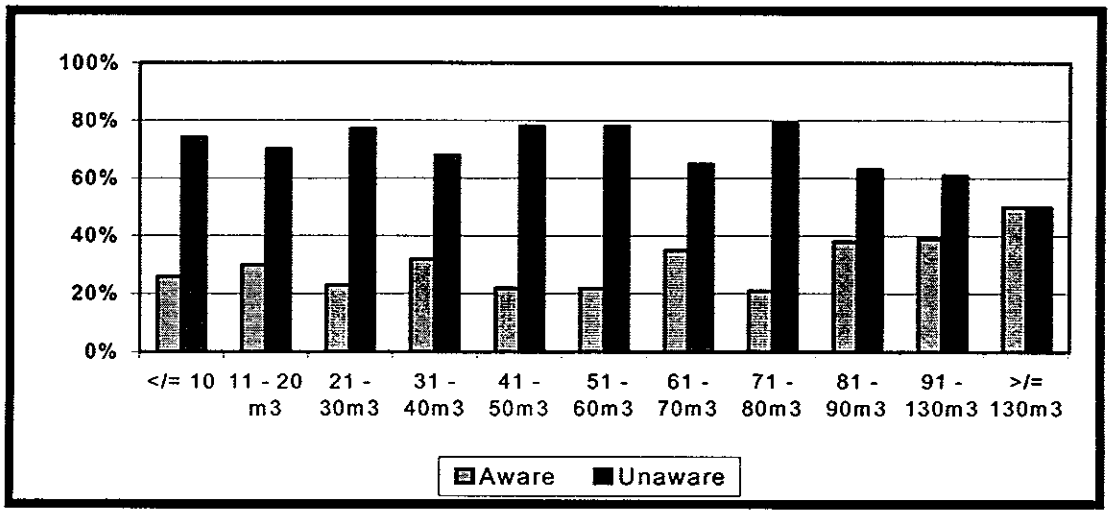
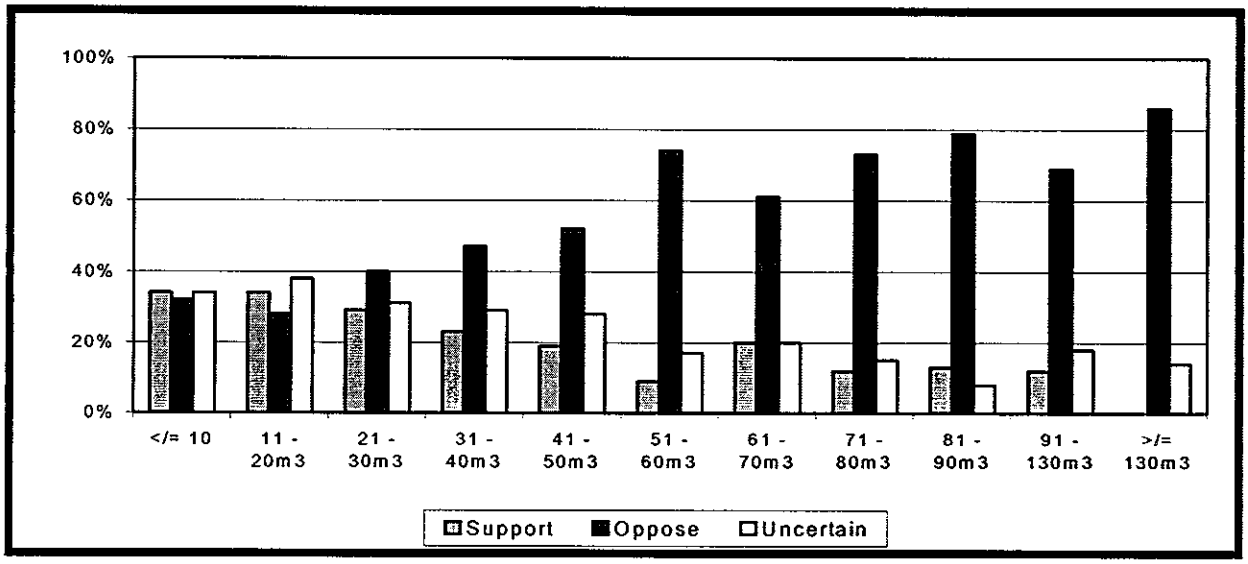


Figure 3.21
Subscribers' Attitudes Towards Current Tariff According to Consumption Levels



3.1.2 According to Income

A pattern similar to that of consumption levels has emerged based on income levels. Figure 3.22 shows that respondents who belong to the high income group are the most aware of the current tariff system. In contrast, the low income group is the least aware.

Figure 3.22
Awareness of Current Tariff According to Income

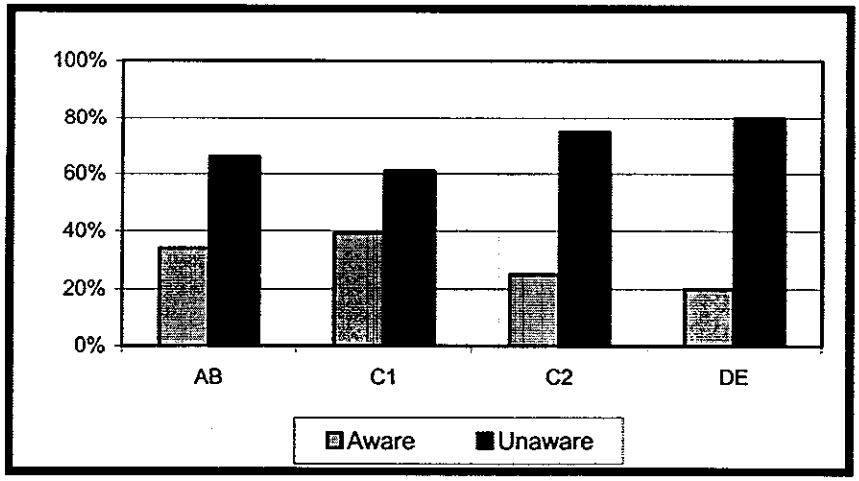
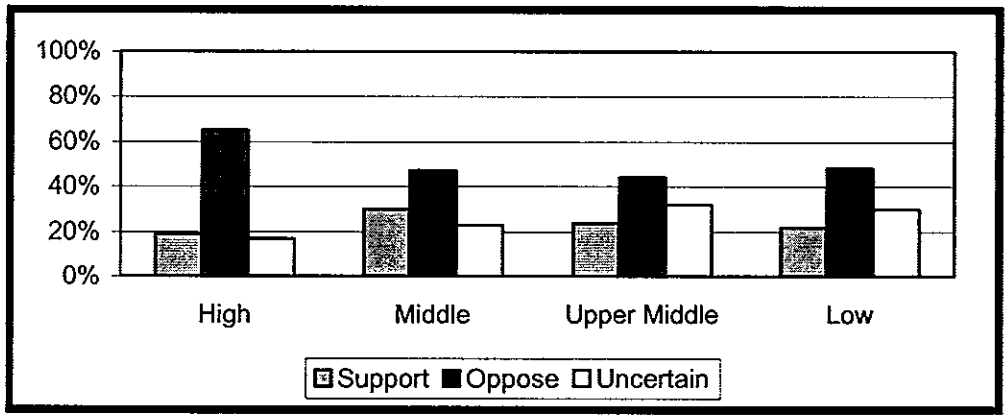


Figure 3.23 shows that high income subscribers strongly oppose the current tariff system and consider it to be high. This level of opposition declines for lower income subscribers.

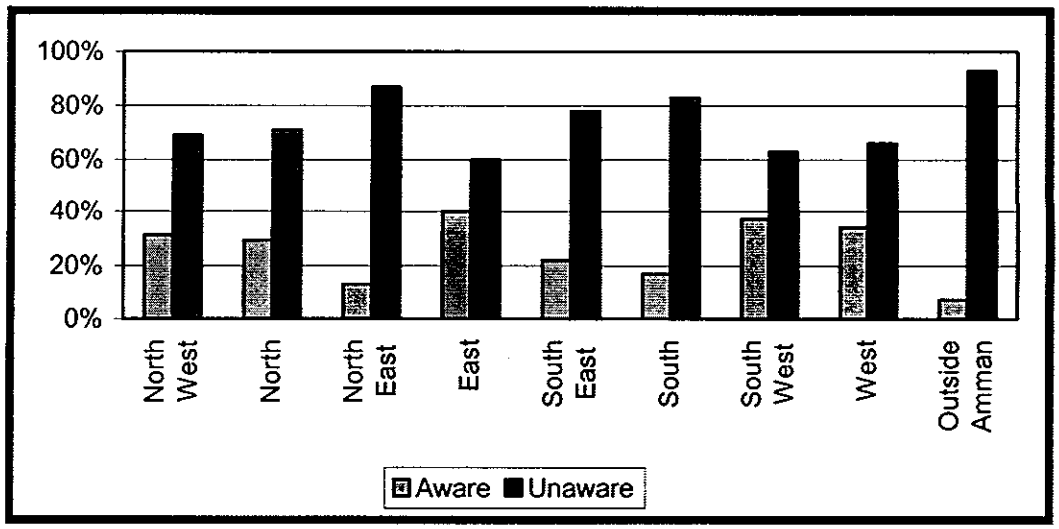
Figure 3.23
Subscribers' Attitudes Towards Current Tariff According to Income



3.1.3 According to Residence

Residents outside Amman are most unaware of the current tariff system, whereas those residing in the east are the most aware (Figure 3.24). The implication here is that subscribers residing in suburban and rural areas were out of the information loop and, therefore, knew less about the tariff system.

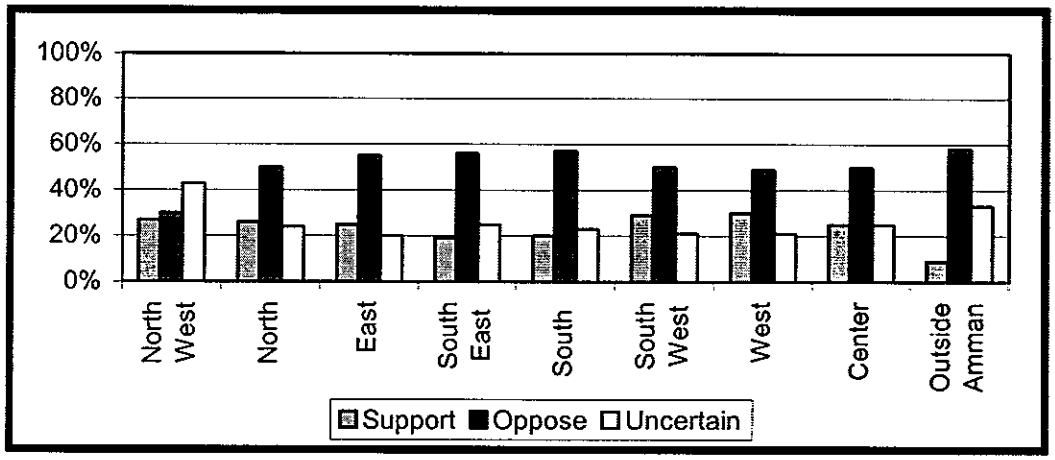
Figure 3.24
Awareness of the Current Tariff Rate According To Residence



Residents outside Amman, however, strongly oppose the current tariff system and consider it to be too high. On the other hand, 30% of the West Amman respondents support the current tariff system (Figure 3.25); another indication of serious opposition by affluent areas.

Figure 3.25

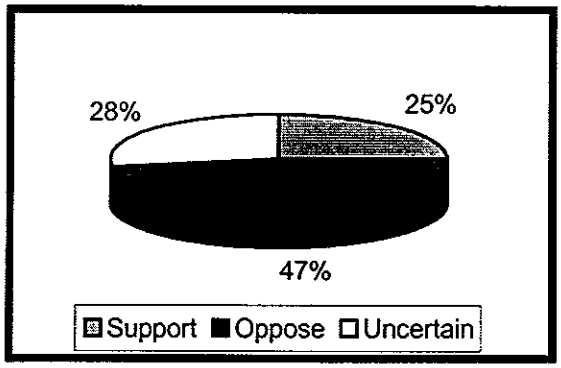
Subscribers' Attitudes Towards Current Tariff According to Residence



3.1.4 Current Tariff System Explained

When interviewers explained the current tariff system to subscribers, 24% showed support, 47% indicated opposition and 28% were uncertain of their feelings (Figure 3.26).

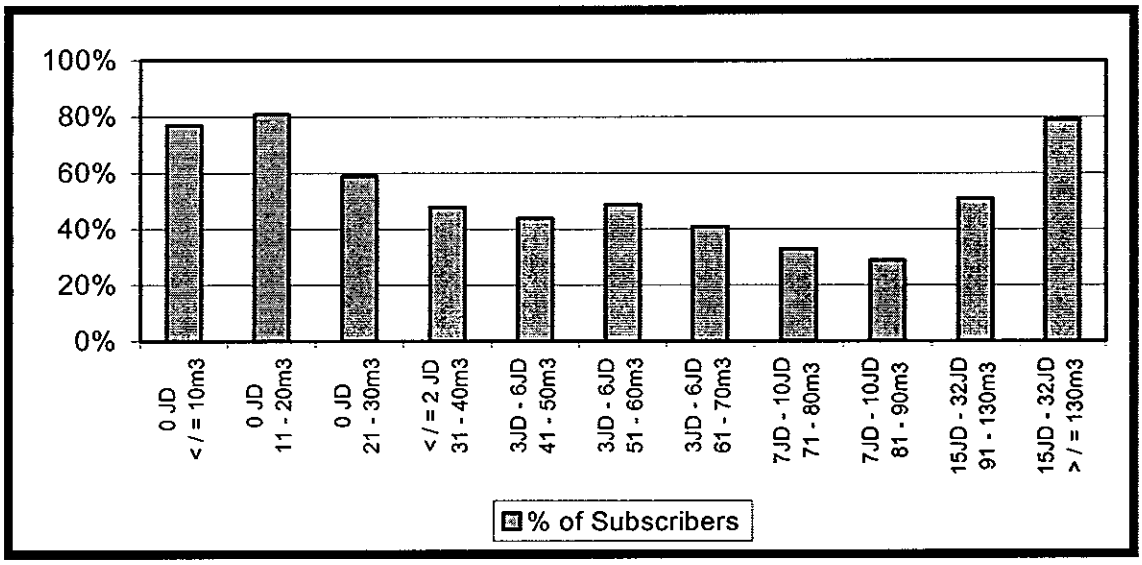
Figure 3.26
Views on Current Tariff Rates
(n=1000)



Moreover, 53% of subscribers considered WAJ's current rates to be 'high' to 'very high'; 38% considered the rates to be fair; 1% considered the rates to be low; and 8% had no particular views on the issue.

Respondents' lack of awareness of the current tariff system may be attributed to the fact that about 45% of them did not notice any real difference in their current bills, from previous bills. Participants who consume the least (30 cubic meters or less) have had no reason to experience any differences between the former and the current tariff system (Figure 3.27).

Figure 3.27
Differences in Tariff Rates According to Consumption Levels



For high level consumers (between 91-130m^3 and >/= 130m^3), Figure 3.27 shows that the monetary difference between the old tariff system and the current one has sometimes reached as high as JD 32 per billing cycle.

The implication here, of course, is that the current tariff system has a direct negative effect on moderate and high level consumer budgets, and very little or no effect on low consumers. About one-third of the population has been forced to pay significantly more by the current tariff rate (consumer categories of 41 cubic meters and higher). Here again, middle upper and upper income consumers have been the most affected by the new rate. The majority of respondents are unaware of how the current tariff rate is computed. Those who are aware of the specific details, notably high-level consumers, report a high level of dissatisfaction with the current tariff system. Obviously WAJ should take measures to explain this system thoroughly and quickly.

3.1.5 Subscribers' Perceptions of WAJ's Utilization of Additional Revenues

It is worth noting that 59% of respondents think that WAJ's new revenues will be higher because of the current tariff system when compared to the previous one; 13% do not think so; and 28% don't really know. When asked what they think WAJ will be using the additional revenues for, subscribers frequently replied: "to repair networks", "to explore new resources", "to build new dams", "to buy new treatment plants" and "to cover its operational and maintenance costs", in this order of importance. It is interesting to note that 34% of respondents don't really have the slightest idea of what WAJ may do with its additional revenues.

Some respondents have expressed high expectations of the additional revenues generated from the current tariff system. They believe that WAJ will put these new financial resources to good use. As a result of new revenues, positive results would include improved water quality (51% of subscribers), more frequent water supply (30%) and better distribution of water (17%). Repair of pipes, exploitation of new resources, training of employees and adequate responsiveness to complaints follow, with 12%, 10%, 5% and 4% respectively. Conversely, 32% of subscribers have no expectations of any improvements and do not expect anything in return.

Understandably, consumers' expectations are highest in the area of quality (rather than supply). Controlling and improving quality is doable and possible; enhancing supply when sources are scarce may not be plausible.

3.1.6 Implications and Observations

A considerable amount of interview time was spent explaining to respondents the details of the current tariff system. Among those who were aware of the current system, a few understood its details. Judging by the remarks of many respondents, a sense of frustration dominated their reactions. Questions, like how can they support "something they don't understand" were asked by many middle and low income respondents.

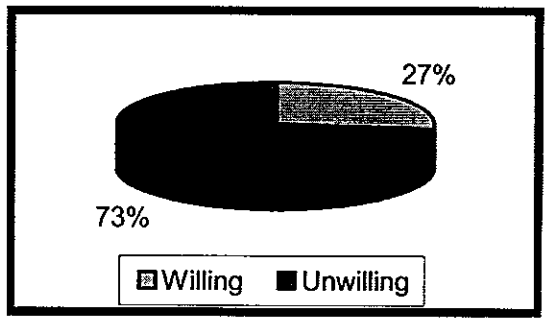
The sizeable increase in the bills of high level consumers, due to the current tariff system (between JD 7 and 32), will undoubtedly influence negatively their attitudes about any future tariff rate increases. The financial burden of the current system is such that any mention of future increases would be daunting. Unlike middle and lower income respondents, many of the middle-upper and upper income subscribers have not been successful in reducing their consumption levels in any serious way. As a result, most of those subscribers are adamantly opposed to the current tariff rate system and may, predictably, reject any future increases by WAJ.

Can future higher rates be introduced? Will they be Plausible? Manageable? Will consumers who refuse to pay the higher rates substitute WAJ's water supply with alternative private water source(s)? Or are subscribers willing to tolerate the new higher rates if WAJ were to improve its service delivery? All these questions and others will be addressed in the following section on the willingness and ability of subscribers to pay higher rates.

3.2 Willingness and Ability to Pay More for Water

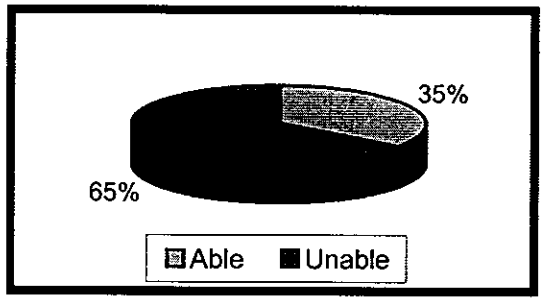
Data presented in previous sections have shown a high degree of subscribers' unhappiness with WAJ's customer services and current tariff rate. As one may predict, the attitude of subscribers was not different when they expressed their opinions on how willing and able they are to pay more if the tariff rate became higher. Only 27% of the total population sample are willing to pay more if the rate increased (Figure 3.28).

Figure 3.28
Willingness to Pay More
(n=1000)



Even if willing, 65% of the subscribers in the survey are unable to pay more (Figure 3.29).

Figure 3.29
Ablity to Pay More
(n=1000)

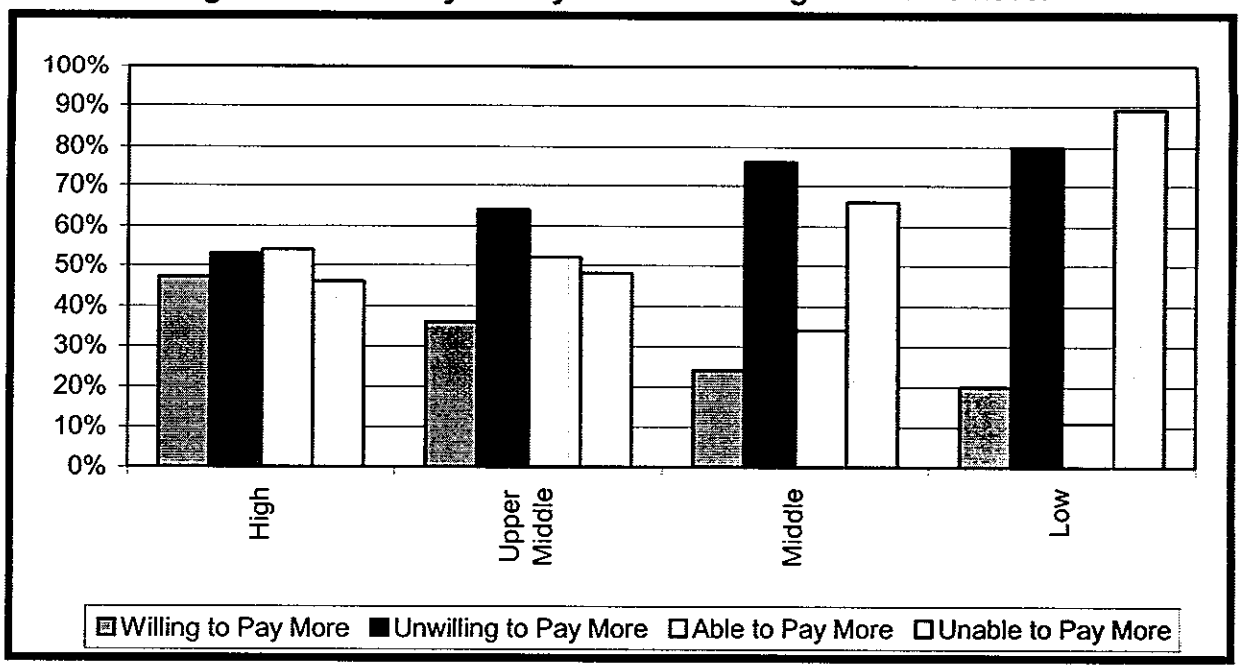


Here, specific patterns of willingness and ability emerge: The more affluent the consumer, the more willing and able he/she is to pay more; and the opposite is true.

3.2.1 Willingness and Ability to Pay More According to Income

Figure 3.30 shows that willingness and ability to pay more are linked to income of subscribers. The higher the income, the stronger the willingness and ability of consumers to pay more, and vice-versa. Among high-income earners, willingness and ability are interlinked. These subscribers are (relatively) the most willing and able to pay higher tariff rates: 47% are willing and 54% are able. In second place are upper middle subscribers (36% and 52% respectively), followed by middle income subscribers (24% and 34% respectively), and low income subscribers (20% and 11% respectively).

Figure 3.30
Willingness And Ability To Pay More According to Income Level

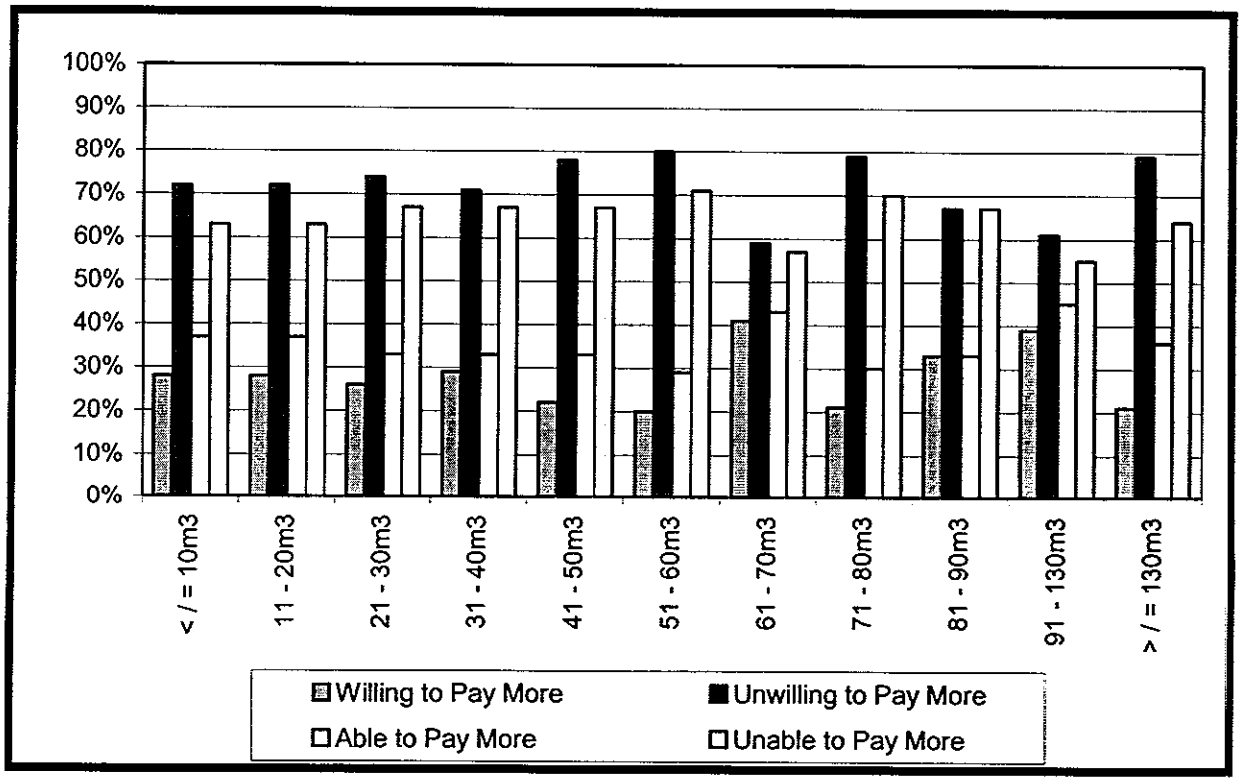


The degree of willingness and ability the lower level, the lower is subscribers' degree of willingness and ability to pay more.

