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Public private partnerships and the poor - case report 2: bulk water consumers of the Karachi water and sewerage board

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**Public Private Partnerships
*and the Poor***

Series Editor: M. Sohail

Public Private Partnerships *and the Poor*

**Case report 2:
Bulk Water Consumers of the
Karachi Water and Sewerage Board**

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Section 1

Introduction

1.1 Background

The Karachi Water and Sewerage Board (KWSB) has faced grave financial crises because it has been unable to recover dues from a variety of consumers. Retail consumers in particular have always lagged behind in paying their bills. According to the KWSB's records, of the 1.1 million bills issued during the year 1998-1999 only 7 per cent were paid. Because of this long trend of financial crises, coupled with various non-performing international loans, KWSB has debts of over Rs.46 billion.

Among the various services offered by KWSB, bulk water supply is relatively stable, at least in financial terms. The bulk water supply service is structured to provide water of appropriate quantities to large-scale residential, commercial, industrial, and manufacturing units. This system is governed by a separate structure of tariff and management procedures. In most cases the service has been satisfactory. According to KWSB officials, parts of the Board may be privatised in the near future. Bulk water supply is the component most likely to be privatised first.

This study has been done as baseline research to establish the viability of privatising the bulk water supply service. It also researched whether part-privatisation or a public private partnership would be an appropriate option to improve the state of affairs of the water supply service.

Section 2

Bulk Water Supply

2.1 Facts and figures

Bulk water supply is not categorised by quantity supplied, rather water connections of 2" diameter and above are designated as bulk water supply outlets when they also fulfil the tariff conditions laid down for the service (see Table 1).

Table 2.1. Estimated average discharge of water (in gallons)

Size of connection	Estimated average discharge of water	Estimated average discharge of water per annum (gallons)
½"	1,250	456,250
¾"	2,500	912,500
1"	5,000	1,825,000
2"	20,000	73,000
3"	40,000	14,600,000
4"	80,000	29,200,000
6"	260,000	94,900,000
8"	400,000	146,000,000
12"	900,000	328,500,000
18"	2,000,000	720,000,000

Bulk water supply provides almost one-third of KWSB's revenues (see Table 2).

Table 2.2. Bulk water supply – Estimates of receipts (1999-2000)

Year	Receipt (million rupees)	Total receipts (million rupees)	Percentage of total receipts
1998-1999	830.00	2305.00	36%
1999-2000	905.50	2504.233	36.16%

CASE REPORT 2: KARACHI

The tariff structure of the bulk water supply has changed over time. In 1981 it was calculated on the basis of net annual rental value of the property. In the following years it was calculated on the basis of unit water costs (see Table 3).

Table 2.3. Review tariff of bulk water supply (amount in rupees)¹

No .	Category	From 1 st Apr 1981	From 1 st Dec 1985	From 1 st Jul 1989	From 4 th Aug 1992	From 1 st Nov 1994	From 1 st Jul 1995	From 1 st Nov 1996	From 1 st Apr 1998
1.	Commercial/ industrial not connected with water line	6.5% NARV*	9.75	15.00	23.00	30.00	39.00	49.00	49.00
2.	Commercial/ industrial connected with water line (un-metered)	9% NARV*	13.5	21.00	32.00	42.00	55.00	69.00	69.00
3.	Metered domestic (per 1000 gallons)	1.96	5.50	8.50	15.00	20.00	26.00	34.00	44.00
4.	Metered industrial/ commercial (per 100 gallons)	1.96	9.00	14.00	25.00	33.00	43.00	56.00	73.00

1. Source: KWSB, *Basic Facts and Figures*, 2000.

Note: NARV* - a measure to determine the basic market value of the property.
Water bills also include the relevant government taxes as applicable

Table 2.4. Database of consumers 1998-99

Category	Number of connected properties	Number of un-connected properties	Total number of properties
Residential	387,020	131,194	1,518,214
Flats	208,533	14,686	223,219
Residential cum commercial	17,712	497	2,209
Industrial commercial	35,576	25,528	61,104
Hospital/school/ mosque/ imambargah	131,025	38,498	169,523
Under construction	1,563	1,895	3,458
Vacant/others	---	1,311	1,311
Shops	20,236	107,562	127,798
Total	785,665	321,171	1,106,836

Section 3

Profiles of selected Bulk Water Consumers

The exact number of KWSB bulk water consumers could not be ascertained as the records were old and had not been updated for the past four years. According to staff, however, there were more than 700. This includes various military and sensitive installations in the city (as reported by the KWSB staff member responsible). Eighteen bulk water consumers were surveyed (see questionnaire in Annexe 1). The following are the edited profiles of those consumers.