3.2.2 Willingness and Ability to Pay More According to Consumption Level

In general, participants who are most able to pay more in the future are high level consumers. The majority of subscribers who are unwilling and unable to pay more in the future consume between 51-60 m^3 (Figure 3.31). This segment of the population usually lives on a tight budget and does not benefit from the 0-40 m^3 tariff allowances which are provided to lower level income subscribers. Consumers in this segment are also unable to afford higher rates because they belong to the middle income group whose incomes are closer to the low income level than they are to the middle income levels. There is no specific consumption level which represents a demarcation line for higher WAJ's rates. Opposition to the payment of higher rates is uniform across all consumption levels and WAJ cannot formulate a new tariff strategy which capitalizes on a certain segment of the population.

Figure 3.31
Willingness and Ability to Pay More According to Consumption Levels



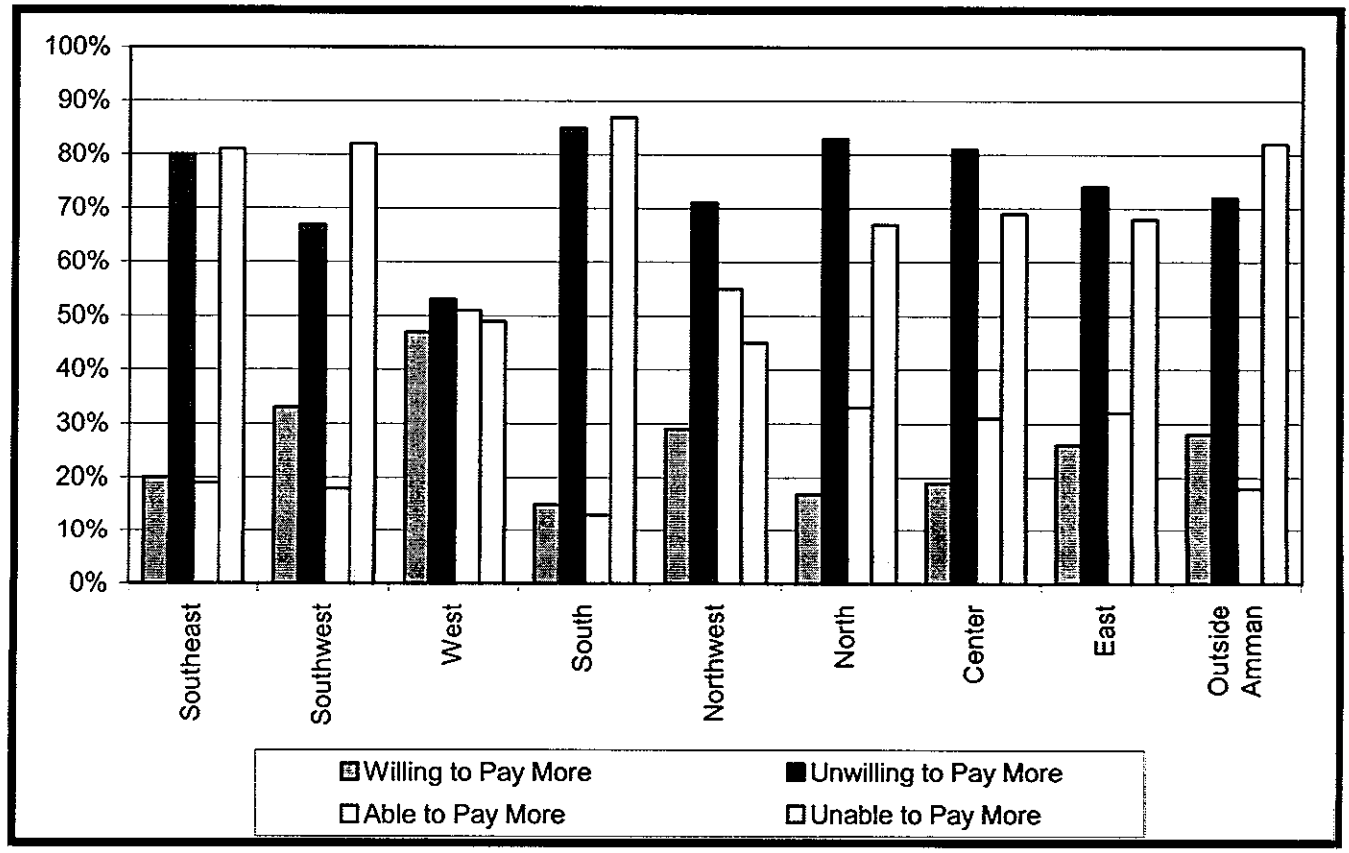
3.2.3 Willingness and Ability to Pay More According to Residence

The issue of willingness to pay more is relative. All willingness levels are very low. Geographical distribution of participants finds those most willing to pay more (in the future) residing in West Amman, whereas Northwest Amman features those who are most able (but not necessarily willing) to pay more in the future. The majority of participants who are unwilling and unable to pay more in the future reside in South Amman (Figure 3.32).

Obviously, most consumers of $51m^3$-$60m^3$ live in the south. They are the ones who would feel the 'pinch' most from a possible tariff rate hike which covers their consumption levels. They are basically middle subscribers whose consumption is neither low to be financially unscathed by the current rate nor high to be able to afford it.

If consumers had to pay more, then those who are financially able are the most willing; and vice versa. Middle and low-income level consumers are adamantly opposed to any future payments. These attitudes are reflected according to places of residence. The population segment that provides WAJ with the greatest challenge and promise consists of the middle-upper and upper income level subscribers who reside mainly in West Amman.

Figure 3.32
Willingness and Ability to Pay More According to Residence



3.2.4 Will Subscribers Change Their Minds and Become Willing to Pay More if WAJ's Services Are Improved?

Most subscribers are unwilling to pay more in the future for any of WAJ's improved services. On average, only 20% indicate willingness to pay more for such services, 63% refuse to pay more, and 13% are not certain and need more time to think the matter through (Figure 3.33).

Subscribers' rank ordered the reasons which prompt their unwillingness to pay more for improved services in the following way: 66% are financially incapable of supporting additional expenses; 63% consider water an inherent right which citizens should not be charged for; 20% consider their water supply to be adequate and have no need for more water; 16% mistrust the Authority; and 9% do not support any measures by WAJ.

Figure 3.33
Willingness to Pay More for Improved Services

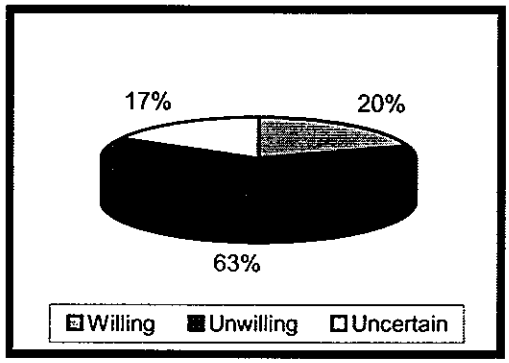
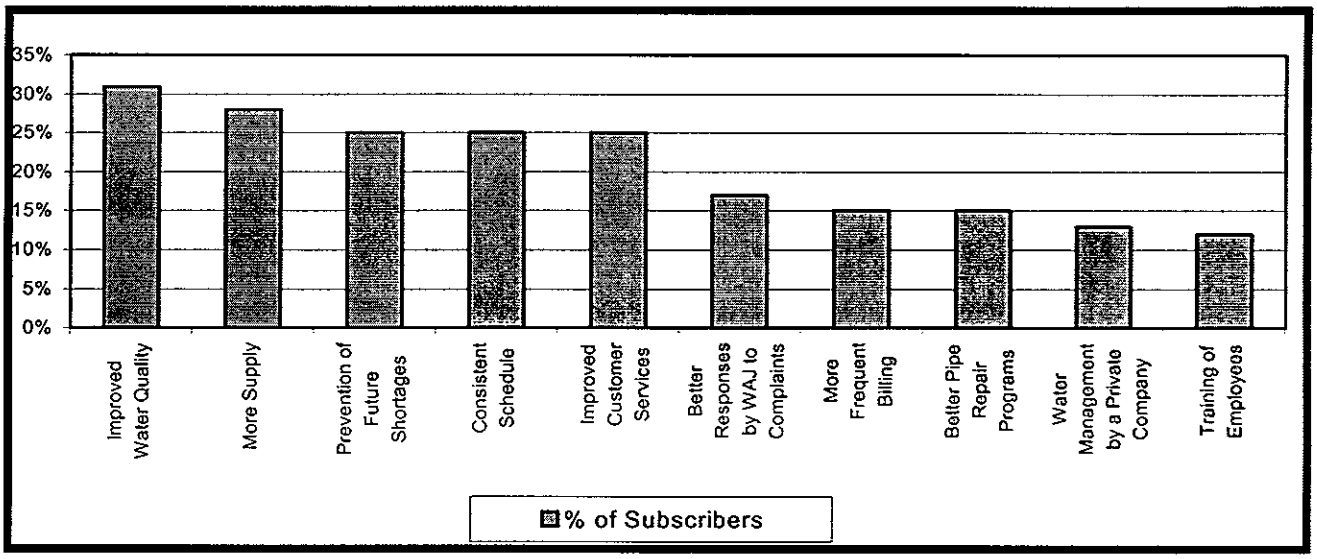


Figure 3.34 shows that, regardless of the specific type of service which WAJ might offer or improve, subscribers' responses have remained consistent with their basic position: They are unwilling to pay more for such improvements. Among the few who are willing, however, the highest degree of willingness is reported for improved water quality services (31% of subscribers supported a higher rate), followed by more supply (28%), prevention of future shortages, consistent water supply schedules and improved customer services (25% each), better responses by WAJ to complaints (17%), more frequent billing (15%), better pipe repair program (15%), water management by a private company (13%) and training of employees (12%). The most important reasons, of course, relate to quality, more supply, consistent schedules and customer services. In essence, those willing to pay more agreed that these reasons are most critical for their support.

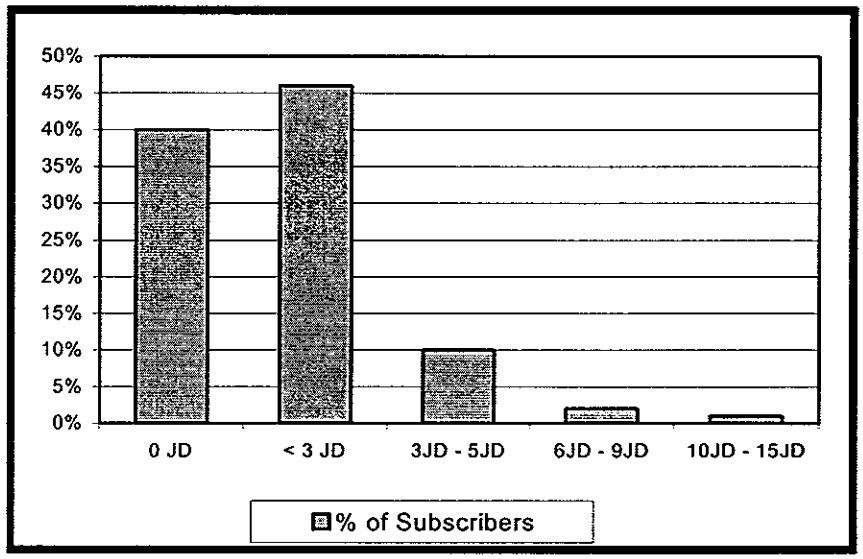
Figure 3.34
Willingness to Pay More for Improved Services



3.2.5 Hypothetically, How Much More Are Subscribers Able to Pay for Improved Services?

Subscribers' notional ability to pay higher rates is not encouraging. About 46% of all respondents are "hypothetically" able to pay an additional amount not exceeding JD3 for each billing cycle (Figure 3.35). About 9% are able to pay JD3-5 per billing cycle, and 41% are unable to pay anything.

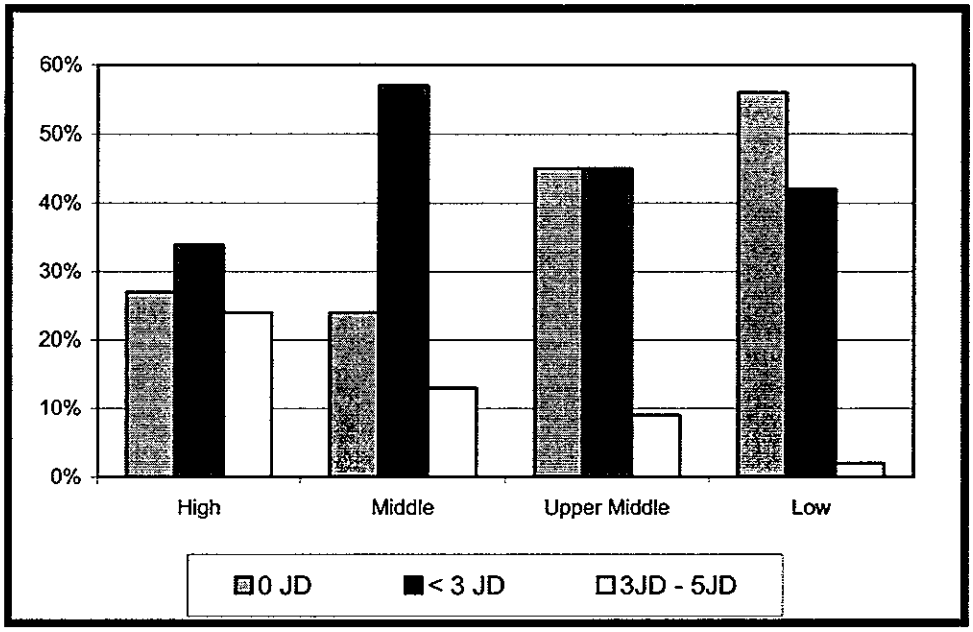
Figure 3.35
Amount Subscribers Are Able to Pay



Clearly, subscribers who belong to the low income are the least able to pay anything. Figure 3.36 shows that 57% and 45% respectively of subscribers in the middle and upper middle income groups are able to pay an additional amount of <JD3 per billing. About 24% of the highest income earners are able to pay an additional JD3-5 per cycle (or JD4).

With the exception of the low and middle-income groups, ability here is more reflective of 'attitudes' than the availability of financial resources. There seems to be a determined intent by most subscribers not to provide an 'open invitation' to WAJ to lift the ceiling of any rate hikes beyond the JD 3-5 per billing cycle. This low rate hike puts a 'damper' on WAJ's plans and expectations to secure significant revenues from subscribers; especially from those in the upper middle and high-income groups. Ability to pay more, however, increased according to income levels. The JD 3-5 additional payment was supported most be upper income subscribers and least by the low income subscribers.

Figure 3.36
Amount Subscribers Are Able to Pay According to Income Level



3.2.6 What Will Subscribers Do if WAJ Increases Tariff Rates?

Generally, subscribers are in no mood to accommodate higher tariff rates. At this time, we believe that WAJ will find it very difficult to introduce the notion of higher tariff rates. Receptivity to such a notion may be dismal. Respondents claim that they would take the following measures if their bills were increased: 56% would complain to WAJ; 29% would reduce consumption; 13% would disconnect the meter; 9% would reduce their spending on other household items to accommodate the new rate; 9% would make deals with tankers; 5% would share water consumption with other households; 1% would tamper with the system (meter); and another 1% would illegally connect a hose to the pipes to avoid meter reading. In the event that WAJ fails to adequately address their complaints to cancel the increase, respondents would disconnect the meter (34%); reduce consumption (33%); make deals with tankers (18%); complain to a higher authority (11%); pay in installments (7%); share consumption with other households (6%); reduce spending on other household items to accommodate the new tariff (5%); tamper with the meter (3%); and illegally connect the hose to the pipes (2%).

3.2.7 Observations and Implications

Clearly, any tariff rate increase at this time will generate resistance by most subscribers, especially those who are affluent and consume higher water quantities. Attitudes of willingness and ability to pay more are, at best, non-supportive. WAJ, as a service institution, should modernize its functions and enhance its services before it can raise tariff rates. Modernization activities should include, but not be limited to, a re-design of the tasks, duties and responsibilities of all those who are involved in the 'delivery of service' function. In-service training is necessary for most employees, especially in the technical, bill collection and customer services department.

The views of subscribers in this study should serve as the basis for WAJ's new policies and procedures. Some of these policies and procedures should help WAJ

put in place at least the following:

1. A reliable and consistent three-day-per-week supply schedule during the winter and summer months; or perhaps a varied undisrupted schedule which accommodates water shortages in the summer.

2. A maintenance program which instigates preventive measures and executes planned shut-downs based on a carefully prepared schedule of activities.

3. An improved inspection function which includes a consistent system of 'checks and balances' covering supply and quality improvements especially with regard to taste, purity and overall potability.

4. A communication campaign which advocates the above while at the same time introduces WAJ as a transparent, committed and caring organization.

While all of the above steps are essential pre-requisites for the introduction of rate increases, they, undoubtedly, represent additional costs for WAJ. It is important to remember, however, that a priority for WAJ today is to win over its customers' support and trust. WAJ may wish to increase subscribers' awareness of the fact that even in countries where water resources are plentiful and are an 'inherent right' of consumers, subscribers must pay not so much for the product but for the management of the product.

4. Communication Medium and Method

When asked about what would be the best communication medium that should be utilized by WAJ, almost all respondents, 91% concurred that television is the best medium for providing information about the current tariff system as well as other issues. One third of respondents, (33%), ranked the radio as their second choice, followed by newspaper publications. For a few, the back side of the bill itself, leaflets and collectors, are tools which can be used for communicating changes.

About 54% of subscribers consider televised discussion panels with officials as the most effective information technique/method to review the current tariff system; 48% believe commercial ads are the next best method; 26%, verbal and written public statements by officials as the third best; 21%, articles in newspapers and magazines as the fourth best.

The television represents the best medium because of the following: it is audio-visual and can be seen by most people at times which are convenient to most; discussions are in the 'Jordanian' Arabic dialect which is understood by all, including those who cannot read or write; and subscribers get to see and hear those who are behind the policies at WAJ.

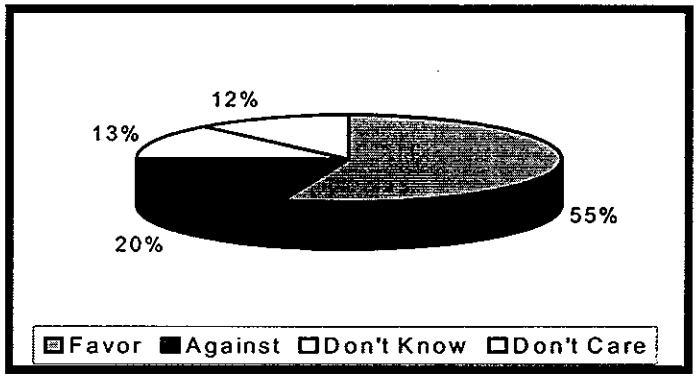
5. Private Sector Involvement

5.1 Views on Private Sector Participation

The issue of privatization is not paramount in the minds of most subscribers. Many don't understand the concept of privatization and a few have fears that Jordan may

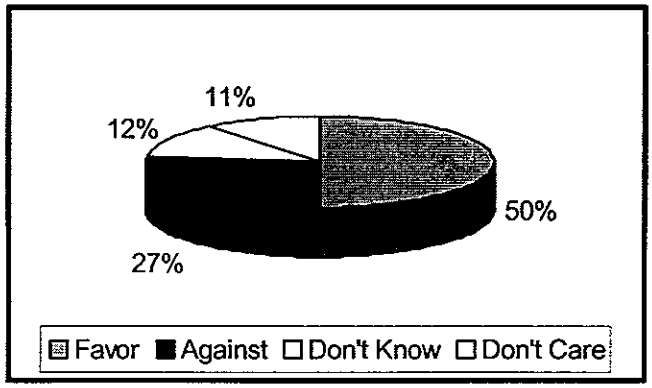
compromise its national integrity if it were to relinquish its responsibilities to foreign companies in the water domain. More than two thirds of the respondents, 67% are not familiar with any government plans to involve the private sector in the operation and maintenance of water in Amman. After explaining the notion of privatization to respondents, 55% favored the involvement of the private sector, whereas 20% opposed it (Figure 3.37). About 13% did not have any opinions while 12% did not really care.

Figure 3.37
Views on Private Sector Participation
(n=1000)



Views on who should participate in the privatization process varied: 45% of respondents prefer a Jordanian company for the job while 15% prefer a joint venture partnership between Jordanian and foreign companies. Moreover, 50% are in favor of the involvement of a foreign company in some form or another in order to operate and maintain more effectively the water system in Jordan. According to them, a foreign company has ample experience, technological know-how, and ability to provide enhanced water quality and improved services. For the 27% who are against foreign involvement, their fear is that a foreign company may control a very critical national resource and would, undoubtedly, increase tariff rates. These subscribers also believe that skilled Jordanian workers should be given the opportunity to do the work because they are just as capable as their foreign counterparts in handling water related services (Figure 3.38).

Figure 3.38
Management Contracting with a Foreign Company
(n=1000)



5.2 Observations and Implications

Transferring management responsibilities of WAJ to the private sector receives a passive or mild reaction from most Jordanians. Subscribers have given little thought to the question of privatization. According to most beneficiaries of water services, what is important is not who provides the service but how the service is provided. Whoever is the provider, however, should take into account the views, opinions and attitudes of subscribers as they relate to water supply, quality, services and the tariff rate. Appointing a local or foreign company (or both) to operate and maintain the water service is not enough justification at this time to raise tariff rates.

Somehow, many Jordanians still feel that foreign know-how is more reliable than the local one. Foreign companies are seen as highly experienced, technologically very advanced and completely transparent entities. All of these characteristics are essential elements in the profile of the service provider, whoever that is.

If WAJ went ahead with its privatization scheme, it must ensure that the selected private operator adheres to specific terms of reference which are reflective of the needs and requirements of its customers. No matter who manages the water service and how it is managed, the government (perhaps the Authority or Ministry) should always be seen as the overseeing body which monitors and evaluates the performance of the service provider; and safe- guards the interest of its citizens.

6 . Summer 1998 Water Crisis

6.1 Attitudes Towards the Recent Crisis

Given that polluted water from the source was the ostensible cause of the recent crisis (62% of subscribers' views), some participants (35%) blamed WAJ for poor performance and negligence. Others, (22%), considered the agreement between Israel and Jordan as unsound; to them, this agreement was the immediate cause of the problem. Contrary to some expectations, however, most participants, 87% continued to use WAJ's water during the crisis along, of course, other supplementary resources. Interestingly enough, 43% of the entire target population did nothing to treat WAJ's water. However, 37% of respondents boiled WAJ's water and 24% filtered it. Respondents complained that resorting to these measures forced them to incur extra expenses, a cause of deep frustration and anger.

During the crisis, respondents resorted to various measures to address short supply and poor quality of water. Some 59% (bought tanker water, while others, 46% bought bottled water. Of those who bought bottled water, 41% continued to do so even after the crisis was over.

Most, 48% of respondents, believe that the crisis is over. However, 28% disagree with this notion and insist that the crisis will continue on and off. In addition, 47% think that the crisis will recur at some point in the future, while 24% disagree and think that it will not happen again. For 39% of the respondents, the belief is strong that the crisis could have been avoided if a private operator was in charge. In contrast, 19% of the respondents disagree and believe that a private operator could not have prevented the problem from occurring. Consequently, this may explain why 38%, as opposed to 23% of respondents, say that the crisis justifies the take-over of the water management function by a private operator.

The occurrence of the recent crisis in 1998 is indeed a cause of great concern by the majority of WAJ's subscribers. However, their frustration with the crisis and their equally divided opinion on whether the crisis may recur are not strong enough reasons to privatize WAJ. The implication here is that many subscribers perceive the crisis to have been prompted by mainly uncontrollable causes.

6.2 Observations and Implications

On balance, despite the painful experience of subscribers during the crisis, today's consumers have a better appreciation of WAJ's frequency of supply and quality of water services in the post-crisis era. If anything, this study has shown that today's subscribers are more supportive than not of WAJ as a source of water supply. Most of those who reverted to cistern and bottled water sources during the crisis dropped those sources once WAJ's water supply was back to normal.

The crisis, however, has shaken consumers' trust in WAJ's quality control and management decision-making mechanisms. Questions persist on why WAJ could not discontinue the supply when the problem was discovered; or did not detect the problem at the source; and other questions.

Though there is fear that the crisis may recur, subscribers are looking ahead for solutions and hope that WAJ will perform better in the future. There is a hopeful tone in subscribers' views that should be capitalized on by WAJ.

Chapter 4
Non-Residential Survey

1. Introduction

This chapter presents the attitudes and views of non-residential subscribers in Greater Amman. They represent entities which belong to a variety of sectors such as education and religious institutions, service organizations, medical providers, government agencies, companies, banks, industry, retail shops and a few others which are not easily classifiable, including an entertainment center, departure terminal, billiard parlor, and used car lot.

This chapter is presented in two parts. The first analyzes the degree of subscribers' satisfaction levels with water supply, quality and customer services. The second investigates the degree of subscribers' willingness and ability to pay current and future tariff rates as well as their views on private sector participation.

The following is a matrix of the profile of entities which were selected for the survey:

Table 4.1
Types of Entities Selected for the Survey

Type of Entity	Consumption Category (m^3)														
	</=10	11--20	21--30	31--40	41--60	61--80	81-110	111-140	141-200	201-300	301-400	401-600	601-800	801-1000	1001-1500
Retail Shop	54	19	10	7	1	2	0	0	0	0	0	0	0	0	0
Office/Company management	31	18	11	4	6	5	5	3	1	0	0	0	0	0	0
Skilled Labor	9	7	7	1	1	4	0	0	1	0	0	0	0	0	0
Farm/Country House	2	2	1	1	7	3	1	1	0	0	1	0	1	0	0
Nursery Garden	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0
Hotel	2	2	4	0	2	2	1	0	0	0	0	1	0	0	0
Coffee Shop/ Restaurant	7	4	4	7	5	2	2	0	2	0	1	0	0	0	0
Factory	3	0	2	2	0	0	1	3	6	0	1	1	1	1	1
Beauty Salon	4	1	2	0	3	0	0	0	0	0	0	0	0	0	0
Clinic	5	3	0	1	1	0	0	1	0	0	0	0	0	0	0
Mosque	0	0	0	1	0	2	1	1	0	1	0	0	0	0	0
Fitness Center	2	1	0	0	1	0	0	0	1	0	0	0	0	0	0
Car Wash/Petrol Station	0	0	1	0	0	0	2	1	0	1	1	0	1	0	0
Bank	1	0	2	0	1	0	0	0	0	1	0	0	0	0	0
Warehouse	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0
Directorate	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0
Brick Factory	2	0	0	0	2	0	0	0	0	0	1	0	0	0	0
Stone Cutting Factory	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Community College/School	0	1	2	1	0	0	1	2	0	0	0	0	0	0	0

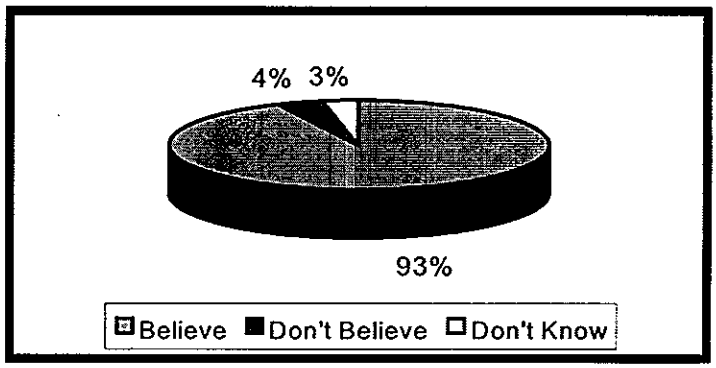
Type of Entity	Consumption Category (m^3)														
	</=10	11--20	21--30	31--40	41--60	61--80	81-110	111-140	141-200	201-300	301-400	401-600	601-800	801-1000	1001-1500
Educational Institute	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
Housing	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0
Community Center	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0
Health Center	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0
Hospital	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Laboratory	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Public Park	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Bakery	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0
Nursery School	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Slaughterhouse	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Workshop	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Other*	2	0	1	2	1	1	0	0	0	0	0	0	0	0	0

2. Non-Residential Subscriber Attitudes towards Water and WAJ

2.1 Jordan's Water Shortage

Non-residential subscribers are aware of the severity of the water situation in Jordan. Of the 401 people interviewed, 93% believe there is a water shortage problem in Jordan (Figure 4.1). Of those 373, some 44% believe the situation is critical but manageable, while about 47% believe that the situation appears to be critical but is not really so. Like residential subscribers, the non-residential population consider "little rainfall" as the main reason for the existing shortage problem, followed (in this order) by "scarce water resources" and "waste by users" respectively. A small percentage of respondents (18%) blame WAJ for water shortages. A high number of subscribers, (59%), believe that Jordan will face a water shortage problem in twenty years' time; but 127 (54%) do not believe that it will be a critical one.

Figure 4.1
Degree to Which Subscribers Believe in the Problematic Water Situation in Jordan



Observations and Implications

Though critical, water shortages are not seen as imminently threatening to entities' way of life. Most respondents don't have a realistic or serious appreciation of what awaits Jordan in the medium and long-term period regarding water supply shortages. The entities feel concerned but not "unduly" alarmed. This rather relaxed attitude about the issue of water as a scarce resource presents a serious challenge to WAJ in the domain of water conservation. Subscribers' responses suggest that their contribution to water conservation is not enough and could be significantly improved. Production and service sectors which include high level consumers should be sensitized to water conservation strategies and brought 'on board' as partners of WAJ in its efforts to preserve water resources.

2.2 Satisfaction Levels

Data gathered in this study shows that subscribers'/entities' satisfaction levels with water supply, quality and customer services are directly related to subscribers' consumption levels, type of entity and geographical location.

2.2.1 Water Supply

2.2.2 Scheduling for "Continuous Supply"

Subscribers' satisfaction with WAJ's water supply schedule is quite high among 77% of subscribers; the schedule is adequate for their business needs. A majority, (59%), receive WAJ's water twice a week; about 15% receive water three times a week; and some 12% receive water once a week. For some 40%, the supply duration is for more than twenty uninterrupted hours; for about 18%, supply duration is between 10 to 12 hours; and for a quarter (26%) supply duration is unknown. The majority of subscribers consider that WAJ's planned (but not necessarily executed) combination of supply days and hours is sufficient. As it stands today, WAJ's schedule represents an acceptable continuous supply program to most entities.

2.2.3 Water Pressure

For the majority of subscribers, adequate water pressure is a necessary requisite for insuring a satisfactory level of supply. Only 15% of subscribers describe the water pressure as low; a significant number (63%) consider the pressure as medium; and for 19% the pressure is considered to be high. The industrial, educational and service (hotel) sectors include the lowest number of subscribers who are satisfied with WAJ's pressure (39%, 42% and 46% of subscribers respectively). The lowest number of satisfied subscribers are in the West (50%), and in the northwest and southeast (57% each). Because the majority of subscribers consider the water supply pressure as acceptable (medium to high), the majority of subscribers (79%), have not purchased or installed pumps to increase water pressure.

2.2.4 Observations and Implications

Generally, WAJ's designated (but not necessarily actual) water supply schedule seems acceptable to more than three quarters of the entities involved in the non-residential study. Equally impressive is the amount of water pressure made available to most of these water supply beneficiaries. Only a minority experience low water pressure and, as a result, suffer negative business-related consequences. The availability of acceptable water

pressure, no doubt, has contributed positively to the enhancement of satisfaction levels of most entities. Continuous supply and duration vary from one sector to another. Subscribers' satisfaction levels are expressed on the basis of adequacy and reliability of the designated schedules. Clearly, WAJ has been very careful in planning a water supply schedule that can be both reliable and responsive. The supply duration of 10-20 uninterrupted hours is considered acceptable by most entities.

2.3 Satisfaction with Frequency and Duration

2.3.1 According to Subscribers' Water Consumption

Table 4.2 shows that no specific pattern of satisfaction has emerged based on consumption levels. One obvious observation, however, is that the lowest level consumers are the most satisfied (70% of subscribers in </=10 cubic meters category) and the highest levels consumers are the least satisfied (none of the subscribers in the 801to 1500 cubic meters are satisfied).

Table 4.2
Subscribers' Satisfaction with Supply Frequency and Duration According to Consumption Levels

n=401		Supply Frequency		Supply Duration	
Consumption Categories (m^3)	% of Total	Satisfied	Dissatisfied	Satisfied	Dissatisfied
</= 10	34%	70%	21%	72%	20%
Bet. 11 – 20	16%	59%	29%	58%	27%
Bet. 21 – 30	13%	64%	28%	62%	28%
Bet. 31 – 40	8%	53%	40%	36%	34%
Bet. 41 – 60	9%	59%	39%	52%	42%
Bet. 61 – 80	6%	51%	46%	55%	29%
Bet. 81 – 110	3%	57%	28%	57%	28%
Bet. 111- 140	3%	46%	46%	54%	31%
Bet. 141- 200	3%	15%	62%	15%	69%
Bet. 201- 400	2.5%	40%	40%	40%	40%
Bet. 401- 800	2%	57%	43%	43%	58%
Bet. 801- 1500	0.5%	0%	100%	0%	100%

On average, about 60% of subscribers are satisfied with the frequency and duration of water supply. Higher levels of satisfaction exist among low level consumers, </= 10 to 30 cubic meters. In general, subscribers of this category include retail shops, workshops, companies and offices, hotels, clinics, farms/country houses, coffee shops and restaurants. Those least satisfied with frequency and duration consume between 141 and 200 cubic meters (only 15% of subscribers are satisfied; subscribers include factories, coffee shops and restaurants, and a stone cutting factory); 201 to 400 cubic meters (40% of subscribers are satisfied; subscribers include farm houses, coffee shops, factories, car wash/petrol stations, brick factories, banks and a slaughter house); and 801 to 1500 cubic meters (none are satisfied; subscribers are mainly factories).

The amount of consumption is determined by the type and size of entity. Small to medium factories, for example, which consume between 141 and 300 cubic meters are generally

dissatisfied with frequency and duration. A similar attitude is shared by other service organizations such as restaurants. A cause for such negative attitude is perhaps the reliance of these entities on water for processing their products and services. Unavailability of water could mean a disruption of the business activities of these entities and a consequent loss of revenue. Also, it is important to note that these organizations cannot afford alternative water supplies such as heavier users of water (201 to 400 cubic meters). The latter's profit margin depend on how able they are to recover their costs on alternative supplies from their customers (e.g. car wash stations, etc.)

2.3.2 According to Sector

Satisfaction with supply frequency and duration appears to be generally contingent on the type of sector (Table 4.3). In general, 'other' institutions (i.e. entertainment centers, departure terminals, billiard parlors and used cars sales lots), industry, education and hotels are the least satisfied with frequency (25%, 25%, 42% and 49% of subscribers, respectively) and duration (25%, 29%, 42% and 45% of subscribers, respectively). Satisfaction levels are highest among retail businesses and government entities.

Table 4.3
Subscribers' Satisfaction with Supply Frequency and Duration According to Sector

n=401		Supply Frequency		Supply Duration	
Type of Entity	% of Total	Satisfied	Dissatisfied	Satisfied	Dissatisfied
Education	3.00%	42%	50%	42%	41%
Religious	1.50%	67%	34%	84%	17%
Hotel	12.70%	49%	45%	45%	47%
Health	4.50%	61%	28%	61%	28%
Government	1.00%	75%	25%	75%	25%
Company	7.70%	50%	29%	58%	29%
Banking	1.20%	60%	40%	60%	40%
Industry	7.00%	25%	58%	29%	53%
Office	13.20%	64%	21%	64%	19%
Retail	27.50%	76%	17%	77%	14%
Services	13.70%	57%	37%	53%	37%
Production	6.00%	59%	41%	59%	37%
Other	1.00%	25%	50%	25%	50%

Table 4.3 shows that satisfaction levels for the remaining sectors are moderate. Clearly, sectors which use water to perform their functions are least satisfied; and the opposite is true.

2.3.3 According to Subscribers' Geographical Location

Table 4.4 shows that satisfaction levels are highest for the Center, South and Southwest, respectively. About 71% of subscribers in the Southwest are satisfied with the frequency and another 71% are satisfied with the duration. In the South, 71% are satisfied with frequency and 74% with duration. In the Center of Amman, 74% are satisfied with frequency and 77% with duration. Most other regions show moderate to moderate-low degrees of satisfaction levels. Subscribers of East Amman are the least satisfied with frequency (48%) and duration (48%).

Table 4.4
Subscribers' Satisfaction With Frequency and Duration According to Geographical Location

n=401		Supply Frequency		Supply Duration	
Geographical Area	% of Total	Satisfied	Dissatisfied	Satisfied	Dissatisfied
North West	29%	57%	32%	55%	33%
North	5.5%	64%	23%	68%	23%
East	8%	48%	33%	48%	27%
South East	10.5%	59%	34%	60%	29%
South	9%	71%	20%	74%	12%
South West	4%	71%	6%	71%	0%
West	16%	57%	38%	53%	43%
Center	9%	74%	23%	77%	20%
Outside Amman	9%	52%	45%	56%	42%

2.3.4 Observations and Implications

A direct relationship exists between satisfaction with supply frequency and duration on the one hand and type of entity on the other. Entities which require larger quantities of water to function efficiently and productively, such as hotels, industry and schools, are the least satisfied with water supply frequency and duration. Geographically, entities in the Center, South and Southwest are most fortunate due to their proximity to the distribution network and their type of businesses which is mainly non-reliant on water. Most of these entities are businesses that use water in a peripheral manner.

Given that the hotel and industry sectors are vital contributors to the country's economy, a priority of WAJ should be to make sure that their water needs are adequately and sufficiently met. WAJ's efforts should be directed at increasing these entities' water supply and duration to help them become more productive and profitable.

2.4 Satisfaction with Water Quality

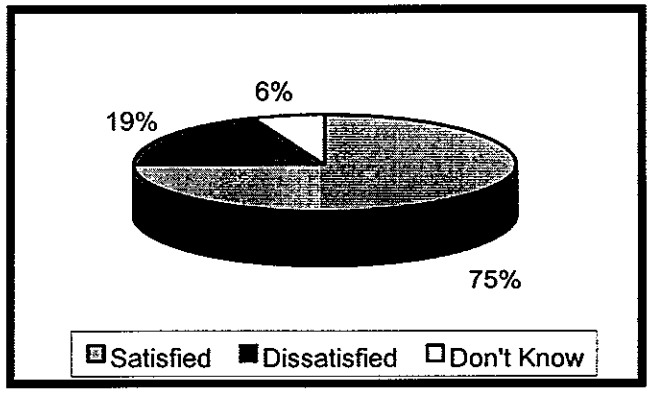
For non-residential subscribers, the quality of water they receive from WAJ is evaluated on the basis of five different dimensions. In addition to color, purity, taste and potability, non-residential subscribers' satisfaction also depends on the degree to which the water they receive from WAJ is suitable for their type of professional activity.
A substantial 86% of respondents consider the water they receive from WAJ as suitable for their type of activity. The lowest level of satisfaction is among consumers of the 141 to 200 cubic meters category (46% are satisfied); the remaining categories indicate medium to high levels of satisfaction. As one would have expected, it is government entities which are most satisfied with the suitability of water (100% are satisfied) as opposed to 60% of subscribers in the banking sector and 66% of subscribers in the health domain (Table 4.5). It is important to note that the low suitability level of water for entities which consume 141 to 200 cubic meters is perhaps due to the fact that they use water as a main ingredient in their production activities.

Table 4.5
Satisfaction with Suitability of Water

CONSUMPTION			ENTITY			GEOGRAPHICAL AREA		
Consumption Categories (m^3)	Satisfied	Dissatisfied	Type Of Entity	Satisfied	Dissatisfied	Geographical Area	Satisfied	Dissatisfied
</= 0010	90%	6%	Education	67%	25%	Northwest	90%	6%
11 – 0020	86%	12%	Religious	84%	0%	North	76%	14%
21 – 0030	88%	6%	Hotel	86%	8%	East	85%	6%
31 – 0040	88%	6%	Health	66%	34%	South East	90%	2%
41 – 0060	83%	11%	Government	100%	0%	South	89%	6%
61 – 0080	87%	0%	Company	91%	6%	South West	88%	6%
81 – 0110	93%	0%	Banking	60%	20%	West	73%	20%
111-0140	77%	23%	Industry	75%	14%	Center	94%	3%
141-0200	46%	46%	Office	83%	17%	Outside Amman	86%	11%
201-0400	90%	0%	Retail	95%	3%			
401-0800	86%	0%	Services	83%	4%			
801-1500	100%	0%	Production	96%	0%			
			Other	75%	0%			

In general, the majority of subscribers (75%) are satisfied with the color, purity, taste and potability of WAJ's water (Figure 4.2)

Figure 4.2
Satisfaction with Color, Purity, Taste and Potability



The following is a presentation of subscribers' satisfaction levels with water quality according to consumption levels, type of entity and geographical location:

2.4.1 According to Subscribers' Consumption Levels

Satisfaction, in general, is least with purity (71% of subscribers are satisfied), potability (72%) and taste (73%). Table 11 shows that moderately-low approval ratings are given by consumers of 141 to 200 cubic meters. For those consumers, the quality factors which contribute most to their low satisfaction levels are water purity (only 31% of subscribers are satisfied), taste and potability (46% each) and color (54%).

Table 4.6
Subscribers' Satisfaction with Quality According to Water Consumption

n=401		COLOR		PURITY		TASTE		POTABILITY	
Consumption (m^3)	% of Total	Satisfied	Dissatisfied	Satisfied	Dissatisfied	Satisfied	Dissatisfied	Satisfied	Dissatisfied
</= 10	34.00%	84%	14%	74%	20%	75%	17%	74%	14%
Bet. 11 – 20	16.00%	82%	18%	68%	30%	75%	24%	67%	25%
Bet. 21 – 30	13.00%	84%	12%	72%	20%	68%	20%	78%	14%
Bet. 31 – 40	8.00%	81%	19%	72%	22%	72%	28%	75%	25%
Bet. 41 – 60	9.00%	83%	17%	75%	25%	75%	22%	78%	17%
Bet. 61 - 80	6.00%	84%	4%	75%	12%	78%	12%	80%	12%
Bet. 81 - 110	3.00%	93%	7%	79%	21%	86%	14%	86%	14%
Bet. 111- 140	3.00%	70%	30%	62%	23%	54%	38%	39%	38%
Bet. 141- 200	3.00%	54%	39%	31%	46%	46%	31%	46%	46%
Bet. 201- 400	2.50%	70%	10%	70%	10%	60%	0%	60%	0%
Bet. 401- 800	2.00%	86%	14%	72%	28%	72%	28%	72%	28%
Bet. 801- 1500	0.50%	100%	0%	100%	0%	100%	0%	50%	0%

specific patterns. Table 4.7 shows that, in general, consumers who belong to the health sector are the least satisfied with quality. In this sector, subscribers' satisfaction is least with color, purity and taste (55% each of subscribers are satisfied); only 66% of subscribers are satisfied with potability.

For the health sector, issues of water hygiene are of paramount importance. Quality of water can't be compromised and anything less than perfect is usually not accepted.

Table 4.7
Subscribers' Satisfaction with Quality According to Type of Entity

N=401		COLOR		PURITY		TASTE		POTABILITY	
Type of Entity	% of Total	Satisfied	Dissatisfied	Satisfied	Dissatisfied	Satisfied	Dissatisfied	Satisfied	Dissatisfied
Education	3.00%	75%	25%	59%	33%	67%	33%	59%	33%
Religious	1.50%	67%	34%	66%	34%	67%	34%	50%	34%
Hotel	12.70%	92%	8%	71%	24%	77%	20%	87%	14%
Health	4.50%	55%	39%	55%	39%	55%	34%	66%	28%
Government	1.00%	75%	25%	50%	50%	75%	25%	50%	25%
Company	7.70%	87%	9%	71%	29%	74%	22%	74%	22%
Banking	1.20%	80%	20%	60%	40%	60%	20%	80%	20%
Industry	7.00%	75%	18%	71%	18%	77%	14%	50%	22%
Office	13.20%	70%	29%	57%	42%	61%	36%	55%	40%
Retail	27.50%	85%	15%	82%	15%	77%	17%	77%	14%
Services	13.70%	86%	4%	73%	8%	74%	8%	75%	8%
Production	6.00%	91%	0%	79%	12%	92%	8%	96%	0%
Other	1.00%	75%	25%	75%	25%	75%	25%	75%	25%

2.4.2 Satisfaction According to Subscribers' Geographical Location

Table 4.8 shows that businesses in West Amman are the least satisfied with the quality of WAJ's water. Here again, we notice that subscribers' satisfaction is least with purity (45% of subscribers are satisfied), taste and potability (48% each) and color (53%). Most of

these institutions are those which consume 141 to 200 cubic meters; and/or are five star hotels, and restaurants.

Table 4.8
Subscribers' Satisfaction with Quality According to Geographical Location

n=401		COLOR		PURITY		TASTE		POTABILITY	
Type of Entity	% of Total	Satisfied	Dissatisfied	Satisfied	Dissatisfied	Satisfied	Dissatisfied	Satisfied	Dissatisfied
North West	29.00%	90%	9%	73%	22%	78%	18%	73%	20%
North	5.50%	82%	18%	78%	18%	63%	32%	59%	18%
East	8.00%	82%	9%	76%	6%	70%	6%	58%	6%
South East	10.50%	93%	5%	88%	9%	90%	2%	86%	5%
South	9.00%	91%	6%	77%	9%	83%	9%	92%	6%
South West	4.00%	70%	12%	70%	12%	59%	12%	76%	6%
West	16.00%	53%	45%	45%	52%	48%	49%	48%	49%
Center	9.00%	89%	9%	77%	20%	80%	17%	89%	9%
Outside Amman	9.00%	86%	14%	77%	22%	78%	20%	83%	12%

2.4.3 Observations and Implications

It is obvious that water supply frequency, duration and quality receive high ratings by low level consumers whose entities don't depend heavily on water. Among those entities which suffer most from the frequency, duration and quality issues are medium to high level consumers whose main business activity is either manufacturing or the provision of services which use water as a main ingredient.

Industrial entities that depend on water to manufacture their products require a frequent supply and a lengthy replenishment schedule to ensure the attainment of optimum production levels. Disruptions of such supply could be harmful to their business interests. The suitability and purity of water should meet minimal specifications to ensure an adequate standard in processing the product mix and in achieving an acceptable result. This is especially true in the food processing industry sector. Potability of water is also important for entities which employ medium to large numbers of employees and cannot afford bottled water.

The educational and health sectors, namely schools and hospitals/primary care centers, require water availability on a continuous bases. Students and patients need to drink potable water. The use of water in health centers is significant and hygiene requirements are absolute.

Hotels, especially five-star entities, have extensive needs for water. Without water, hotels can't 'sell' their services. These institutions are unhappy with WAJ and consider their actual supply schedule as either inadequate or unreliable.

Understandably, these water users don't consider WAJ's actual (not designated) water supply and frequency schedule sufficient for their needs. Any supply disruptions could cause dissatisfaction by their customers and a resultant drop in their business turnover.

Low level users of water, such as offices, banks and government agencies, require water

for either drinking or floor cleaning purposes. To most, WAJ's supply is, therefore, sufficient. In the event it is not, buying water from supplementary sources is neither too costly nor too difficult. Complaints by these institutions about water quality are minimal and generally insignificant. The water purity issue has caused concern among some subscribers; a concern shared by residential consumers. Regardless of which entity is consuming what and where, all agreed that water purity requires WAJ's attention.

2.5 The Sewerage System

2.5.1 Connection to the Sewerage System

About 84% of the entities surveyed are connected to the sewerage system. A negligible 3% of them claim that they have faced problems with their sewerage network. Their strongest complaints are about odor, followed by blockage and flooding.

2.5.2 Satisfaction with the Sewerage System

There is general satisfaction with the services of the sewerage network. Out of the 337 entities connected to the sewerage system, some 97% are satisfied with the connection. As such, only 44% of the connected entities responded to the blockage repairs question. Here again, about 93% have indicated satisfaction with this service. Of the 129 who did complain about flooding problems, 91% are satisfied with the level of WAJ's responsiveness to their complaints. Satisfaction with the sewerage maintenance system is high for 82% of the 137 subscribers who complained about it, at one time or another.

Sewerage services have received a high approval rating from most entities. WAJ has maintained those systems well and addressed most complaints adequately.

3. WAJ's Customer Services

3.1 Billing and Meter Reading Services

3.1.1 The Billing System

Almost all respondents (98%) report that they are billed by WAJ once every three months. In response to a question of what billing frequency they prefer, 72% of the respondents indicated a preference to the current billing system; 26% prefer monthly invoicing.

The majority of subscribers (about 76%), however, prefer to have the bill delivered to their place of business by collectors; some 24% of subscribers prefer to receive their bills through the mail. More than half of the subscribers (53%), prefer to settle their bills through the banks; some one third (31%) prefer to pay them directly to collectors.

How is WAJ Perceived Regarding Billing Discrepancies?

For 52% of subscribers, the bills they receive are accurate and reflect the actual amount of water they consume. However, more than a third of the respondents (36%) report that WAJ overcharges them for the water amount they actually consume.

Of the total population sample, only 48% have complained to WAJ about different issues

of billing discrepancies. A high number of subscribers (60%) have indicated satisfaction with WAJ's responsiveness to their complaints (Figure 4.3).

Figure 4.3
Satisfaction with WAJ's Responsiveness to Billing Discrepancies

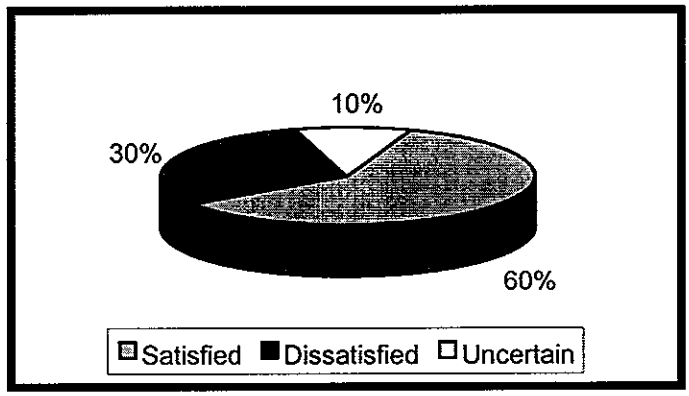


Figure 4.4 shows that satisfaction with WAJ on this issue is least among subscribers in the Southeast, East and Northwest (20%, 25% and 36% of subscribers are satisfied respectively).

Figure 4.4
Satisfaction with WAJ's Responsiveness to Billing Discrepancies According to Geographical Location

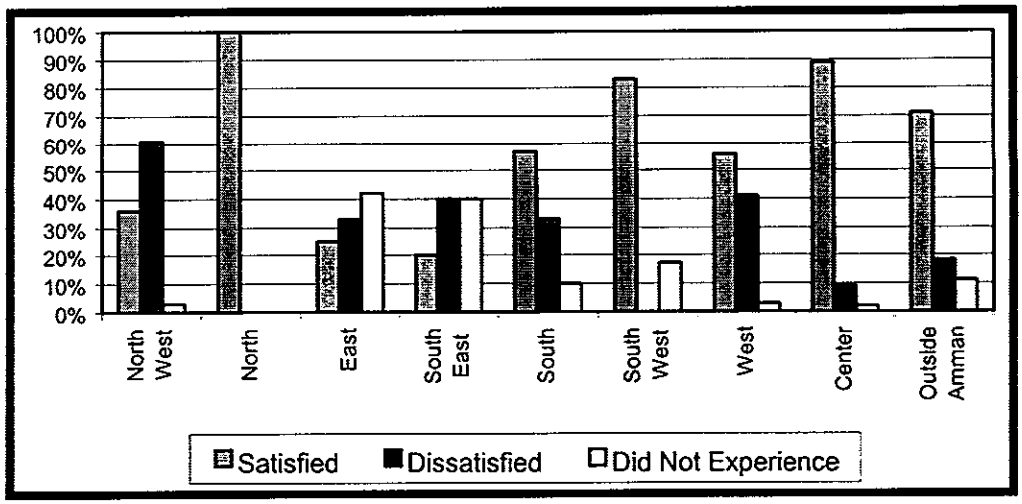
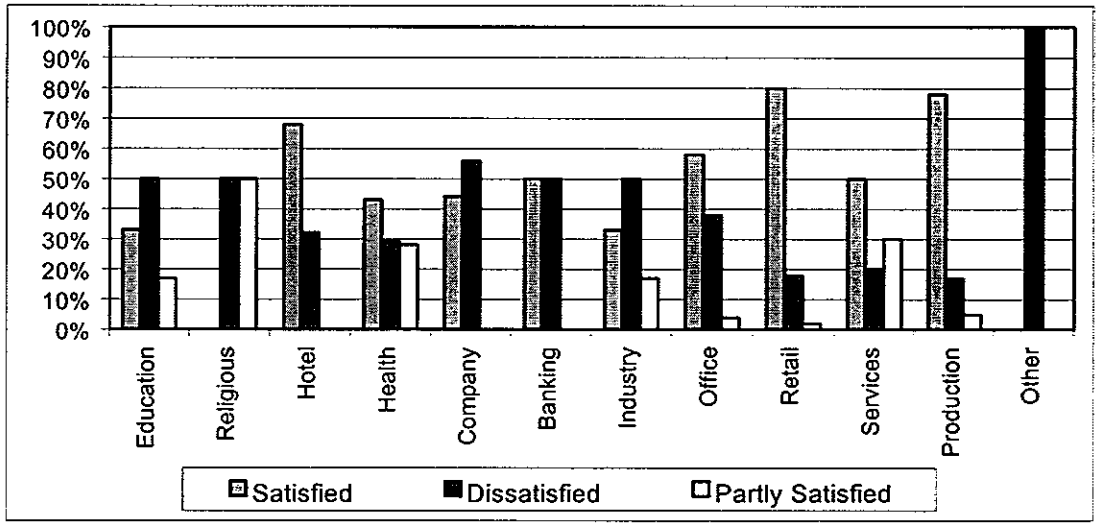


Figure 4.5 shows that religious entities are not satisfied with WAJ on this issue. Satisfaction is also very low among subscribers in the education and industry sectors (33% each are satisfied), and in the health domain (43% of subscribers are satisfied). Billing discrepancies do not apply to government agencies.

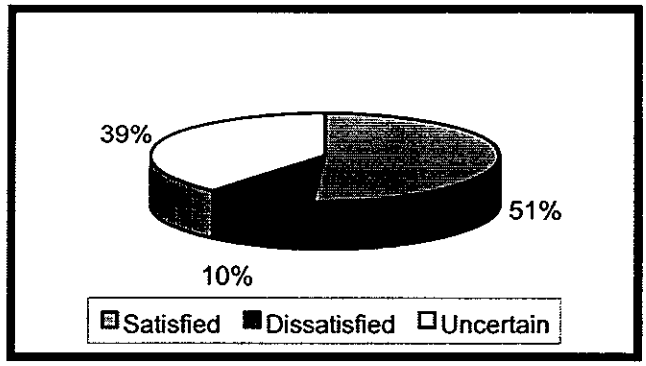
Figure 4.5
Satisfaction with WAJ's Responsiveness to Billing Discrepancies According to Type of Sector (Activity)



3.1.2 Meter Reading Practices

Of the total 401 businesses surveyed, only 51% have indicated satisfaction with WAJ's meter reading precision. Some 39% are partly satisfied, and the remaining 10% are not satisfied (Figure 4.6).

Figure 4.6
Satisfaction with WAJ's Meter Reading Practices



Interestingly, those who are least satisfied with this service consist mainly of the low to moderate level consumers: Among those who consume between 11 and 20 cubic meters, only 42% are satisfied; between 31 and 40 cubic meters, only 41% are satisfied; and between 61 and 80 cubic meters, only 34% are satisfied. Only 40% of the low to middle level consumers (201 and 400 cubic meters) are satisfied with WAJ's meter reading practices (figure 4.7)

Figure 4.7
Satisfaction with Meter Reading Practices According to Consumption Levels

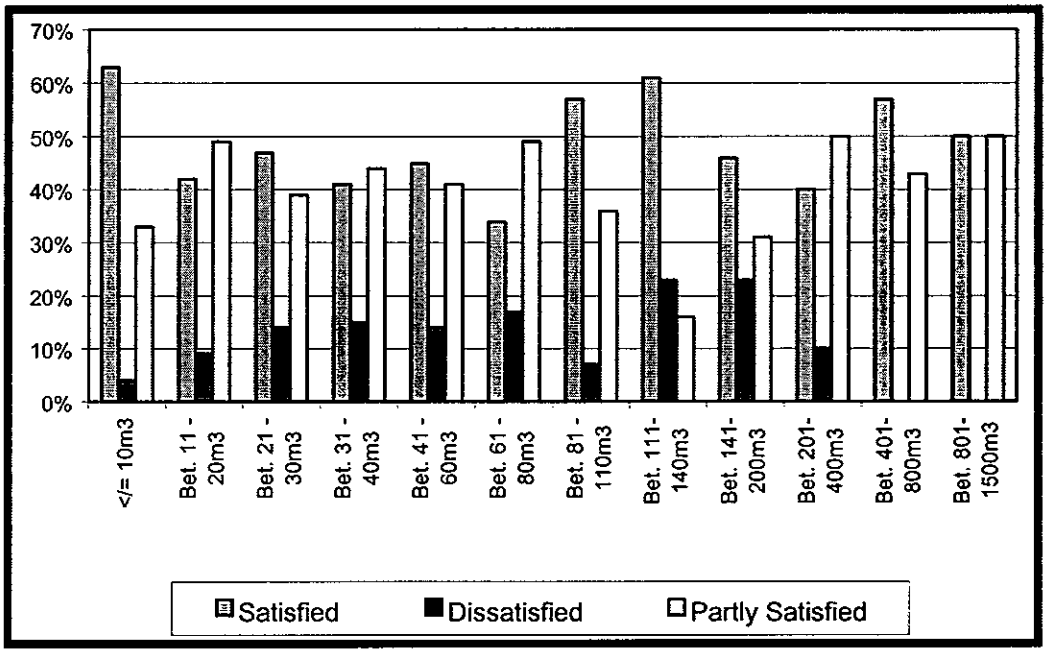


Figure 4.8 shows that the banking and education sectors are the least satisfied with WAJ's meter reading practices, with lows of respectively 20% and 33% of subscribers indicating satisfaction. The hotel and production sectors, as well as companies, are also generally not satisfied with this service (only 42% each are satisfied).

Figure 4.8
Satisfaction with WAJ's Meter Reading Practices According to Type of Sector

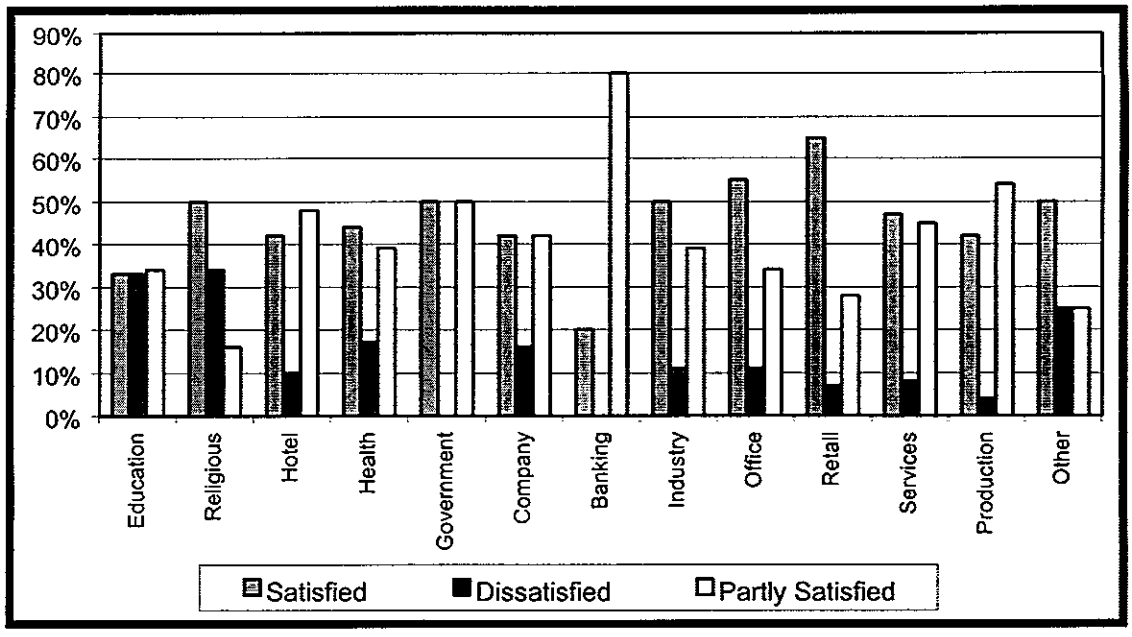
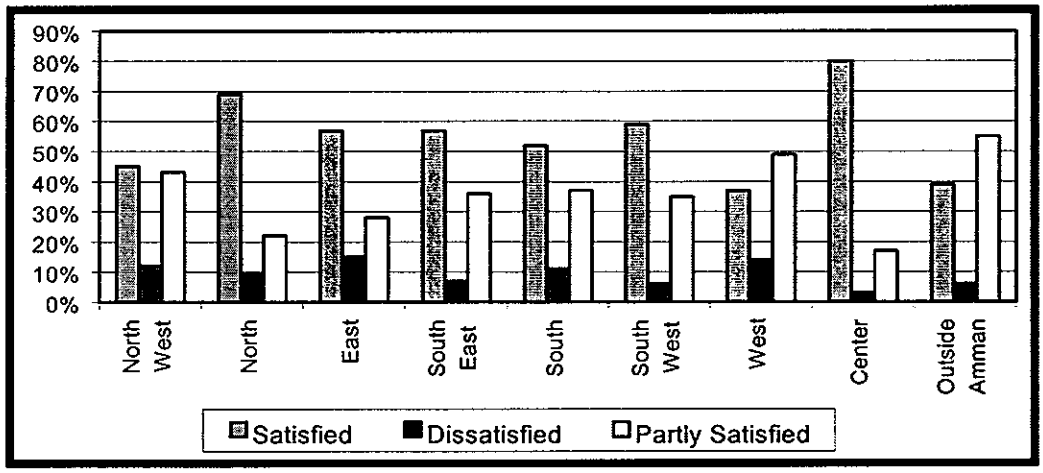


Figure 4.9 shows that entities in the West and Outside Amman are least satisfied with WAJ's meter reading practices (37% and 39% are satisfied respectively). The rest of the regions are moderately satisfied. Subscribers in the Center of Amman are the most satisfied (80%).

Figure 4.9
Satisfaction with WAJ's Meter Reading Practices
According to Geographical Location



Observations and Implications

Like residential subscribers, non-residential entities have had unhappy experiences with meter reading practices and precision. Meters are not adequate and collectors are not reliable all the time. Billing discrepancies represent a cause for mistrust in WAJ's practices and motives. The implication here is that negative opinions of meter reading practices influence attitudes towards other government policies, especially those relating to tariff rates.

It is not clear why the religious, education, industry and health sectors have had the worst experience with billing discrepancies. These are sectors which need further investigation by WAJ. Entities belonging to these sectors which are located in the Southeast, East and North are least satisfied.

Quarterly billing remains the most preferred system while the payment mode which is most favored is banks rather than collectors. Here WAJ may want to consider the continuation of its quarterly billing policy and the allowance of entities to pay either through the banks, collectors or WAJ's offices.

3.2 Maintenance of Water Pipes and Leakage

3.2.1 Pipe Conditions

Some 51% of subscribers are satisfied with the quality and condition of pipes. Among the remaining subscribers, however, 19% are dissatisfied and 30% are partly satisfied (Figure 4.10).

Figure 4.10
Satisfaction with Quality of Pipes

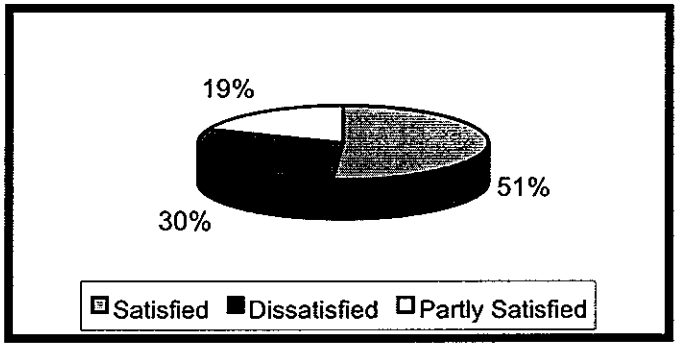


Figure 4.11 shows that the lowest number of satisfied customers with the conditions of the pipes belong to the banking sector (only 20% of subscribers are satisfied), government (only 25%), companies (only 29%) and services (38%).

Figure 4.11
Satisfaction with Quality of Pipes According to Type of Sector

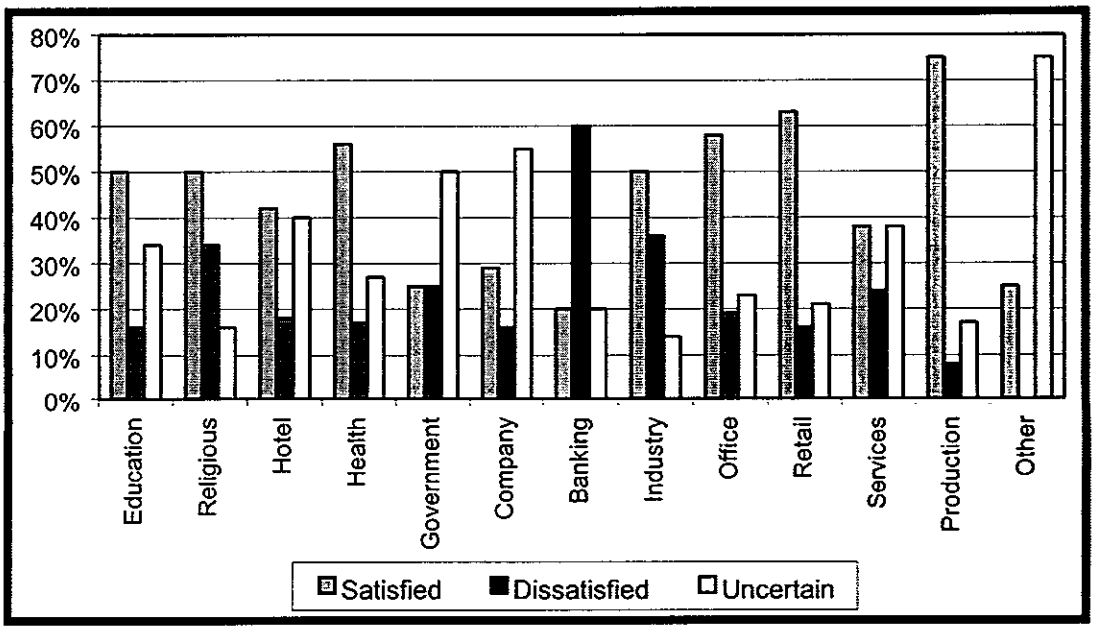
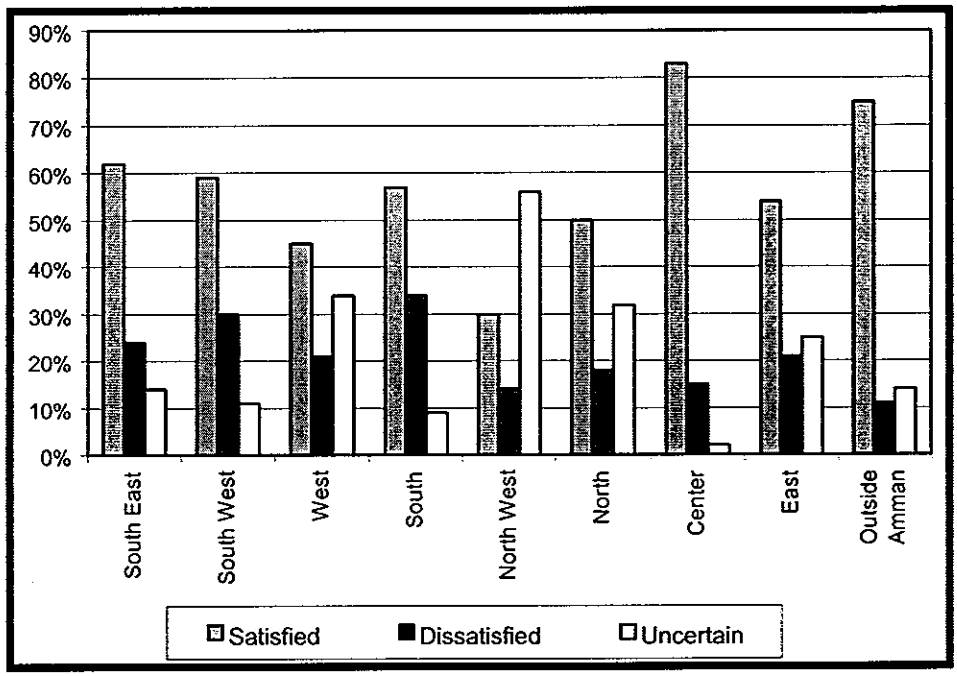


Figure 4.12 shows that subscribers in the Northwest and West regions are the least satisfied with the quality of pipes (30% and 45% are satisfied respectively).

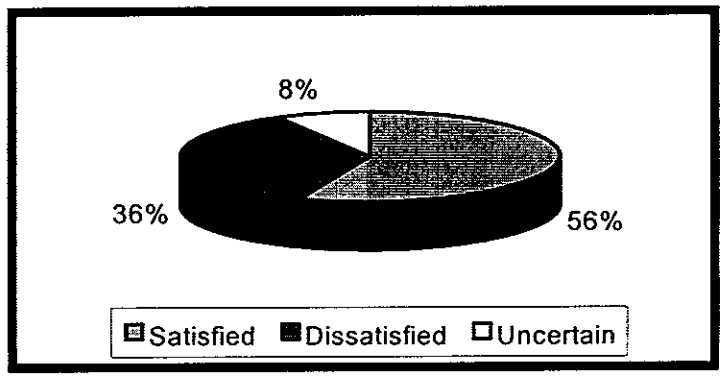
Figure 4.12
Satisfaction with Quality of Pipes According to Geographical Location



3.2.2 How Does WAJ Respond to Maintenance Calls Regarding Pipe Leakage?

Of the total population sample, only 211 subscribers have complained to WAJ about pipe leakage. Figure 4.13 shows that about 56% of those subscribers who complained are satisfied with WAJ's responsiveness to maintenance calls for the repair of pipe leakage.

Figure 4.13
Satisfaction Levels with WAJ's Maintenance of Pipe Leakage



leakages (Figure 4.14). Satisfaction is also very low among subscribers in the sectors of health (33% of subscribers are satisfied), industry (41%), companies (43%), and None of the subscribers in the religious and banking segments of the population are satisfied with WAJ's responsiveness to maintenance calls for the repair of pipe services (48%).

Figure 4.14
Satisfaction with WAJ's Responsiveness to Leakage
According to Type of Sector

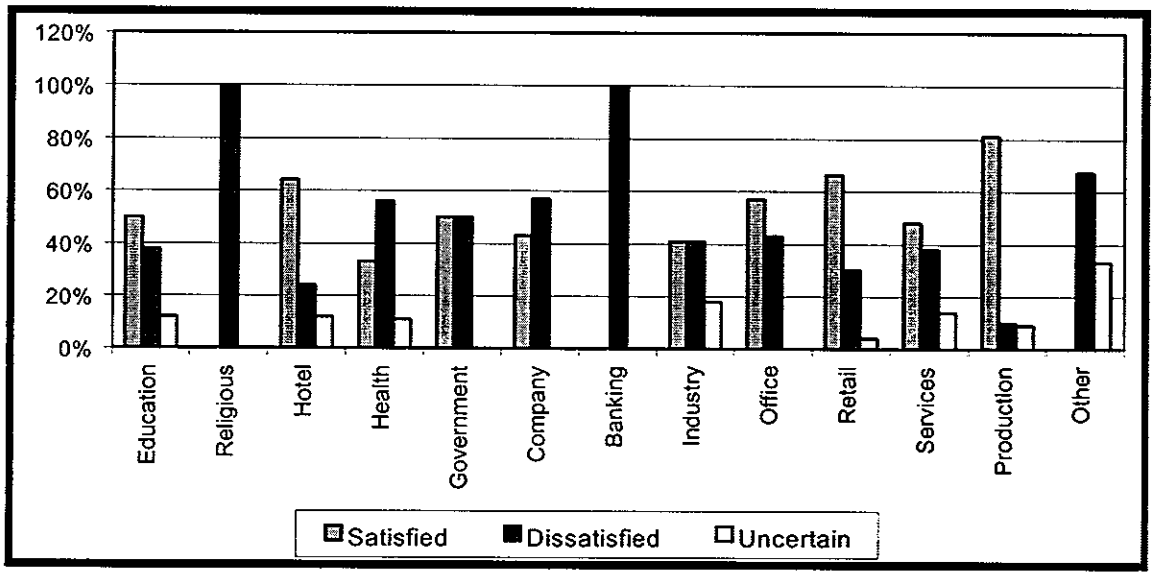
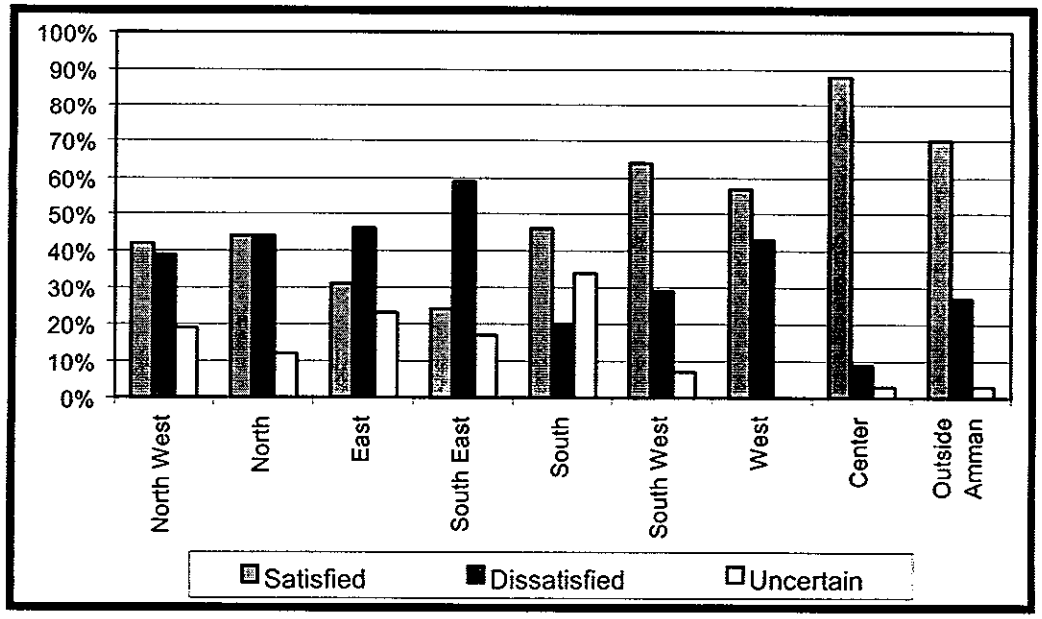


Figure 4.15 shows that the lowest number of satisfied subscribers is in the Southeast (24% of subscribers are satisfied), followed by the East (31%), the Northwest (42%) and the North (44%).

Figure 4.15
Satisfaction with WAJ's Responsiveness to Pipe Leakage
According to Geographical Location



3.3 How is WAJ Seen as a Problem Solver of Supply Disruptions?

Here again, only 204 (51%) of subscribers have complained to WAJ about supply

disruptions. Of these respondents, about 54% are satisfied with WAJ's responsiveness to their calls for help when water supply is disrupted (Figure 4.16). Some 37% of the remainder are dissatisfied, claiming that they do not receive adequate responses from WAJ.

Figure 4.16
Satisfaction with WAJ's Responsiveness to Supply Disruptions

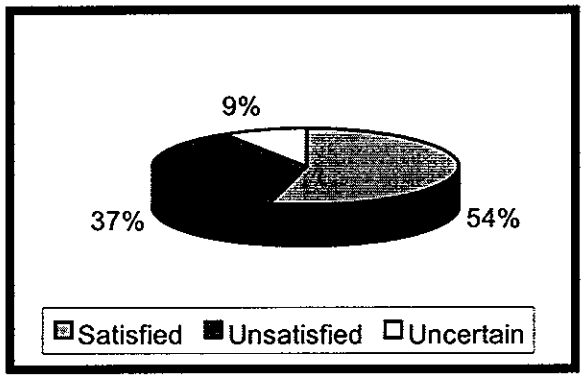


Figure 4.17 shows that none of the subscribers of the religious segment are satisfied with WAJ's responsiveness to complaints about supply disruptions. Satisfaction is also low for subscribers in the industry, health and banking sectors (12%, 25% and 33% of subscribers are satisfied respectively).

Figure 4.17
Satisfaction with WAJ's Responsiveness to Complaints about Supply Disruptions According to Type of Sector

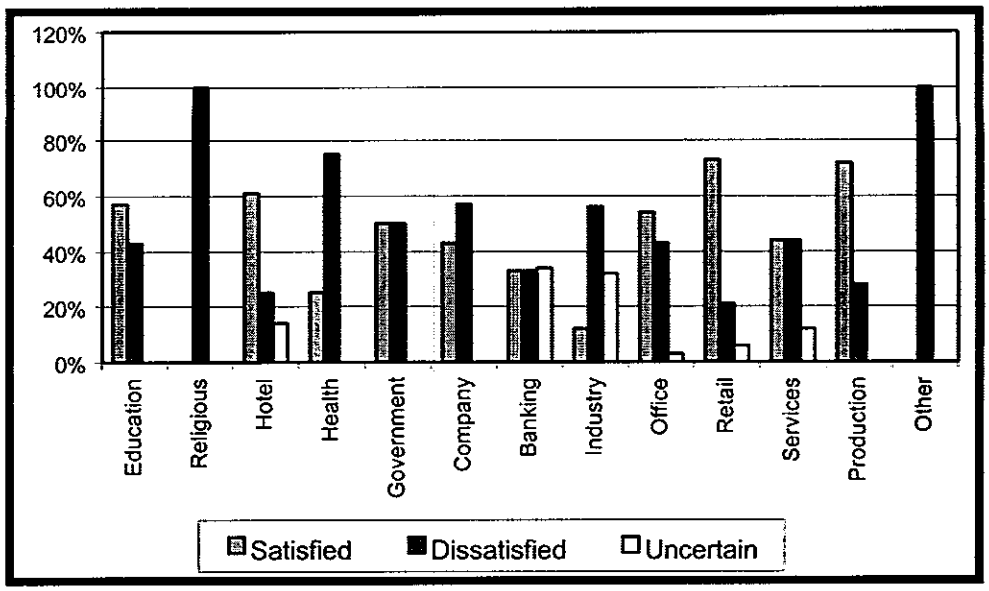
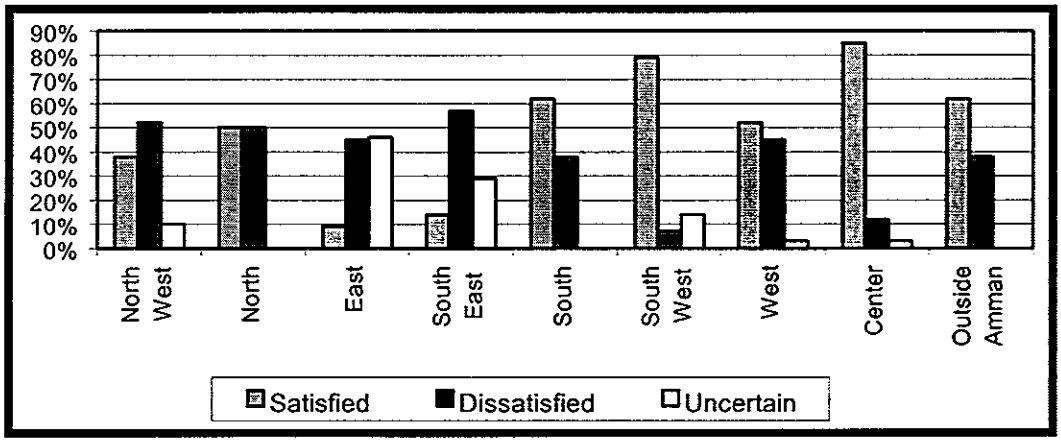


Figure 4.18 shows that only 9% of subscribers in the East have indicated satisfaction with WAJ's responsiveness, followed by 14% in the Southeast, 38% in the Northwest, 50% in the North, 52% in the West, 62% in the South and 79% in the Southwest, and a strong

85% in the Center of Amman.

Figure 4.18
Satisfaction with WAJ's Responsiveness to Complaints about Supply Disruptions According to Geographical Location



Observations and Implications

Supply disruptions present a problem to more than one third of the entities in the study. Satisfaction with pipe conditions is not low; less than 20% of the entities are unhappy with WAJ's responsiveness to maintenance calls on pipe leakage. Surprisingly, however, religious organizations are extremely unhappy about WAJ's responsiveness to supply disruptions, followed by banks and other retail entities. All these entities don't rely on water to conduct business; water is mainly used for cleaning and drinking purposes.

The quality of pipes is worst in the Northwest, while responsiveness of WAJ to leakage and supply disruptions is weakest in the South and Southeast; most of the dissatisfied entities are located in these regions.

One can only appreciate the size of the pipe leakage and water disruption problem for WAJ when the complaints of non-residential and residential subscribers are put together. Though the problem seems less acute in the non-residential sector, the combination of both segments of the population poses a formidable challenge to WAJ.

4. Alternative or Additional Water Supply Sources

4.1 Tanker Water

Like residential subscribers, only a minority of participants (27%) augment their water supply needs by buying tanker water from private tanker operators. Of the 108 participants who buy water from private companies, about 37% buy once a month; some 27% buy twice a month; and 16% buy 3 to 4 times a month. The purchased quantity does not usually exceed 10 cubic meters each for 69% of subscribers a month. Furthermore, some 73% of subscribers report paying about JD1.5 –2/cubic meter. Reliance on tanker water is lowest for small and medium level consumers.

In general, the majority of subscribers who buy tanker water are satisfied with its quality in terms of color, purity, taste, potability and suitability for their type of business/activity. Also, a high percentage of subscribers, (87%), is satisfied with the 'waiting period' associated with delivery and supply. Dissatisfaction, however, is greatest with the price of tanker water. Significantly, 97% of the tanker customers have insisted that they would stop buying water if WAJ were able to provide adequate water supply and quality.

4.2 Bottled Water

The consumption of bottled water seems to be relatively low. Only a few respondents, (11%), buy bottled water. Although, for the majority (42%), consumption is usually less than 5 liters/week; another 42% purchase quantities between 5 and 36 liters per week; while some 16% purchase more than 51 liters per week. Some 27% of subscribers who buy bottled water pay less than JD1 per week for their purchases; about 22% pay between JD1.76-JD2.9 per week; and another 22% pay more than JD10 per week. Bottled water is mainly used for drinking. Once again, the majority of respondents who buy bottled water (73%), are willing to stop doing so if they were sure WAJ can provide water of potable quality.

4.3 Observations and Implications

Like residential subscribers, dependence of entities on alternative supply sources is low and inconsistent. The market share of tanker and bottled water is relatively small. Larger entities and/or institutions which use water for production or processing purposes often find it imperative to order supplementary supplies in order to sustain their operational momentum. These entities, however, continue to favor WAJ as the sole supplier, if the latter was able to keep up with its water replenishment program. Loyalty to private suppliers is tenuous at best. The tanker water sector stands the risk of loosing a significant market share if WAJ or the private operator were successful in providing adequate water supply.

5. Water Storage

5.1 Profile of Entities

An important determining factor of storage tanks' availability for a particular entity is usually its nature of business/activity. Of the population sample, 27% are retail shops; 14% are services; 13% are offices; 13% are hotels and catering agencies; 8% are companies; 7% are industrial entities; 6% are production; 4% are health institutions; 3% are educational institutions; 2% are religious institutions; 1% are banks; 1% are government agencies; and 1% are a variety of small businesses. The majority of businesses (80%), employ less than 10 employees; some 9% employ 10 to 15 persons; and about 4% employ 16 to 20 persons. Only 1% employ more than 150 employees.

5.2 Availability of Tanks

Nearly all respondents (97%), own water storage tanks. Of these respondents, some 43% own one water tank; 31% own two tanks; 12% own three tanks; 6% own four tanks; 1% own five tanks; and 6% own more than five tanks. The maximum combined storage capacity of all tanks owned by each of the entities is between 2 to 5 cubic meters (50%); the capacity for some 24% is </= 1 cubic meter; and the capacity for 16% is between 6 to

10 cubic meters. Most of the respondents (88%), have no underground wells. Of the remaining 12%, 92% own one well and 6% own two wells. Well capacity for 25% is between 6 and 16 cubic meters; for 30% it is between 17 and 49 cubic meters; and for 17% it is between 50 and 150 cubic meters. The majority of respondents (96%), do not collect rainwater. Of the 394 subscribers who have storage facilities, some 76% have storage capacities that last for four days or more; for some 14% for three days; and for about 9% for two days.

Many of the hotels and some of the schools and hospitals have wells which provide them with three to four days of reserves. Like residential subscribers, entities in all sectors depend heavily on tanks and wells. Without them, most will face serious supply problems.

6. Water Uses, Habits, and Practices

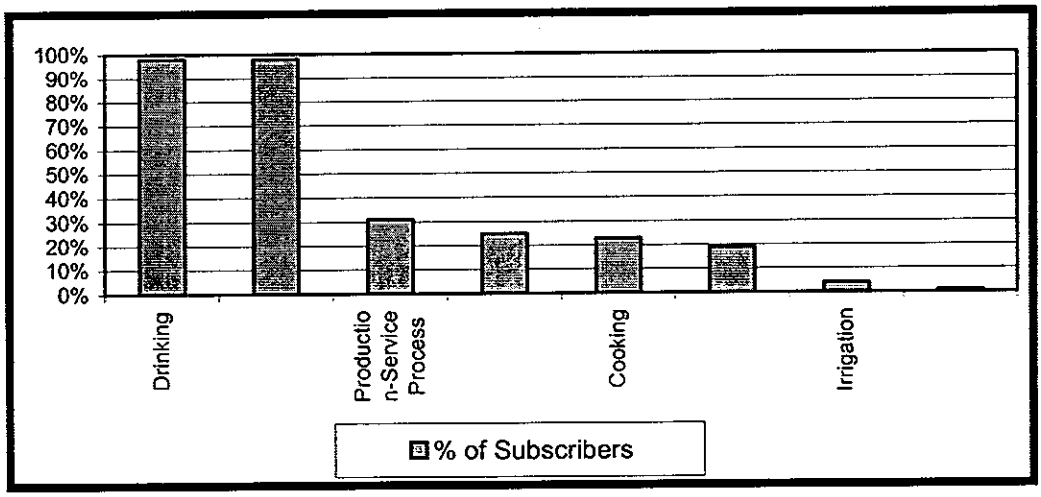
WAJ's water is used for a variety of purposes. Uses cited by almost all respondents include cleaning, drinking, cooking, washing vegetables and fruits, irrigation and production- processing (Figure 4.18).

The majority of respondents (90%), do not boil the water they receive from WAJ. Those who do boil water, however, report that they use boiled water mainly for drinking and for specific production activities. Some use water for cooking (29% of the entities), and a few for washing vegetables and fruits (22%). Some 87% (n =349) of subscribers report that they do not filter the water they receive from WAJ. The most commonly used filtration systems are the sand and activated carbon systems. Both systems allow subscribers to use water for drinking, production purposes and cooking. More than half of the subscribers (58% or n =232) do not let tap water settle before using it.

Observations and Implications

Entities have secured for themselves water storage capacities which are suitable for their type of business/activity and/or size. The larger the entity, the bigger is its storage capacity.

Figure 4.19
Subscribers' Uses of Water



With the exceptions of some hotels, restaurants, schools, hospitals and some commercial institutions, very few entities pay special attention to water boiling or filtering. The potability of water is generally accepted by most.

7. Willingness and Ability to Pay More for Water

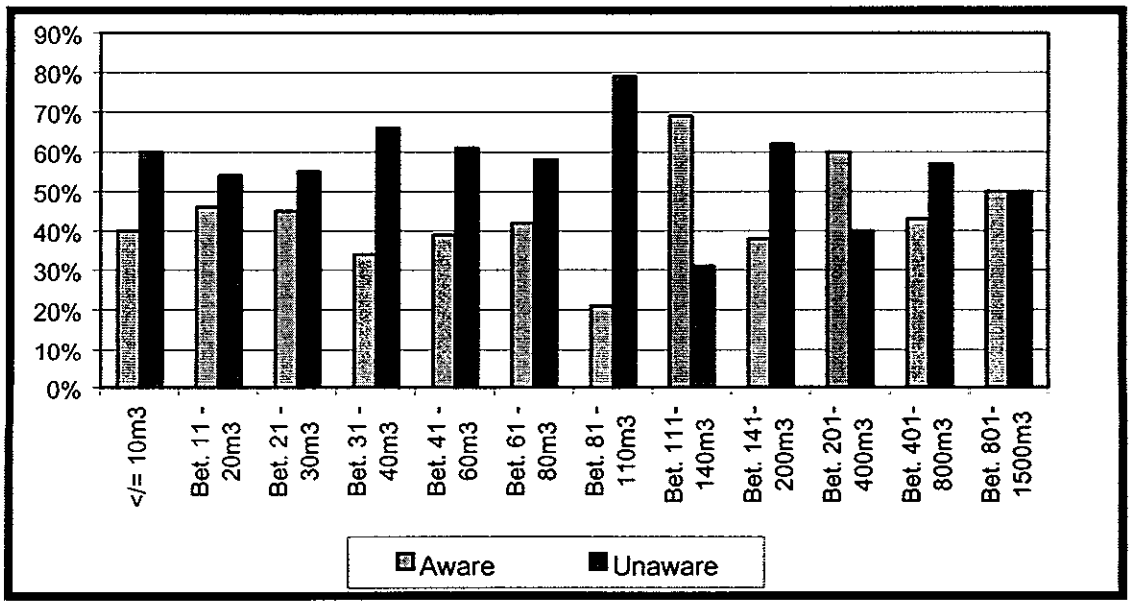
7.1 Awareness of and Attitudes Toward the Current Rate

Only 42% of respondents are aware of the details of the current tariff system. Data obtained in the survey supports the fact that awareness of the current tariff system varies according to subscribers' level of consumption, type of entity and geographical location.

7.1.1 According to Consumption Levels

Figure 4.20 shows that, in general, the moderate to high level consumers (between 111 and 140 cubic meters; 201 and 400 cubic meters; and 801 and 1500 cubic meters) are the most aware of the current tariff system.

Figure 4.20
Awareness of The Current Tariff System According to Consumption Levels

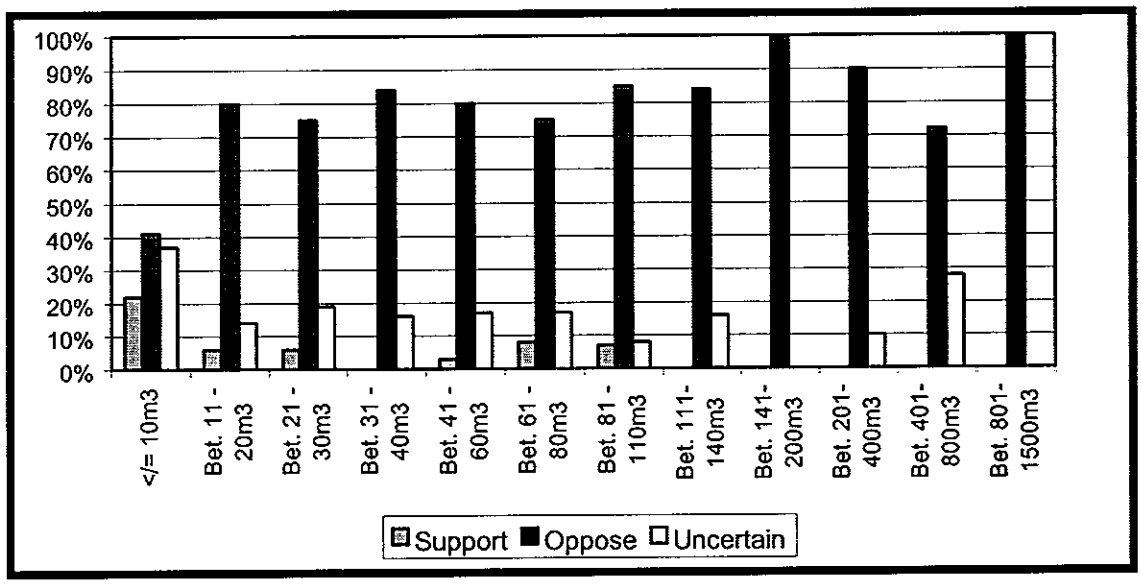


In general, there is little or no support for the current tariff system: None of the high level consumers (between 111 and 1500 cubic meters) support this tariff rate; an average of 5% of consumers, between 21 and 110 cubic meters, support it; and only 22% of consumers who consume </= 10 cubic meters, support it (Figure 4.21). On average, some 87% of subscribers consider the current rate high.

While awareness of the current system is low, support for it is nearly non-existent. The complete lack of support by all medium and high level users is of concern. If anything, these findings present WAJ with a formidable challenge to overcome: How can attitudes of non-residential consumers be changed positively? How could WAJ even consider a new

tariff rate when the current one is almost totally not accepted?

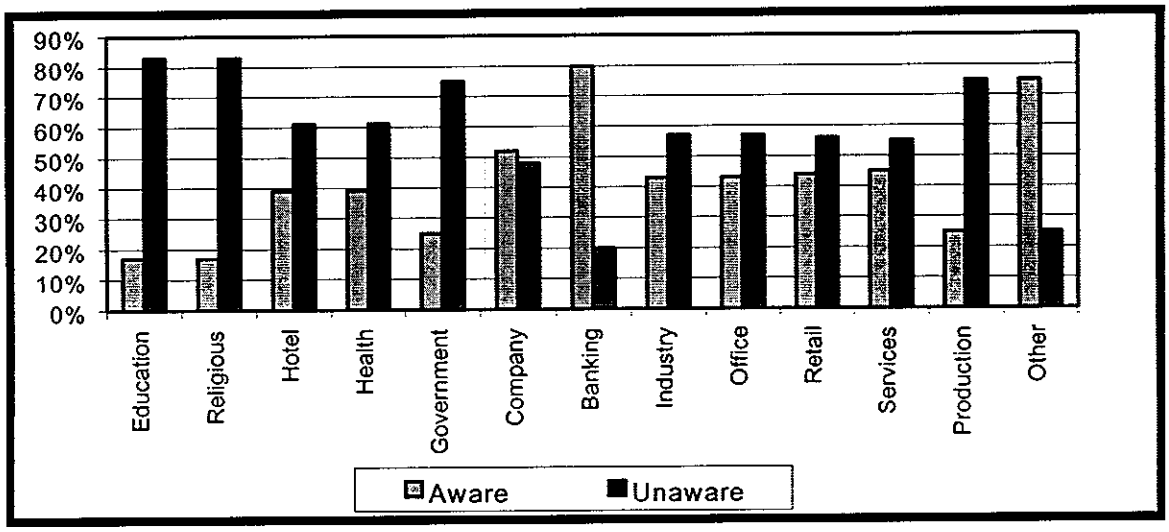
Figure 4.21
Subscribers' Attitudes towards Current Tariff According to Consumption Levels



7.1.2 According to Type of Sector

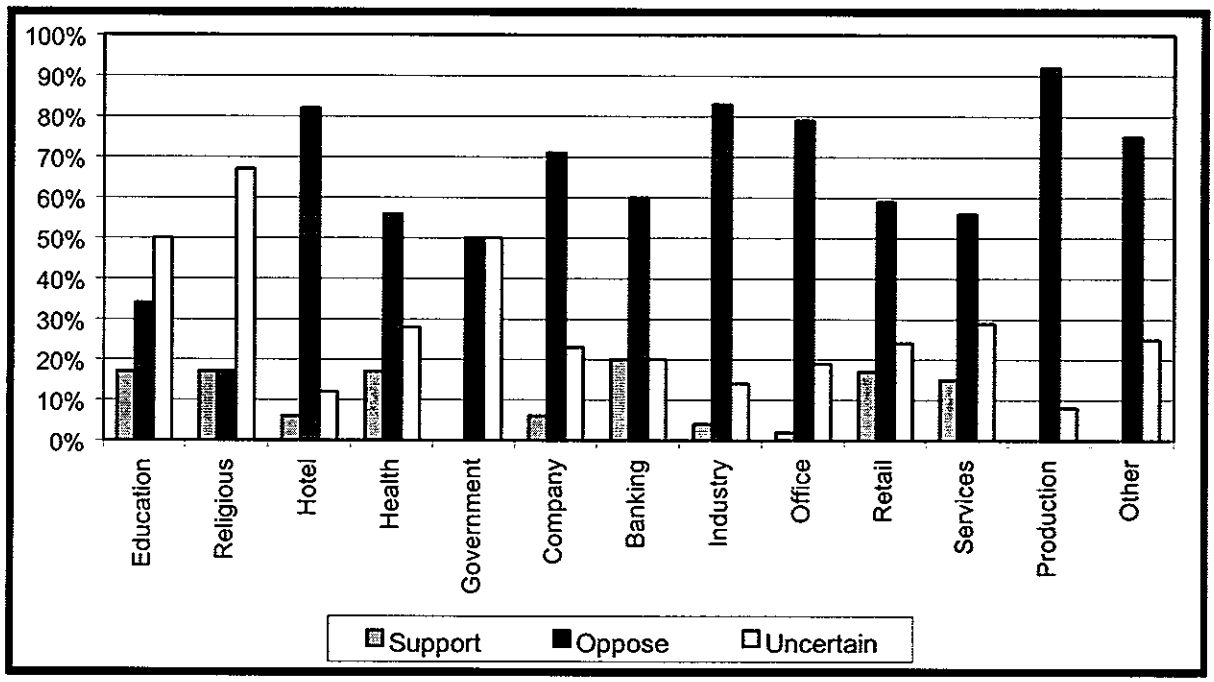
Figure 4.22 shows that the banking sector is the most aware of the current tariff system (80% of subscribers are aware); followed by companies (52%); services (45%), retail (44%); industry and offices (43% each); hotel and health (39% each); production and government (25% each); and education and religious institutions (17% each). A significant 75% of the 'other' subscribers are aware of the current rate.

Figure 4.22
Awareness of Current Tariff According to Type of Sector



Predictably, Figure 4.23 shows that support for the current rate is alarmingly low among all sectors (similar to consumption levels). None of the subscribers in the production, government and 'other' sectors support the rate. Exceedingly low levels of support are also prevalent in offices (2% of subscribers are satisfied), industry (4%), companies and hotels (6% each) segments. Only about 15% of subscribers in the services domain support the current rate. Some 17% of subscribers in each of the education, religious, health and retail sectors support the current rate. The highest number of consumers who support the current rate is in the banking sector (only 20% support it).

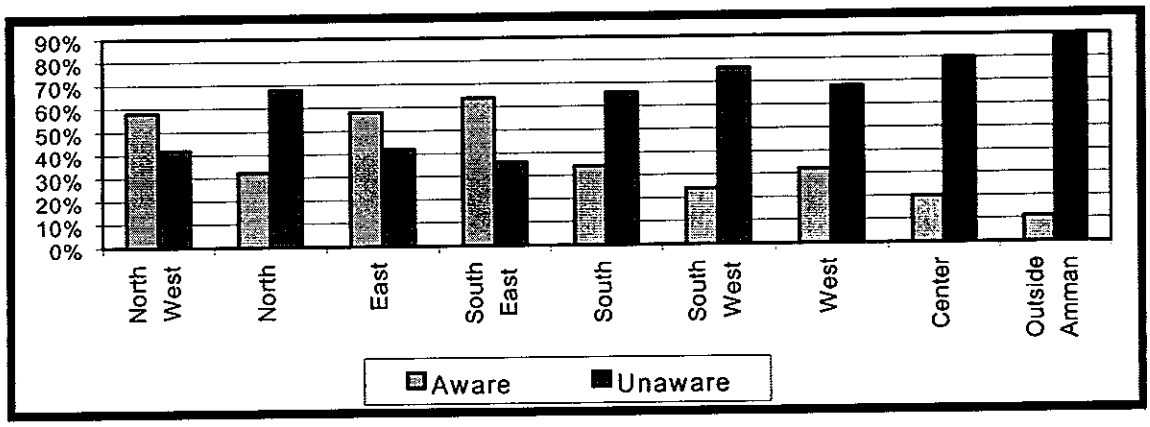
Figure 4.23
Subscribers' Attitudes Towards Current Tariff According to Type of sector



7.1.3 According to Geographical Location

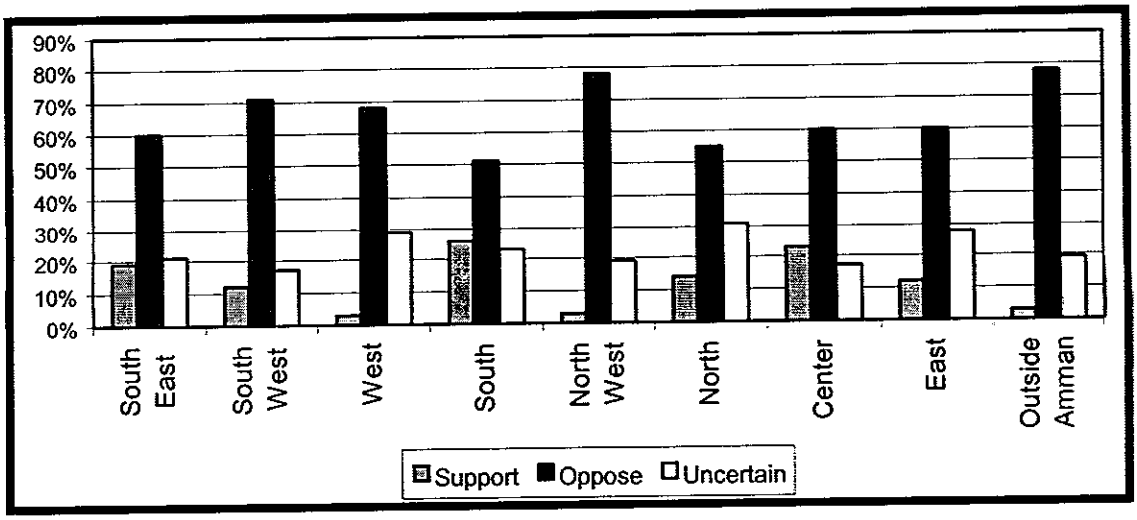
Do geographical areas play a role in the information loop? Figure 4.24 shows that entities Outside Amman are the least aware of the current rate (11% of subscribers are aware); followed by the Center of Amman (20%); Southwest (24%); West and North (32% each); and the South (34%). Subscribers in the East and Northwest show the highest level of awareness of the current tariff system (58% each).

Figure 4.24
Awareness of Current Tariff Rate According to Geographical Location



Subscribers outside Amman, in the West and Northwest regions are the least supportive of the current rate (only 3% each of the entities support the current tariff). On the other hand, 26% of the subscribers in the South support the current tariff system (Figure 4.25). One can only assume that, among the very few entities which support the current tariff rate system, are those that are least affected by it (i.e. retail shops, NGO's, and others).

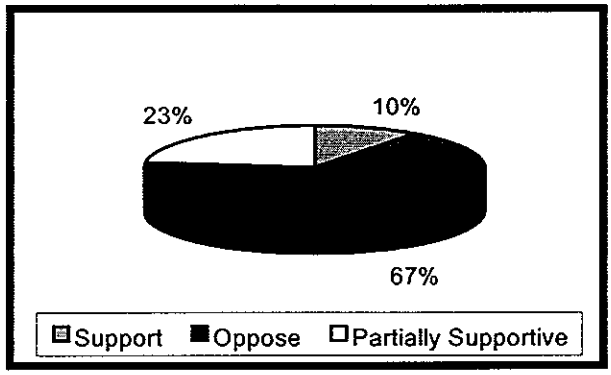
Figure 4.25
Subscribers' Attitudes Towards Current Tariff System According to Geographical Location



7.2 Reactions after Current Tariff System Was Explained

After developing an understanding of the current tariff system during the interview, more than two thirds of subscribers (67%) continued to oppose it; 10% to support it; and 23% to feel partially supportive (Figure 4.26).

Figure 4.26
Views on Current Tariff Rate



Moreover, a significant 77% of subscribers continued to consider WAJ's current rates as 'high' to 'very high'; and 17% as fair. The remaining 6% had no particular views on the issue. All subscribers have noticed increases in their current bills when compared to previous bills. For some 37% of subscribers, the difference is less than JD5 per cycle; for 20% the difference is between JD5–10; for 14% the difference is between JD11–20; and for 24% the difference is between JD21–100. For the remaining 5%, the difference ranges between JD101 and 1000.

These increases are very significant for at least 40% of all non-residential subscribers. This may explain why most of them are very opposed to the current rate. Clearly, increases over JD150 per cycle may impact significantly the profitability or even the sustainability of small or medium size organizations. Increases of JD500 or more may have a similar impact on larger organizations.

Over one half of the subscribers (54%), report that they will not charge their customers extra fees to cover the expenses of the current tariff rate; about 13% will charge their customers extra fees. The remaining 33% of subscribers either do not know if they were going to charge their customers extra fees or feel the issue is not applicable to them. Even with the current increase in the tariff rate, for some 57% of subscribers, the rate remains more affordable than buying tanker water; whereas for 18% it is now more affordable to buy tanker water. Some 24% consider buying tanker water more affordable depending on the season.

For large entities, buying large amounts of tanker water is cost-effective: the larger the amount, the lower is the price. Tanker tankers use a regressive tariff system which allows large consumers to save money on their purchases. In many cases, tanker water is less expensive than WAJ's; a convenience which may deprive WAJ of significant revenues.

7.3 Subscribers' Perceptions of WAJ's Utilization of Additional Revenues

It is worth noting that 72% of respondents think that WAJ's revenues will be enhanced because of the current tariff system; 3% do not think so; and 25% don't really know. When asked about what they think WAJ will be using the additional revenues for, subscribers frequently replied: "to explore new resources", "to repair networks", "build new dams", "to cover its financial deficit", "to buy new treatment plants", "to increase salaries", "to cover its operational and maintenance costs" and "to cover its capital costs", in this order of importance. It is interesting to note that some 28% of respondents don't really

have any idea of what WAJ may do with the additional revenues.

Some respondents have high expectations of the additional revenues generated from the current tariff system. They believe that WAJ will put these new financial resources to good use. As a result of new revenues, the most anticipated positive results include improved water quality (34% of subscribers), more frequent water supply (25%) and better distribution of water and exploitation of new resources (21%). Repair of pipes, adequate responsiveness to complaints and training of employees followed, with 8%, 3% and 2% respectively. Conversely, 42% of subscribers have no hope of any improvements and do not expect anything in return.

7.4 Observations and Implications

While awareness of the current tariff rate is 'unexpectedly' very low among educational, religious, government and production entities, support for the rate is alarmingly low across the board. Receptivity to the current system is low and subscribers' attitudes are negative. Clearly, entities involved in this study disagree with WAJ's tariff rate policies and significantly oppose any additional water costs. Although several subscribers believe WAJ is going to put the additional revenues to good use, most of them have no concern with this issue.

Reliance on tanker water is increasing among medium and high level consumers. Seemingly, tanker tankers are taking advantage of the current tariff by providing important opportunities to large businesses and industries.

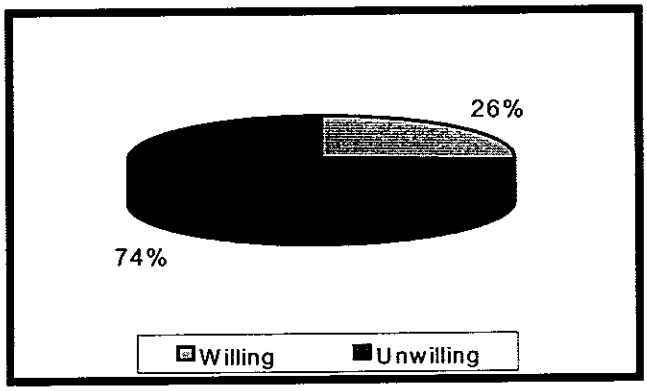
Subscribers' attitudes, perceptions and views of the current tariff system are predictive of significant opposition to any future tariff rate increases. The mood is not supportive; it is most certainly indicative of negative reactions to any possible higher rates. Additional revenues which may be used to cover WAJ's improvements of its services do not represent a justification for such increases. Opposition by all subscribers to WAJ on this issue is extremely strong.

8. Willingness and Ability to Pay More for Higher Tariff Rates

8.1 Willingness and Ability to Pay More

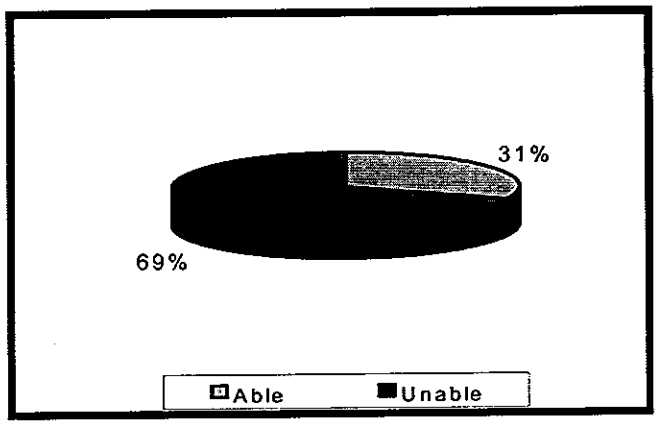
Only 26% are willing to pay more if the rate increased (Figure 4.27). Entities which did not consider this question relevant are government agencies.

Figure 4.27
Willingness to Pay More



Even if willing, 69% of the subscribers in the survey are unable to pay more (Figure 4.28).

Figure 4.28
Ability to Pay More



8.1.1 Willingness and Ability to Pay More According to Type of Sector

Where applicable, Figs. 4.29 and 4.30 show that none of the subscribers in the religious category are either willing or able to pay more for any future tariff increases. The banking industry, on the other hand, is the most willing (60% of subscribers are willing) and able (80%) to pay more. Predictably, however, willingness and ability levels are quite low for most sectors.

Figure 4.29
Willingness to Pay More According to Type of Sector

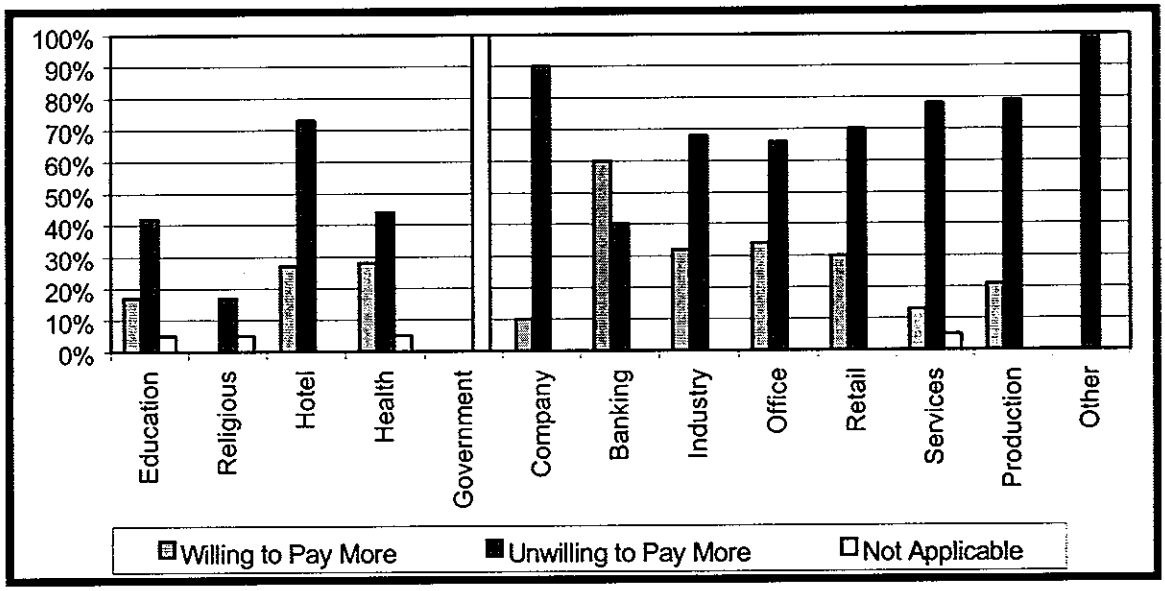
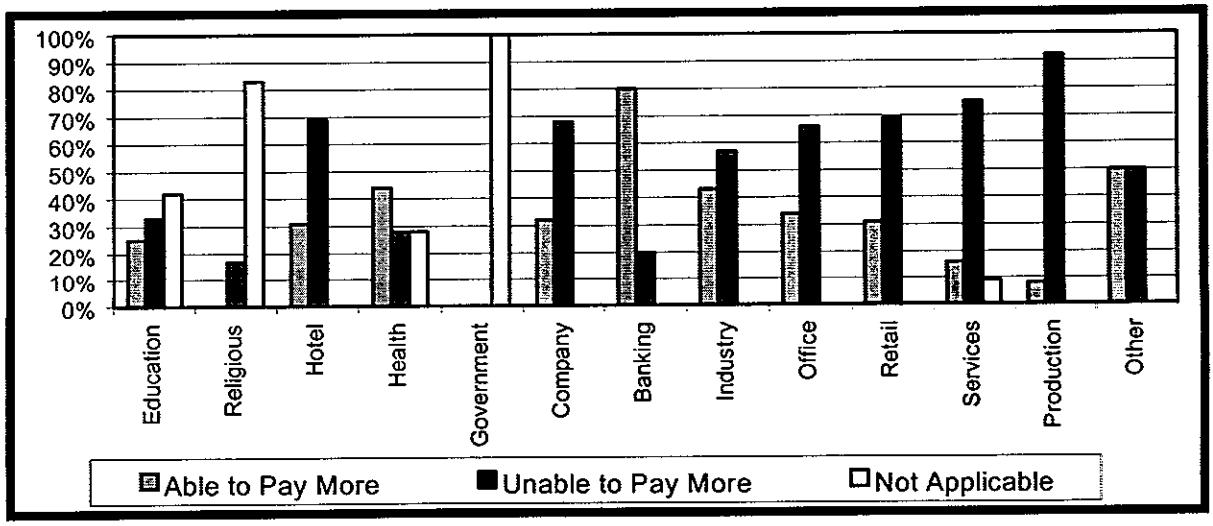


Figure 4.30
Ability to Pay More According to Type of Sector



8.1.2 Willingness and Ability to Pay More According to Consumption Levels

Figures 4.31 and 4.32 show that, when compared to other subscribers, those who consume the least (</= 10 cubic meters) are the most willing to pay more for increased future tariff rates (only 35% of subscribers in this category are willing). In general, however, it is the low-medium to high level consumers (201 and 800 cubic meters) who are most able to pay more for increased rates (42% of subscribers in these categories). The majority of subscribers who are unwilling and unable to pay more in the future consume between 61 and 80 cubic meters (13% and 17% are willing and able respectively). Entities in this category are relatively small and have very meager

resources.

Figure 4.31
Willingness to Pay More According to Consumption Levels

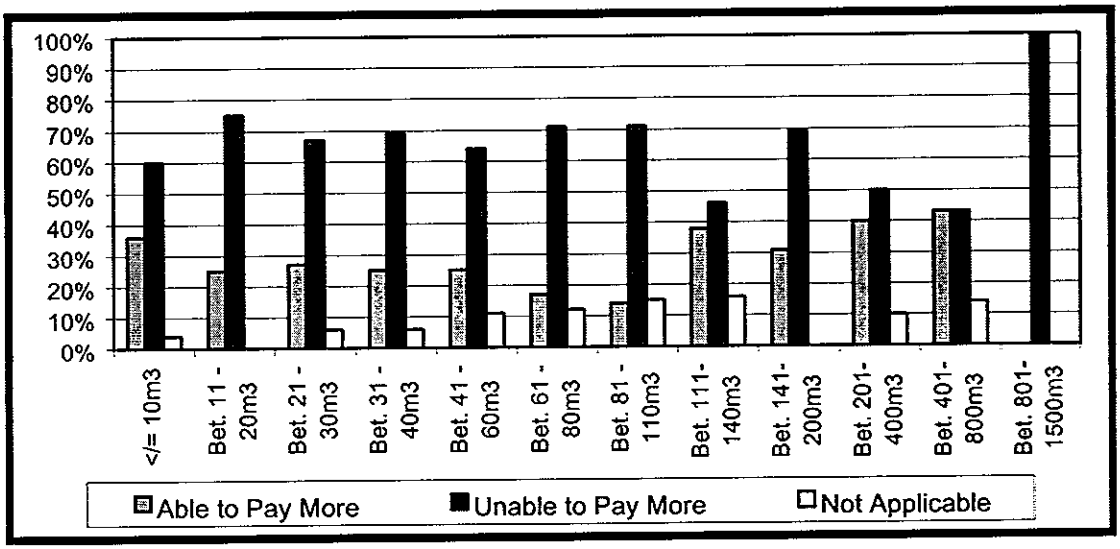
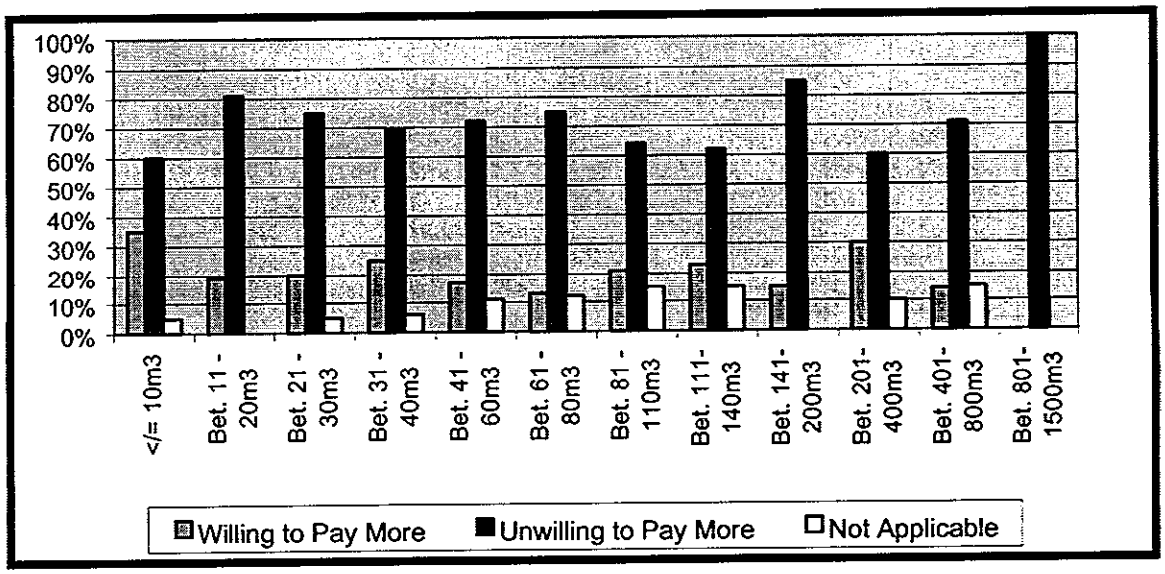


Figure 4.32
Ability to Pay More According to Consumption Levels



In essence, willingness and ability to pay more by most consumers is discouraging. Large consumers (801 and 1500 cubic meters), for example, are neither willing nor able.

8.1.3 Willingness and Ability to Pay More According to Geographical Location

Geographical distribution of participants finds those most willing to pay more in the future to be businesses operating in the Center of Amman; whereas East Amman features businesses most able (but not necessarily willing) to pay more in the future (Figures 4.33 and 4.34). Entities in the Center are usually small offices, banks and the like. Rate increases may not affect them in any significant way.

Figure 4.33
Willingness to Pay More According to Geographical Location

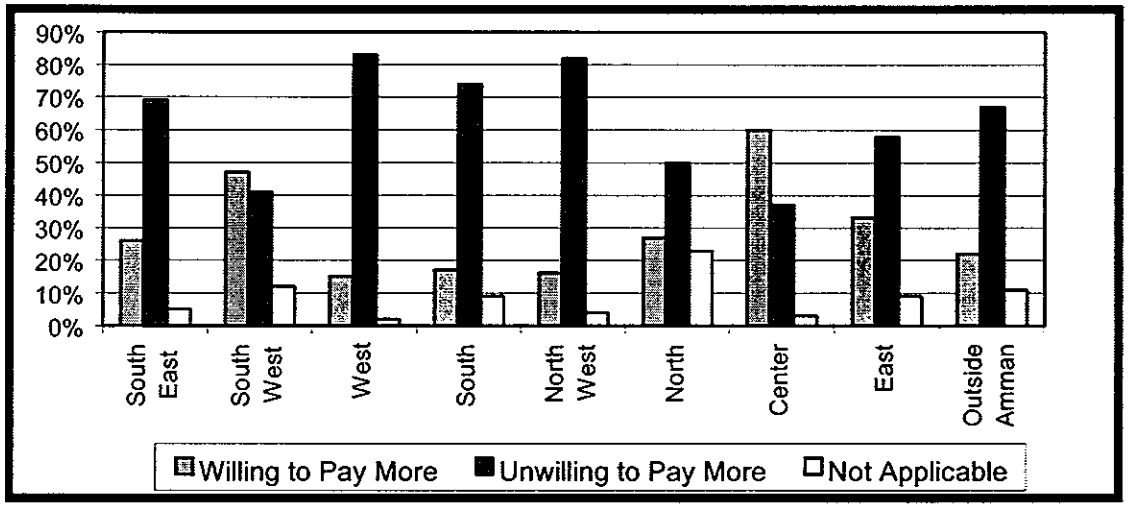
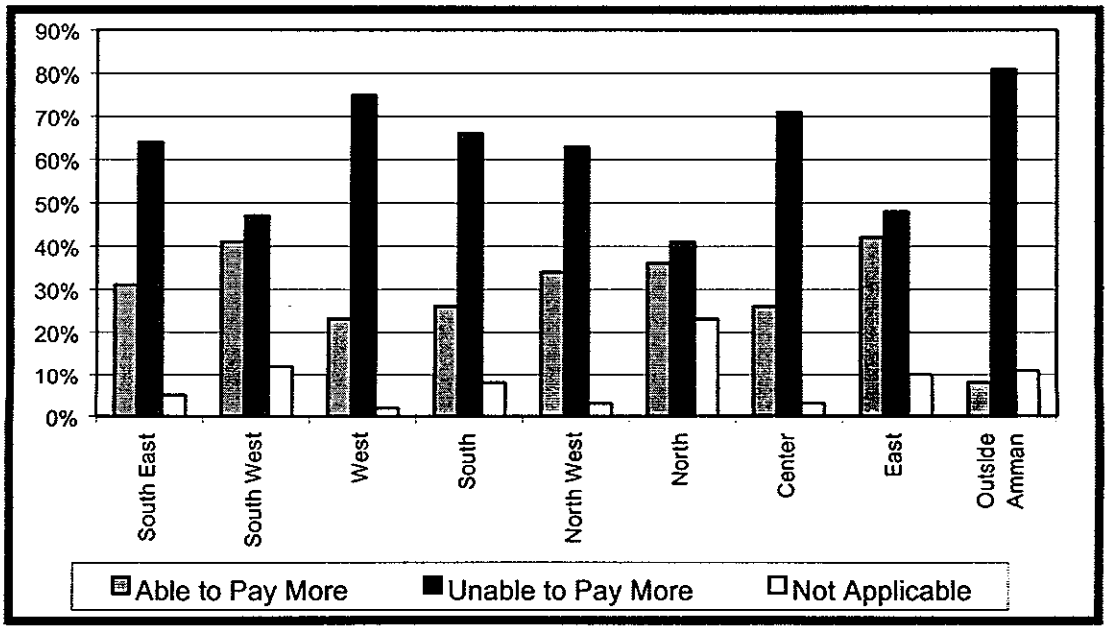


Figure 4.34
Ability to Pay More According to Geographical Location



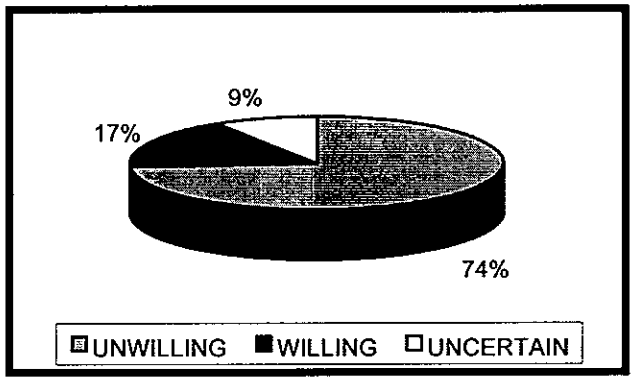
Most entities which are able to pay more are entities which rely little on water such as banks, offices and organizations which need not recover any rate increases from their customers. For other entities such as car wash stations, affordability is a function of cost recovery.

8.2 Will Subscribers Change Their Minds and Become Willing to Pay More if WAJ's Services Are Improved?

Most subscribers are unwilling to pay more in the future for any of WAJ's improved services. Out of the sample population, only 377 have responded to the issue of willingness to pay more for improved services. Of these 377 respondents, an average of

74% refuse to pay more for such services, an average of 17% are willing to pay more, and 9% are uncertain and need more time to think the matter through (Figure 4.35).

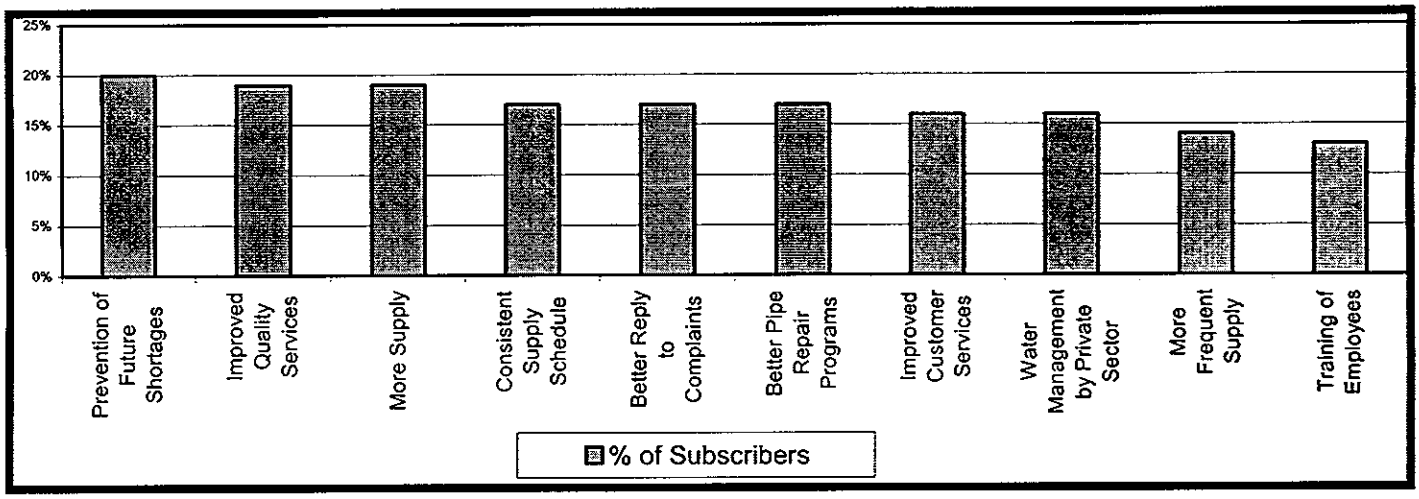
Figure 4.35
Willingness to Pay More for Improved Services



Subscribers have rank ordered the reasons which prompt them to be unwilling to pay more for improved services in the following way: 58% consider water an inherent right and that entities should not be charged for it; 44% are financially incapable of supporting additional expenses; 36% consider their water supply to be adequate and would not require more water; 16% mistrust the Authority; 11% do not support any measures by WAJ; and 7% consider the price to be high as it is.

Figure 4.36 shows that, regardless of the specific type of service which WAJ might offer or improve, subscribers' responses remain consistent with their basic position: They are unwilling to pay more for such improvements. Among the few who are willing, however, the highest degree of willingness is reported for prevention of future shortages (20% of subscribers supported a higher rate), improved water quality services and more supply (19% each), consistent water supply schedules, better responses by WAJ to complaints and better pipe repair programs (17% each), improved customer services and water management by a private company (16% each), more frequent billing (14%), and training of employees (13%).

Figure 4.36
Subscribers are Willing to Pay More for Improved Services



Observations and Implications

Unlike residential subscribers, a priority for entities is not quality but supply shortages. Supply disruptions are a threat to most non-residential entities. Like residential subscribers, however, these entities believe that water should be an inherent right for all and that the government should not charge for it. Most entities refuse to pay more regardless of the improvements that WAJ may provide.

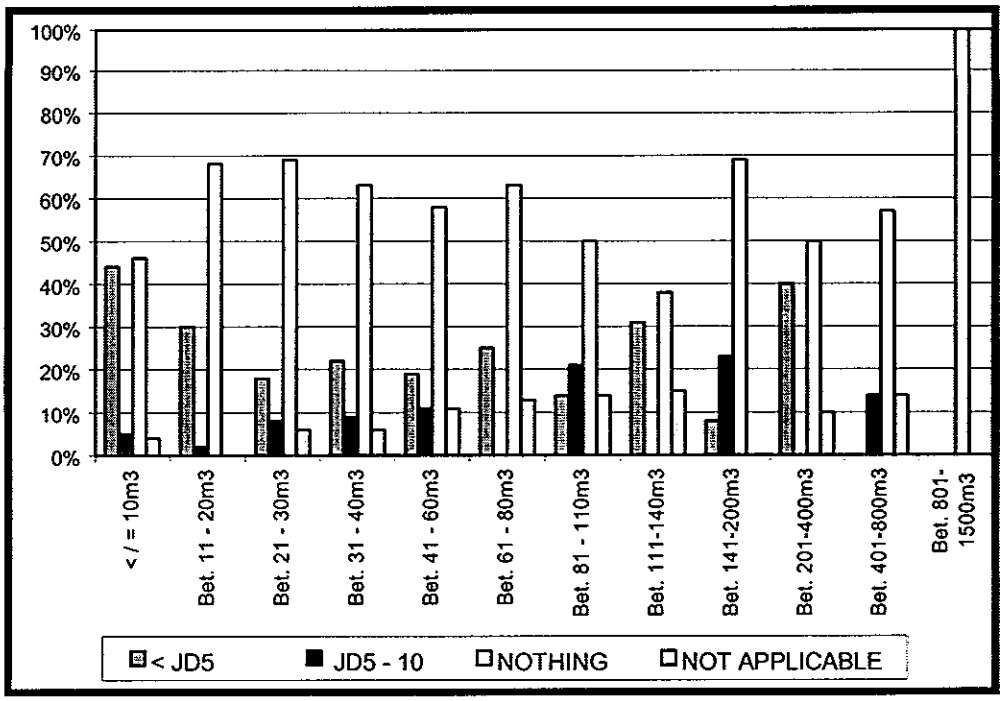
8.3 Hypothetically, How Much More are Subscribers Able to Pay for Improved Services?

Subscribers' notional ability to pay higher rates is not encouraging. About 32% of the 377 respondents are "hypothetically" able to pay an additional amount not exceeding JD5 for each billing cycle. About 7% are able to pay JD5-10 per billing cycle, and 61% are unable to pay anything.

Some 44% of subscribers who consume </=10 cubic meters are able to pay <JD5 for each billing cycle; similarly, 40% of subscribers who consume between 201 and 400 cubic meters are able to pay <JD5 for each billing cycle; and 31% of those who consume between 111 and 140 cubic meters are able to pay <JD5 for each billing cycle (Figure 4.37). In general, therefore, WAJ can expect from this low level of consumers about JD5 per cycle for improved services.

These increases as proposed by entities are negligible. Most medium to large organizations which consume most of the water are not willing to pay anything for any improved services. The message is clear: 'Don't charge us more; improved services are our right'.

Figure 4.37
Amount Subscribers are Able to Pay According to Consumption Levels



8.4 What Will Subscribers do if WAJ Went Ahead with Tariff Rate Increases?

Generally, subscribers are not receptive to higher tariff rates. At this time, we believe that WAJ will find it very difficult to introduce the notion of higher tariff rates. Receptivity to such a notion is expected to be dismal if not violent. Respondents claim that they would take the following measures if their bills were increased: 34% would make deals with tankers; 33% would complain to WAJ; 32% would reduce consumption; 16% would disconnect the meter; 10% would re-allocate their budget to cover the new tariff rate; 2% would illegally connect a hose to the pipes to avoid meter reading; and 1% would tamper with the system (meter). In the event that WAJ fails to adequately address their complaints to cancel the increase, respondents would disconnect the meter (52%); make deals with tankers (43%); re-allocate the business budget to accommodate the new tariff (15%); reduce consumption (12%); tamper with the meter (2%); and illegally connect the hose to the pipes (2%).

Most of these reactions are negative and threatening. Entities will 'migrate' to private suppliers and use methods which will 'beat' WAJ's tariff rate system.

8.5 Observations and Implications

There is no doubt that WAJ will have to significantly improve its relationship with its non-residential clients before it considers any future tariff rate increases. The current mood is overwhelmingly unsupportive to future increases and most subscribers indicate inability to pay more. Like in the case of residential subscribers, WAJ will have to put in place an action plan which would re-vitalize its image and help build a solid base of consumer trust in its policies and procedures. WAJ has to start at the beginning and take nothing for 'granted'.

With non-residential entities, WAJ has the added challenge of assisting them maintain their economic viability. Without adequate quality, water supplies and an affordable tariff rate, some of these entities are apt to loose their foothold in the market place.

9. Communication Medium and Method

When asked about what would be the best communication medium that should be utilized by WAJ, almost all respondents, (94%), agree that television is the best medium for providing information about the current tariff system as well as other issues. Half of the respondents rank newspaper publications as their second choice, followed by the radio (33%). A few (7%), have suggested leaflets.

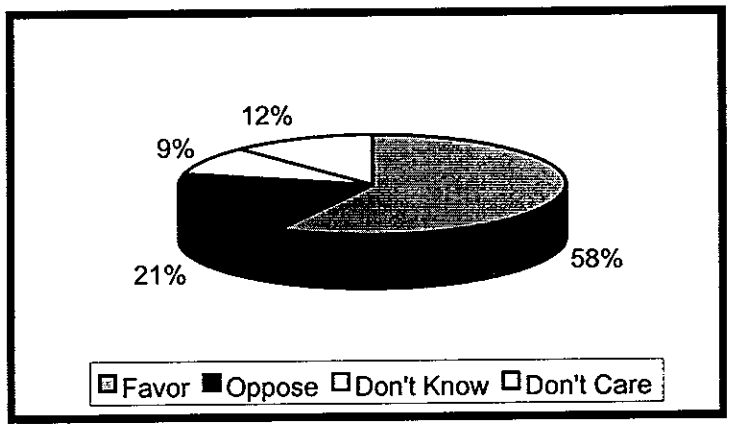
About 60% of subscribers cite televised discussion panels with officials as the most effective information technique/method to review the current tariff system and other water related issues; 48% consider articles in newspapers and magazines as the next best method; 41% refer to commercial ads as the third best method; and 37% consider verbal and written public statements by officials as the fourth best approach.

10. Private Sector Involvement

10.1 Views on Private Sector Participation

Surprisingly, more than half of the respondents, (57%), are unfamiliar with government plans to involve the private sector in the operation and maintenance of water in Amman. Some one third of the respondents (34%), are aware of government plans to privatize WAJ, and some 9% are not sure of what they actually know. After explaining private sector participation to the respondents, 58% appeared to favor the involvement of the private sector, whereas 21% showed opposition to it (Figure 4.38). About 9% did not have any opinions while 12% did not really care.

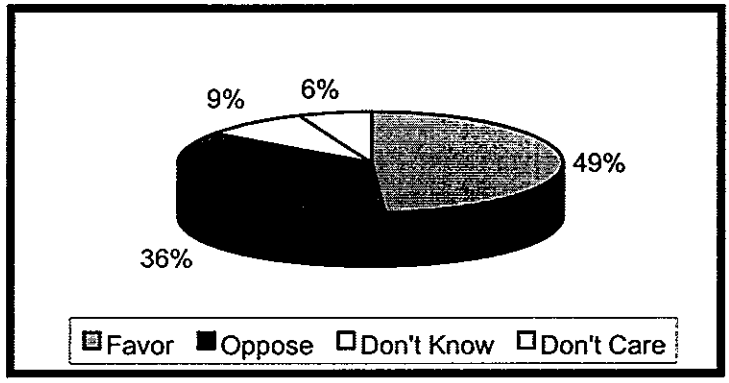
Figure 4.38
Views on Private Sector Participation



Views on who should participate in the private sector participation process varied: 40% of respondents prefer a Jordanian company for the job; 32% prefer a joint venture partnership between Jordanian and foreign companies; and some 16% prefer a joint venture partnership between Jordanian and Arab companies.

Like residential subscribers, a large number of entities (49%) are in favor of the involvement of a foreign company in some form or another in order to operate and maintain the water system in Jordan. According to them, a foreign company is more experienced and technologically advanced as well as able to provide enhanced water quality and improved services. For the 36% who are against foreign involvement, their fear is that a foreign company may control a very critical national resource and as such will undoubtedly increase tariff rates. These subscribers also believe that skilled Jordanian workers should be given the opportunity to do the work because they have a proven track record in the water service domain (Figure 4.39).

Figure 4.39
Management Contracting Through a Foreign Company



10.2 Observations and Implications

Privatization is generally supported by the non-residential segment. Those opposed are concerned that a foreign company will take charge of an important resource in Jordan and that such an intervention is not healthy for the country. A Jordanian and/or Arab company which is supported, in one form or another, by a foreign company can be the ideal solution if the private sector were to take charge of WAJ.
No matter which type of private operator is selected, WAJ should fully communicate to its subscribers the advantages and benefits of such an operator. It should also provide adequate assurances that the Authority's active presence will continue, regardless of which operator is in charge of the day-to-day routine.

11. Summer 1998 Water Crisis

11.1 Attitudes Towards the Recent Crisis

For 59% of the respondents, the crisis did not have any serious effect on their businesses. However, all respondents had views and opinions of the causes that have led to the crisis. Given that polluted water from the source was the main cause of the recent crisis (69% of subscribers' views), some participants (45%) blamed WAJ for poor performance and negligence. Others (41%), considered the agreement between Israel and Jordan as unsound; to them, this agreement was the immediate cause of the problem. Contrary to some expectations, however, the majority of participants, 98%, continued to use WAJ's water during the crisis along with, of course, other supplementary resources. Interestingly enough, 73% of the entire target population did nothing to treat WAJ's water. However, 13% of respondents boiled WAJ's water and another 13% filtered it. Respondents complained that resorting to these measures forced them to incur extra expenses; a situation which was not conducive to business development.
During the crisis, respondents utilized various measures to address the disrupted supply and poor quality of water. Some, (48%), bought tanker water, while others (23%), bought bottled water. Of those who bought bottled water, 40% continued to do so even after the crisis was over.

Most, 65% of respondents, believe that the crisis is over. However, 17% disagree with this notion and insist that the crisis may continue on and off. Moreover, only 38% think that

the crisis will recur sometime in the future, as opposed to 44% who disagree and think that it may not happen again. For 44% of the respondents, the belief is strong that the crisis could have been avoided if a private operator were in charge. In contrast, some 25% of the respondents disagree and believe that a private operator could not have prevented the problem from occurring. However, some 39%, as opposed to 34% of respondents, who say that the crisis in itself does not justify the take-over of the water management function by a private operator.

11.2 Observations and Implications

Fears of the crisis are indicative of a shaky consumer confidence in WAJ's preparedness to address future problems. Most non-residential consumers are supportive of a private operator despite their concern of a resultant tariff hike. Jordan's experience with the privatization process has been positive. There is little doubt, however, that almost all entities continue to prefer to see WAJ present in the provision of water services.

Chapter 5
Conclusions and Recommendations

The cost of water services is of great importance to customers, and the majority of subscribers would strongly oppose any tariff increases. This opposition pervades Greater Amman no matter the residential or work area, income, level of water consumption. WAJ or the private sector operator will need to make a concerted effort to change subscribers' negative perceptions about water services before tariff increases can be implemented.

At the same time, there were indications that some residential respondants are willing to pay more to water. However, tariff increases would have to be directly linked to the rehabilitation and modernization of Greater Amman's networks and the improvement of customer services. While these are a costly and demanding efforts that require time, material, and human resources, they are unavoidable. Supply disruptions, pipe leakages, and the quality of water were regularly singled out by customers as areas requiring improvement. As subscribers become aware of these improvements, WAJ is likely to secure their support. This approach has been used by water utilities elsewhere with noticeable success.

The results of the focus groups and surveys also indicated that WAJ's current major initiative to transfer management of the Greater Amman network to a private operator requires a carefully orchestrated public relations campaign. The benefits of private sector participation must be clearly communicated to build a solid base of support among subscribers. The public will also need to be assured of WAJ's continuing involvement and its intention to resolve their dissatisfaction with water services. The transition of management responsibilities from WAJ to a private company should be transparent and sensitive to subscribers' concerns.

1. Conclusions

1.1 Overall Conclusions

1. The public has translated its awareness of Jordan's water shortages into water conservation behavior that is apparent in every aspect of their daily routine. Water shortages are "here to stay," and people have suggested that WAJ should play an active role in expanding water conservation measures.

2. Subscribers do not believe that WAJ is responsible for water shortages, but they do blame the Authority for its inability to assure a reliable and consistent delivery schedule which is free of disruptions.

3. A satisfactory "continuous" supply for residential subscribers means at least twenty uninterrupted hours delivery two or three days per week with adequate water pressure. For non-residential entities, the currently designated schedule is sufficient.

4. Subscribers are relatively satisfied with water quality. Modest attention by WAJ to water taste, purity, and overall potability may significantly increase its support base among subscribers.

5. Subscribers believe that WAJ is deliberately negligent and uncaring. They see this attitude expressed in WAJ's poor delivery of customer services. WAJ's unresponsiveness to water supply disruptions and billing/meter discrepancies has diminished its image in the minds of consumers.

6. Despite their general disapproval of WAJ's delivery practices, customers remain faithful to the Authority. If WAJ were to improve supply and quality it would be the exclusive supplier of water for nearly all customers. In that event, the tanker and bottle water markets would largely disappear, with the exception of the largest users and isolated segments of the population.

7. One of WAJ's priorities is to deal convincingly with those who can afford current tariffs and future increases but are unwillingness to pay more.

8. Most subscribers say they are opposed to the current tariff, although they not know the current structure, and are unwilling and unable to pay more in the future. This attitude pervades all consumption and income groups and is found among residential and non-residential subscribers. The general lack of support for future tariff increases can be explained in two ways: (a) tariff increases have not historically yielded any tangible improvements in WAJ's services and in many cases services have actually deteriorated, and (b) the majority of subscribers cannot afford to pay more.

9. Most subscribers support private sector participation, if it leads to improved services without tariff increases which will affect their cost of living.

10. Communication between WAJ and its customers needs attention and improvement. Subscribers do not understand WAJ's plans, procedures, and constraints. They also believe that WAJ lacks the resolve to communicate in a way that will reduce the misunderstandings with its customers.

11. Most subscribers do not understand the details of the current tariff system although that knowledge would assist WAJ in making tariff adjustments in the future.

12. On average, residential subscribers' willingness and ability to pay for a higher tariff does not exceed JD 3 per billing cycle. Non-residential willingness and ability does not exceed JD 5. For residential subscribers, although JD 3 or even 5 appears to be an insignificant amount, for many users it would mean a doubling of their present bill.

13. Residential and non-residential subscribers are not willing to pay more for water if network supplies and services improve. This suggests that supplies and services already meet adequate standards so that their improvement does not warrant an increased tariff or that people are not willing to pay more for the improvements.

14. The current quarterly billing system is aproved of by the majority of subscribers. Most pay collectors directly, but many also like to pay through banks.

15. Subscribers rate WAJ low on its responsiveness to complaints about leakages, billing and meter discrepancies, and supply disruptions. Unless corrected, WAJ will continue to face strong opposition from subscribers.

16. Almost all subscribers own storage tanks which provide reserves for three to four days. The ownership of tanks has contributed significantly to subscribers' ability to cope with water shortages and supply disruptions.

17. Tanker and bottled water are used by a small 'following' of customers, but most of them are not loyal and would shift entirely to network water if it could meet their needs and standards.

18. Televised panel discussions which involve WAJ officials and experts are the most effective communication medium for subscribers.

1.2 Residential Conclusions

1. Upper middle and high income subscribers, who are the largest consumers and reside in West and Northwest Amman, are most dissatisfied with WAJ's water supply procedures, quality standards, and customer services and the most opposed to the current tariffs.

2. Residents of Central Amman, who are middle and low income subscribers, are the most satisfied with their water supply and WAJ's customer services. They are less satisfied with water quality and pressure.

3. Most subscribers are generally dissatisfied with WAJ's maintenance services, complaining about pipe leakages, billing/meter reading discrepancies, and supply disruptions.

4. Most subscribers do not "bother" to complain about billing discrepancies.

5. Among the many subscribers who are able to pay more for water, a significant number are opposed. Upper middle and high income earners are among the most unwilling and unable, since inability is not a reflection of real worth but a ceiling on how far people will consider paying for services.

1. 3 Non-Residential Conclusions

1. Schools, hotels, and factories are the least satisfied clients of WAJ concerning frequency and duration of water deliveries.

2. Among those who are very unhappy with WAJ's inconsistent water supply schedule are factories which consume 141-400 cubic meters and 801-1500 cubic meters; slaughterhouses, car wash/petrol stations, banks and mosques which consume 201-300 cubic meters; and farms/country houses, coffee shops/restaurants and hotels which consume 301-400 cubic meters.

3. Most entities which are unhappy with the frequency and duration of water supply.

4. Unhappiness with bill discrepancies is highest among entities which are situated in the southeast, east and northwest, particularly educational, industrial, and health institutions.

5. Meter reading practices by WAJ's collectors are mainly contested by entities which consume 61-80 cubic meters and 141-400 cubic meters. The first group (61-80 cubic meters) is largely retail shops, offices/companies, repair shops, 2 and 3 star hotels, coffee shops, mosques, primary schools, and medical centers. The second group (141-400 cubic meters) consists mainly of small to medium size factories, farms, restaurants and the slaughterhouse. These entities are situated throughout Greater Amman, but many are located in the west and outside Amman.

6. Government agencies, banks, and companies which are generally situated in the northwest and west of Amman are least pleased with the quality of pipes.

7. Non-residential subscribers rate WAJ low for responsiveness to their complaints about supply disruptions. Those most negative were health, banking, industrial, and service entities in the east, southeast and northwest of Amman.

8. In some cases, willingness to pay depends on the ability of the entity to pass the additional costs on to customers without loosing their business.

9. The few entities that are willing to pay more are mostly situated in the center of Amman, followed by the southwest and east. Of the few which have indicated an ability to pay, more are located in the east, southwest and north.

2. Recommendations on Customer Relations and Public Awareness

This willingness and ability to pay study reveals an interesting dilemma for the Water Authority of Jordan: both residential and non-residential subscribers say they are frustrated and unhappy with WAJ's operations but the vast majority are not willing to pay more for better services. When higher tariffs are tied to offers of a variety of improvements, willingness decreases. This is an surprising conclusion since large water utilities elsewhere have successfully linked tariff increases to tangible service improvements with little resistance from customers.

Subscribers appear to be more willing to accept existing conditions, despite their unhappiness with supplies and services than pay more for what it would cost to improve them. An explanation may be that subscribers' budgets are already stretched to the limit, and they have no more disposal income. While this is true for many lower income earners, it is more likely that they do not believe that tariff increases will actually result in improved services, fearing

they will pay more and get the same or less. The issue becomes then, if WAJ is seriously considering restructuring its water tariffs to increase revenues, how can it proceed without further alienting its customers?

The widespread indifference of subscribers to WAJ's constraints and their absence of sympathy for its challenges suggest that WAJ needs to communicate quickly and forthrightly with them. The study provided clear indications of customer attitudes. It is less revealing about the actions that WAJ must take to gain some measure of customer confidence. Therefore, the most supportable recommendations are those which use the study's results as the basis for further exploration and design of customer relations and public awareness programs. WAJ is already attempting to make the headquarters building more user-friendly to subscribers with new waiting rooms and colorful and visible signs.

In this changing atmosphere, it is suggested that WAJ consider the following:

1. Identify strategies to develop and institutionalize customer service training programs in the Authority which instill in employees attitudes and behaviors to deal promptly and respectfully with customers.

2. Determine the target participant audience for the training courses.

3. Develop an approach and content for a public relations campaign which promotes and communicates messages. Some options include:

    - "Town meetings' which are televised from a variety of locations (urban, suburban, rural) throughout the country.

    - Documentaries which allow consumers access to WAJ's operations and plans and which demonstrate the various facets of the water supply and quality control operations.

    - Televised case studies which focus on different types of problems caused by consumers' negligence or lack of knowledge, and others.

    - A newsletter or other materials included with the bill, which provides relevant information to customers.

    - Educational curricula for schools about water resources, uses and practices, quality control, and costs.

    - Educational seminars, courses and group discussions.

ANNEXES

ANNEX A
STUDY METHODOLOGY

1. Qualitative Assessment Phase

Qualitative assessment of subscribers' views, attitudes and opinions was garnered through focus group discussions. The focus group methodology was adopted in moderating the discussions and in reporting the findings. The groups were selected from the target areas in Greater Amman. Focus group participants included males and females from residential, commercial and industrial segments of the target population. These participants were recruited from various geographical districts in Amman, as well as from Amman's suburbia. Fourteen focus groups were conducted; eight from the residential sector and six from the non-residential. Each focus group included approximately 8-10 participants.

1.1 Residential Focus Groups

1.1.1 Parameters

The recruitment process of focus group participants utilized the following parameters:

- Representation of different districts/zones
- All dwelling types were represented
- Size of dwellings (according to billing amount)
- Income level
- Educational level
- Gender

1.1.2 Focus Groups' Participants' Profile

Residential focus group participants included:

- Residents of single homes (detached, single main entrance-owners and paying tenants) of varying sizes located in Greater Amman.
- Residents of apartments (owners and tenants) from different geographical areas of Greater Amman.
- Females and males from different income levels (high, medium and low) and from varied water quantity user groups (high, medium and low).

1.1.3 Geographical Profile

All focus group participants were chosen from Greater Amman, based on the city's districts:

- Greater Amman: 4 groups representing all districts (or zones)
- Suburban: 2 groups (Sahab, Akoumieh, Qwiesmieh)
- Rural: 2 groups (Jizeh, Khashafieh/Sahab)

Table A.1
Geographical Distribution Of Focus Groups

Zone	District
1- Abdali	Abdali
2- Abdoun	Zahran
3- Al Hashami	Basman
4- Al Rashid	Jubeiha
5- Al Taj	Al Naser
6- Dabaybeh	Ras El Ein
7- Haddadeh	Basman
8- Hamzeh	Marka
9- Jebal Al Hussein	Abdali
10- Jebal Al Nathif	Ras El Ein
11- Muhajireen	Madina
12- Ras El Ein	Ras El Ein
13- Salheen	Tla'a Al Ali/ Khilda/Um Summaq
14- Shmeisani	Abdali
15- Sweifieh	Wadi Seir
16- Tla'a Al Ali	Tla'a Al Ali/Khilda/Um Summaq
17- Um Summaq	Tla'a Al Ali/khilda/Um Summaq
18- Um Uthaina	Zahran
19- Wasfi Al Tal Street	Tla'a Al Ali/Khilda/Um Summaq
20- Bayader Wadi Seir	Wadi Seir

1.1.4 Focus Groups' Structure

In structuring the focus groups, the following was done:

- Mixed gender discussion groups were achieved, despite the difficulty encountered in the recruitment process;
- Varying socioeconomic strata were mixed in the broadest way; and
- Representation of age cohorts was attained in most focus groups.

The following table sums up the profile of all focus groups:

Table A.2
Profile Of Focus Groups

Group	Area	Gender	Type of Dwelling	Zones	Household size	Socioeconomic groupings
Group 1	Greater Amman	Male & Female	40% Single Unit; 60% Apartment	9, 14, 17, 18	25% Low; 75% Medium	ABC1
Group 2	Greater Amman	Male & Female	Apartment	3,5,7,8,16, 20	25% Low; 75% Medium	C2DE
Group 3	Greater Amman	Male & Female	40% Single Unit; 60% Apartment	2,4,9,10,13 ,15,17,9	75%Medium; 25% High	ABC1
Group 4	Greater Amman	Male & Female	Apartment	1,6,8,9,11, 12,15,16	40% Low; 40%Medium; 20% High	C2DE
Group 5	Suburban	Male & Female	Single Unit	Akoumieh, Qweismieh suburbs	50% Low; 50% Medium	C1C2
Group 6	Suburban	Male & Female	80% Single Unit, 20% Apartment	Sahab suburb	30%Low; 50%Medium 20% High	C1C2
Group 7	Rural	Male	Single Unit	Jizeh (rural)	40%Low; 50%Medium; 10% High	C2DE
Group 8	Rural	Female	Single Unit	Khashafie/ Sahab (rural)	40% Low; 50%Medium; 10% High	C2DE

1.1.5 Billing Structure

Billing was defined by WAJ/Forward as follows:

- Low billing household: up to 40 m^3
- Medium billing household: 41-129 m^3
- High billing household: more than 130 m^3

1.1.6 Recruitment and Screening of Focus Group Participants

Based on the parameters presented above, focus group participants were selected from a representative set of zones/towns/villages. Participants were selected from twenty zones representing Greater Amman and four other towns/villages. Zone selection from the geographical target area ensured area representation.

Residents of each selected area/zone, who were known to recruiters, served as the initial contact pool. With their help, contacts were made with neighbors, friends and relatives, living in the selected area. Based on a screening process utilizing the parameters above, participants were then selected and assigned to the various focus groups.

In brief, only every other contact in the chain was invited to participate, (e.g. Contact A not eligible, introduces to Contact B; Contact B eligible, introduces to Contact C; Contact C not eligible, introduces to Contact D; Contact D eligible, introduces to Contact E, and so on...)

1.2 Non-Residential Focus Groups

1.2.1 Groups' Constituency

Six non-residential focus group sessions were held, with approximately ten participants in each group. Participants in non-residential focus groups were selected from a list of water subscribers provided by WAJ. The list detailed subscribers' level of consumption and type of establishment they represented. These two independent variables were further subdivided: type of establishment was divided according to commercial, institutional and industrial; level of consumption was divided according to Low, Low/Medium, Medium/High and High usage patterns. The division was as follows:

Commercial sector:	Low:	up to 40cm^3/quarter
	Low/Medium:	41-130 cm^3/quarter
	Medium/High:	131-270 cm^3/quarter
	High:	>271cm^3/quarter
Industrial sector:	Low/Medium:	up to 170cm^3/quarter
	Medium/High – High:	170-600cm^3/quarter
Institutional sector:	Low:	up to 60cm^3/quarter
	Low/Medium:	61-170cm^3/quarter
	Medium/High:	171-320cm^3/quarter
	High:	>321cm^3/quarter

Two discussion groups were held in the Amra Hotel and the remaining four took place at the Market Research Organization's offices.

2. Quantitative Assessment Phase

A baseline survey was conducted among a representative sample of subscribers in Greater Amman.

2.1 Residential Subscribers

2.1.1 Pilot Study

Fieldwork for the pilot study was conducted in January 1999. A total of 49 interviews were conducted in three areas in Amman. These were Ras El Ein, Abdali and Yarmouk. Following the pilot study, an additional training session of two days was conducted for the interviewers and field supervisors. The findings of the pilot study confirmed the need for additional sampling lists from WAJ; since the original two lists supplied by WAJ did not include enough names with clear addresses. Two additional lists were obtained from WAJ, each having the names and addresses of 1000 subscribers.

2.1.2 Sampling

A comprehensive sampling frame was developed and used to select sample units. MPRC selected a proportionately stratified representative sample of 1000 subscribers (For more details, see appendix A). This sample was based on a target population of (N=247,633 residents). Sampling was stratified by areas (n=26) and sub-areas (n=142). By applying n/N (1000/247633), every nth or 248th unit was selected from the sample list supplied by WAJ. The list included the specified collection area, number and name of subscribers as well as their average water consumption levels for the last 8 cycles. This list was complemented by an Operation Management Support (OMS) list providing the selected subscribers' addresses and telephone numbers. WAJ and OMS lists were merged to provide a comprehensive sample.

Sampling Distribution

Twenty-six main areas were covered in the sample. The sample was representative of the number of subscribers residing in each area. The sample structure was as follows:

Table A.3
Sampling Distribution of Subscribers by Geographical Location

	Area	Location	Universe (%)	Sample (%)
1	Bader	South/West	5	6
2	Zahran	West	6	6
3	Abdali	North/West	8	8
4	Tareq	North	3	2
5	Yarmouk	South	6	5
6	Quweismeh	South/East	5	5
7	Khreibet El Souk-Jawa-Yadoudeh	South	3	2
8	Mqabalein/Bnayat/Um Qseir	South/West	2	2
9	Ras El Ein	South	4	4
10	Madineh	Center	2	2
11	Basman	North	11	12
12	Marka	East	4	5
13	Nasser	South/East	8	8
14	Wadi El Seir	West	8	8
15	Bader El Jadideh	West	0.3	0.3
16	Sweileh	North/West	3	4

17	Tla'a El Ali/Khilda/Um Summmaq	North/West	8	8
18	Jubeihah	North/West	5	5
19	Shafa Badran	North	1	1
20	Abu Nseir	North	2	1
21	Na'our	Outside Amman West	1	1
22	Sahab	Outside Amman South/East	1	1
23	Muwaqar	Outside Amman East	1	1
24	Jizeh	Outside Amman South	1	1
25	Um Basateen	Outside Amman West	1	1
26	Marj El Hamam	Outside Amman West	2	2

Consumption Levels

Table A. 4
Sampling Distribution By Consumption Levels

Consumption	Universe (%)	Sample (%)
0-10m^3	14	15.1
11-20 m^3	17	14.1
21-30 m^3	19	19.5
31-40 m^3	15	16.5
41-50 m^3	11	10.9
51-60 m^3	7	8.9
61-70 m^3	5	4.6
71-80 m^3	3	3.3
81-90 m^3	2	2.4
91-130 m^3	4	3.3
More than 131 m^3	2.9	1.4

2.1.3 Instrument

The **Interview Schedule** was constructed on the basis of information received from focus group findings as well as in-depth discussions with WAJ officials. The instrument consisted of 178 questions divided into thirteen sections plus a section on demographics. It covered the following:

- Screening
- Sewerage Network Connection
- General Issues
- Water Supply
- Satisfaction with Quality and Service
- Alternative Water Supply Sources

- Storage
- Habits, Uses and Practices
- Problems
- WAJ's Billing Practices
- Current Tariff System
- Private Sector Involvement or Privatization
- Recent Crisis

2.1.4 Data Collection

Eleven interviewers were recruited and trained to collect data from the field. The training of interviewers included the refinement of their interview techniques and the instillation of a common understanding of each question in the instrument. All interviewers were requested to simulate interview situations in order to insure a common approach in the data collection process.

Each interviewer received a training manual, which included the following:

- Explanation of the new tariff system;
- Subjects covered in the survey;
- Sampling methodology; and
- Guidelines for coding the Likert scale questions.

2.1.5 Data Entry and Analysis

QPS was used in creating a database that allowed the researcher to analyze the multi-dimensional aspects of the study. Data analysis included the criteria of consumption levels, socio-economic status and geographical location of subscribers.

2.1.6 Grading of Social Class

The method of grading social class is based primarily on the occupation of the head of household. Also, education of respondent and of the head of household and place of residence are criteria used to define social grading. Weight given for each criteria is as follows:

Occupation:	45%
Education:	40%
Place of Residence:	15%

2.2 Non-Residential Subscribers

2.2.1 Pilot study

Fieldwork for the pilot test survey was conducted in February 1999. A total of 24 interviews were conducted in three areas in Amman, namely Al-Madineh, Abdali and Marka. Following the pilot test survey, additional training sessions were conducted.

As a result of the pilot test survey, few questions were modified. All changes in the instrument were reviewed and approved by WAJ and USAID. The researcher sought and received two additional samples lists from WAJ (n=400 each). This allowed the researcher to identify and locate sample units; a situation which was not possible with the original sample lists. According to WAJ's list, the total number of non-residential subscribers was 26,693. Average consumption of the last eight cycles was also recorded.

OMS provided addresses for the subscribers based on municipality divisions of the areas. None of the results obtained from the pilot test survey were admitted for analysis. All the completed questionnaires from the pilot study were discarded.

2.2.2 The sample

A similar sampling frame was developed and used to select n=401 non-residential sample units. These 401 subscribers were proportionately selected from the sampling frame. WAJ supplied a list of these subscribers specifying the collection area, name and number of subscribers, their average water consumption levels and type of business. This list was complemented by an OMS list providing subscribers' addresses and telephone numbers. WAJ's and OMS' lists were merged to provide a comprehensive sampling list.

Sampling Area

Twenty four main areas were covered in the sample. The sample structure was as follows:

Table A.5
Sample Structure

	Area	Location	Universe (%)	Sample (%)
1	Bader	South/West	2	3
2	Zahran	West	9	7
3	Abdali	North/West	14	15
4	Tareq	North	2	1
5	Yarmouk	South	5	4
6	Quweismeh	South/East	6	7
7	Khreibet El Souk-Jawa-Yadoudeh	South	2	1
8	Mqabalein/Bnayat/Um Qseir	South/West	2	1
9	Ras El Ein	South	3	3
10	Madineh	Center	12	9
11	Basman	North	4	3
12	Marka	East	7	8

13	Nasser	South/East	4	3
14	Wadi El Seir	West	10	8
15	Bader El Jadideh	West	0.1	< 1
16	Sweileh	North/West	3	3
17	Tla'a El Ali/Khilda/Um Summmaq	North/West	8	8
18	Jubeihah	North/West	4	3
19	Shafa Badran	North	0.3	1
20	Abu Nseir	North	0.1	0
21	Na'our	Outside Amman West	0.1	1
22	Sahab	Outside Amman South/East	0.1	1
23	Muwaqar	Outside Amman East	0.6	< 1
24	Jizeh	Outside Amman South	1	4
25	Um Basateen	Outside Amman West	0.1	0
26	Marj El Hamam	Outside Amman West	0.4	1
27	Um El Rasas	Outside Amman South	0.05	0

Consumption Levels

Table A.6
Sample Structure by Consumption

Consumption	Universe (%)	Sample (%)
0-10 m^3	33	34
11-20 m^3	16	16
21-30 m^3	10	13
31-40 m^3	7	8
41-60 m^3	10	9
61-80 m^3	5	6
81-110 m^3	5	3
111-140 m^3	3	3
141-200 m^3	4	3
201-300 m^3	3	1
301-400 m^3	1	1
401-600 m^3	2.3	1
601-800 m^3	0.4	1
801-1000 m^3	0.2	0.2
1001-1500 m^3	0.3	0.2
1501-2000 m^3	0.1	0
More than 2000 m^3	0.4	0

Type of Business

Table A.7
Sample Structure by Type of Business

Type of business	Universe (%)	Sample (%)
Retail shop	23	23
Office/Company	21	21
Skilled labor	6.04	7
Farm/Country house	6	5
Nursery garden	0.17	1
Hotel	4	3
Coffee shop/Restaurant	6	8
Factory	2.05	5
Beauty salon	2	2
Clinic	2	3
Mosque	2	1
Fitness center	0.4	1
Car wash/Petrol station	1.2	2
Bank	1	1
Warehouse	2	1
Government department/Directorate	3.1	1
Tile/Brick factory	1.4	1
Stone cutting factory	1	<1
Community college/School	3.1	2
Educational institute	0.4	1
Housing	1.2	1
Community center	1.2	1
Health center	0.4	1
Hospital	0.2	<1
Laboratory	0.2	<1
Public park	1	<1
Bakery	1	1
Nursery school	1	<1
Slaughterhouse	0.03	<1
Workshop	3	1
Embassy	1	
Prison/Military camps	1	
Olive press	0.01	
Theater	0.07	
University	0.02	
Public toilet	0.01	
Unions	0.10	
Cemetery	0.01	
Vegetable market	0.16	
Other	2.06	

The original list included a few premises where interviewers could not enter to conduct interviews. Replacement premises were chosen from the substitute list. In

some cases substitute subscribers were not in the same business category as was the case with the original subscribers. They did have, however, have similar consumption levels. The following represents the list of institutions, which had to be substituted by other firms:

Table A.8
Substitution List of Institutions

Type of establishment	Reasons for no entry	Substitute
Embassy	Security pass required	Factory
Embassy	Security pass required	Factory
Prison	Security pass required	Factory
Olive press	Out of season	Office
Military camps #(2)	Security pass required	Factory (n=2)
Olive press	Out of season	Factory
Ministry of Water & Irrigation/ Tankers Division		Factory

2.2.4 Nature of Business

The nature of business was defined in coordination with WAJ. All outlets that sell food and beverage were classified under 'hotel and catering'. These included hotels, restaurants, coffee shops, and refreshment shops. Services included car wash/petrol stations, skilled labor, workshops, fitness centers, printing press, and housing services. Production included farms, country houses, and nursery gardens.

In 24 cases the section on "willingness and ability to pay" in the instrument was not answered by the interviewees. These interviews were conducted in government departments, where decisions relating to payments are not taken by any one person.

2.2.5 Sector

Table A.9
Sample Structure by Sector

	Universe (%)	Sample (%)
Commercial	85	86
Industrial	5	7
Institutional	10	7

2.2.6 Instrument

The Interview Schedule was constructed on the basis of information received from focus group findings as well as in-depth discussions with WAJ officials. The instrument consisted of 154 questions divided into twelve sections, plus a section on demographics:

- Screening
- Sewerage Network Connection
- General Issues

- Water Supply
- Satisfaction with Quality and Service
- Alternative Water Supply Sources
- Storage
- Habits, Uses and Practices
- WAJ's Billing Practices
- Current Tariff System
- Private Sector Involvement
- Recent Crisis

2.2.7 Data Collection

Six interviewers were recruited and trained to undertake the field survey. The training of interviewers helped refine their interview techniques and develop their complete understanding of each question in the instrument. All interviewers were requested to simulate interview situations in order to insure a common understanding and approach in the data collection process.

Interviewers were assigned specific areas and provided with lists of names and addresses under the supervision of a field supervisor. Each field supervisor was responsible for ensuring that:

- Interviewers carried out their responsibilities adequately and on time;
- All completed Interview Schedules were edited in the field and corrections made on the spot; and
- Interviewers were visited randomly and observed while conducting the interview.

In addition, field supervision for non-residential subscribers ensured that appointments were made with all prospective sample units. Upon completion of all interviews, a random number of sample units were called to assess their views on how the interview went.

Fieldwork was conducted on the following dates: 10 April and 24 April 1999.

2.3 Data Entry and Analysis

QPS was used in creating a database that allowed the researcher to analyze the multi-dimensional aspects of the study. All data was analyzed according to types and sizes of organization, location and consumption level.

ANNEX B
DISCUSSION GUIDE FOR RESIDENTIAL FOCUS GROUPS

Introduction

Thank you for taking the time to participate in this group discussion. We are seeking your views on issues related to water. The information we gather will be used by the authorities to better understand your requirements and expectations. We are interested in your frank opinion, there are no right or wrong answers. All the relevant materials of this study will be treated confidentially. Please speak up, and only one person speak at a time.

General Discussion (10 minutes)

- In your opinion, how important is the water issue to the Jordanian population? Do you think there is a serious issue of water shortage?

- What are the main sources of water? For how long they will sustain Jordan's requirements?

- Which sector consumes more? Domestic, industrial or agricultural?

General Usage and Attitudes (30 minutes)

- How frequently do you get water? Does the frequency change seasonally? Is it enough? Do you have a reservoir? Size?

- Source of water?

- How often do you suffer shortages? What do you do during long intervals when you don't get water? (Probe: purchases of water tanks, from where, is it easy to obtain? How much does it cost, how does it compare with the water bills received from WAJ? If same, which do you choose?)
  Do you store in bathtubs, bowls...?

- What is understood by continuous water supply?

- Have you had problems like leakage and other problems? (Identify by area). Have you ever complained about water shortage? Water leakage? What do you usually complain about? Where do you go, (describe the procedure)? How long does it usually take to correct the problem? Should it be centralized?

- Do you use water for purposes other than the regular household usage? (Watering gardens, car washing...?).

- What do you think of the quality of the water? (Hard/soft, clarity, smell of chlorine...)
  Do you think it is safe? If not, why not?

- Do you use tap water for drinking? Do you ever use bottled water? When? Why? Do you ever boil tap water, or use filters? Why?

- Is your house connected to the main sewerage system or not? Do you have any problems (smell, difficulty of draining waste water....)

Awareness of Tariff Rates (15 minutes)

- How is the water consumption billed? (Probe: awareness of new tariff rates). What does the water bill include? (Connection, meter, maintenance...?)

- What was your reaction to the latest bill you have received from the Authority? When was it received? What did you do about it? (Probe: filed a complaint? What was the outcome?).

- If not aware of new tariff system, explain and ask: Why do you think the Water Authority has introduced new tariff rates? (Probe: Which do they prefer, progressive or flat?)

Expenditures (40 minutes)

- On average, how much do you consume? (Probe: how do users measure consumption, by m^3 or other).

- How frequently do you receive water bills? What do you think of the billing frequency? (Probe: preference for shorter/longer frequencies). If more frequent billings are desired, what would say if this involves additional service cost?

- What would be the best way of paying? (Through a bank, direct to collector, to WAJ).

- How much of your current expenses does the water bill represent? Do you know how this compares with other countries of the region or elsewhere? How does the water consumption per capita differ? Is it less, more or the same as other countries?

- What services do you expect to receive?

- Would you be willing to pay more if... and if yes, to what extend would you be willing to pay more? (Probe: percentage of income? Flat amounts...?).

  * The services are improved? How do you envisage the services to be improved?

  * If the water quality was improved? How can the water quality be improved?

  * If this will ensure more frequent water supply? More consistent supply?

    Consistent schedule of supply?

  * Adequate responsiveness to complaints?

* If this would prevent water shortages in the future?

- If not willing to pay for any of the above, what alternative measures would you suggest for the Water Authority to adopt in order to improve the quality and services?

- How could this be achieved? What if WAJ's cost of water requires the increase?

- If services and quality are improved, and you are getting more frequently supply of water, how much more would you be able to pay (Probe: percentage of income? Flat amounts...?).

- Now that the tariff has increased, have you seen an improvement? What?

- If improvements don't take place, how willing will you be able to pay?

Sources of Information (15 minutes)

- From where do you usually get information from about the quality of water? Safety of water? To what extent do you trust the credibility of these sources?

- Whom would you trust to get information about water quality and safety? (Probe: doctors, environmental groups, WAJ, friends, local media?).

- Have you seen any advertisement? What did you think of it? Was it convincing?

- If you were to communicate a message about the new tariff rates, conservation of water and other issues, what would that message be? How would you communicate it? Which type of media would you choose?

Private Management: Pros and Cons (10 minutes)

- Do you think a private operator should manage water, or the state? Why? (Probe: Do they trust WAJ?)

- How do you think the service would differ if publicly or privately managed? What are the implications of public/private management? (In terms of billing, collection, dealing with complaints...)

- Would you be willing to pay more if private management?

ANNEX C
DISCUSSION GUIDE FOR NON-RESIDENTIAL FOCUS GROUPS

Introduction

Thank you for taking the time to participate in this group discussion. We are seeking your views on issues related to water. The information we gather will be used by the authorities to better understand your requirements and expectations. We are interested in your frank opinion, there are no right or wrong answers. All the relevant materials of this study will be treated confidentially. Please speak up, and only one person speak at a time.

General Discussion (10 minutes)

- In your opinion, how important is the water issue to the Jordanian population? Do you think there is a serious issue of water shortage?

- What are the main sources of water? For how long will they sustain Jordan's requirements?

- Which sector consumes more? Industrial, agricultural or residential?

General Usage and Attitudes (30-40 minutes)

- Do you know the source of water that gets to your area?

- How frequently do you get water? Does the frequency change seasonally? Is it enough?

- Do you have other sources of water such as wells? If so, what percentage of your water do you buy from WAJ (Industrial and tourist sector)?

- How often do you suffer shortages? What do you do during long intervals when you don't get water? (Probe: purchases of water tanks, from where, how much does it cost? How much does it compare with the water bills received from WAJ? Difference in quality?). Do you have a reservoir? Do you store in any other way? How?

- What is understood by continuous water supply?

- What is the shortage capacity for your property?

- Do you treat the water in any way before you discharge it? What do you do? If no, why not? Do you reuse water at any state? How?

- Have you had problems like leakage? Have you ever complained about water shortage? Water leakage? To whom? What do you usually complain about? Where do you go, describe the procedure (should it be centralized?)? How long did it take to correct the problem?

- What do you think of the quality of the water? Do you think it is safe? If not, why not? (Probe: cleanliness, safe to drink, hard/soft, smell of chlorine...)

- Are you willing to invest in reuse treatment plants or in techniques that enable reuse of gray water? (Industrial and tourist sectors)

- Are you willing to invest in treatment plants and water saving technologies if you get incentives such as tax incentives?

- Do you pay extra expenses to soften or treat water? (Industrial sector)

- Is your facility connected to the main sewerage system?

- Do you have any problems with the sewerage system? (Smell, difficulty of draining waste water...)

- Do you carry any expenses to pre-treat your sewage effluent? (Industrial and tourist sectors).

- How do you feel about the government control and supervision of industrial waste? The quality of control the government practices and the frequency?

- What kind of technical help does WAJ offer the industrial sector, if any?

- How could WAJ services in this domain be improved?

Awareness of Tariff Rates (15 minutes)

- How is the water consumption billed? (Probe: awareness of new tariff rates). What does the water bill include?

- What was your reaction to the latest bill you have received from the Authority? What did you do about it? (Probe: Filed a complaint? What was the outcome?)

- If not aware of new tariff rates, explain and ask: Why do you think the Water Authority has introduced new tariff rates? (Probe: Which do you prefer flat or progressive?)

- Do you think that water tariff increases would result in a decrease in consumption or will it promote illegal behavior (illegal connection or removal of meters)?

- Do you agree on special tariff for non-domestic users?

Expenditures (40 minutes)

- On average, how much do you consume? (Probe: how do users measure consumption, by m^3 or other?)

- How frequently do you receive water bills? What do you think of the billing frequency? (Probe: preference for shorter/longer frequencies). If more frequent billing is desired, what would you say if this involves additional service cost?

- What would be the best way of paying? (Cash, through banks...).

- How much of your current expenses (overheads, rent...) does the water bill represent? Do you know how this compares with other countries of the region or elsewhere? How does the water consumption per capita differ? Is it less, more or the same as other countries?

- Would you be willing to pay more if... and if yes, to what extend would you be willing to pay more?

  * The services are improved? How do you envisage the services to be improved?

  * If the water quality were improved? How can the water quality be improved?

  * If this will ensure more frequent water supply? More consistent supply?

  * If this would prevent water shortages in the future?

- If not willing to pay more for any of the above, what alternative measures would you suggest for the Water Authority to adopt in order to improve the quality and services? How could this be achieved? What if WAJ's cost of water requires the increase?

- If services and quality are improved, and you are getting more frequent supply of water, how much more would you be able to pay?

- Now that the tariff has increased, have you seen an improvement? What?

- If improvements don't take place, how much more will you be able to pay?

Sources of Information (15 minutes)

- From where do you usually get information about the quality of water? Safety of water? To what extent do you trust the credibility of these sources?

- Whom would you trust to get information about water quality and safety? (Probe: doctors, environmental groups, WAJ, friends, local media?).

- Have you seen any advertisement? What did you think of it? Was it convincing?

- If you were to communicate a message about the new tariff rates, conservation of water and other issues, what would that message be? How would you communicate it? Which type of media would you choose?

Private Management (15 minutes)

- Do you think a private company should manage water, or state? Why? (Probe: Trusting WAJ?)

- How do you think the service would differ if publicly or privately managed? What are the implications of public/private management? (In terms of billing, collection, dealing with complaints, efficiency and conservation of water...) What services do you expect to receive from both?

- Would you be willing to pay more if private managed or government and why?

ANNEX D
POST-CRISIS DISCUSSION GUIDE FOR RESIDENTIAL AND NON-RESIDENTIAL SUBSCRIBERS

Introduction

Thank you for taking the time to participate in this group discussion. We are seeking your views on issues related to water and the recent water crisis in Amman. The information we gather will be used by the authorities to better understand your requirements and expectations. We are interested in your frank opinion, there are no right or wrong answers. All the relevant materials of this study will be treated confidentially. Please speak up, and only one person speak at a time.

General Discussion (15 minutes)

- In your opinion, what was the reason for the recent water crisis in Amman?

Usage and Attitudes during the Crisis (40 minutes)

- How frequently did you get water supply during the crisis (Specify area of residence)? How does it differ from the usual frequency during this period?

- What action did you take to make up for the shortage in supply?

  - Add tanks? Get water form springs?
  - Buy from tankers? How often? How did you get them (stand in line?...) How long did you have to wait? How much did you pay? Did you buy tankers before now?
  - How did the government deal with the tankers? Was this early enough? Sufficient?

- Did you boil or filter the water? What did you use it for? Did you use to boil or filter water before the crisis? Are you still boiling, filtering it? Why?

(For residential users:)

- Did you have to treat the water in any way? How?
- Did you buy bottled water? What did you use if for? Was it easy to fund? How much did it cost? Before? Now?
- Did you incur costs more than you normally do? How much more? How did you pay for the extra cost? (Borrow, reallocate resources?).

(For non-residential users:)

- Have you increased your charges? Are you still doing that?
- Did the problem have any serious effect on your business? How? Did it affect your customers in any way? How?

- What do you think about the government's decision to cancel the bills covering this period? Did it compensate for the additional cost?

- Did you change your usage habits during this period? How? (Garden, swimming pool, reducing water related activities).

- Did you use more water when you knew that you were not paying for this cycle?

(For residential users:)
- Did the quality of water (WAJ or other) cause any health problems to any member of
your family? How? (if incurred, cost of hospitalization, medicine).

Usage and Attitudes (Future) (10 minutes)

- How do you feel about this issue now?

- Do you think there is any possibility of its recurrence in the future? If so, have you taken any measures at home? What?

Attitudes Towards WAJ and Private Sector Involvement (15 minutes)

- Do you know of any plans to involve the private sector in the operation and maintenance of water in Amman?

(Explain that a private foreign company will operate the system in Amman; it will be a French company which has vast experience in similar work throughout the world.)

- How do you feel about this? What do you expect from the private operator and from WAJ?

- Who is most likely (government or private) to prevent the recurrence of the crisis? Why?

Financial Willingness and Affordability (15 minutes)

- On average, how much water do you consume? How much does it cost you? (Last 3 bills). How much did it cost you before?

- How much of your current expenses does the water bill represent?

(Describe new system)

- Why do you think WAJ has introduced this new tariff system?

- Is this more or less fair than the old system?

- Under the new system you are paying... for your water consumption, if required to do so, would you be willing to pay more? To what extent would you be willing to pay more? What do you expect in return?

- Regardless of your willingness or expectations, how much more would you able to pay for your water consumption?

- If cost increases by...%, what ...% would you be able to pay?

- If tankers or bottled water bought: If WAJ provides good quality water would you stop tankers and bottled water?

- How much more would you pay for improved services?

ANNEX E

RESIDENTIAL SURVEY RESULTS
(WHOLE COUNT)

ANNEX F

NON-RESIDENTIAL SURVEY RESULTS
(WHOLE COUNT)