3.1 Pakistan Steel (PS)

Bin Qasim, Karachi

- PS has had a bulk water connection since 1978.
- They have 256 staff in operations and maintenance of the water system including executive staff led by a Deputy General Manager, Managers, Assistant Managers, and Junior Officers.
- The use 20 mgd (million gallons per day) of water.
- No problems reported about KWSB.
- They obtain their water from 16km of canals from the Haliji and Kenjhar canals connections, 2km of pipeline from the canal tailend to the pumphouse, 100 per cent pumping capacity for stand by 2km raising main head 210, 35km gravity floor (ms pipe 60"Ø).
- They have five reservoirs of 22 mgd each. This makes the total capacity as 110 mgd. 22-million-gallon (110 gallons altogether).
- There is a 22-million-gallon filtration plant, and closing plant. After filtration the water goes to the steel mills 10km from the reservoirs, and approximately 5 million gallons are supplied daily to the steel mill's residences (like Township, Gulshan-e-Hadeed Phase-I & II, which consist of 11,000 residences).
- The future water need is estimated at 60 mgd (which is also the sanctioned water quota for the enterprises).
- PS are confident that KWSB will fulfil its responsibilities.
- The staff report no significant need to improve the system. There have been no complaints from PS's retail clients.

- The supply tariffs are very high. At present the rate is Rs.34 per 1000 gallons (even though the water supply system is developed and managed by PS).
- The water is consumed by downstream industry (50 large plots over 10 acres, of which 20 plots are constructed), steel mills plants, Steel Township, Gulshan-e-Hadid Phase-I & II (a residential neighbourhood of low and middle-income groups). Residential/retail use is 5 mgd; downstream industrial use is 2 mgd, and the remainder goes to the steel plants.
- Future clientele will include Gulshan-e-Hadeed Phase-III (as the population is increasing in the existing settlements) and the future extension of steel plants.
- The high water tariffs is the biggest problem faced.

3.2 Defence Housing Authority

Phase-I, Off Korangi Road, Karachi

Person Interviewed: Mr Mukhtar Shah, SDO (Engineer)

- DHA obtained one 12" connection in 1954, one 24" connection in 1997, one 12" connection in 1978 (for Zamzama Phase-V), and two connections of 12" each in 2000.
- A staff of 40 operate and maintain the water supply system including an Additional Director (Water Supply), Deputy Director (Water Supply) and SDO (Water Supply).
- The water need is as follows:
Daily=>8 million gallons
Weekly=>56 millions gallons
Monthly=>240 million gallons
Yearly=>2,880 million gallons
- KWSB supplied less water than was needed, and supply is uncertain.
- Process of supply:
 - One mMain source serves the whole area.
 - One 24"-dia connection (Channa Goth) → serves Phase-I, II, II (ext.), IV, V, V (ext.), VI, VII and VIII.
 - Two 12"-dia connections (Korangi Road) → Serves only Phase-II and II (ext.)
 - One 12"-dia connection (Zamzama) → Serves only Phase-V and V (ext.)
- The future water need is estimated at 10 mgd.
- Financial obligations are finally settled with the KWSB as they have paid the outstanding bills till present.
- DHA has some confidence that the KWSB will increase its supply.
- The present household requirement is 30 gallons per day. In future it will be 50 gallons per day.
- Uncertainty of supply is one of the key problems.

- To contain the monopoly, KWSB should allocate quota to each district of the city.
- To ensure a steady supply, the pumphouses need to be upgraded.

3.3 Sindh Industrial Trading Estates (SITE), Karachi

Person Interviewed: Mr Shamsuddin Saluto

- SITE received their bulk water connection in 1950.
- 108 staff are involved in operation and maintenance, headed by an Estate Engineer and Assistant Engineer.
- The existing water need is 15 mgd.
- The supply from KWSB is less than is actually needed. This has further decreased after the closure of Hub Dam.
- KWSB do not seem to be in a position to fulfil their current supply obligations.
- KWSB will not be in a position to fulfil their water supply obligations in the future.
- The water is received in bulk at six different locations and distributed to retail consumers through SITE's own pipe network.
- The future water need is estimated to be 20 mgd.
- KWSB needs to control wastage and leaks. Additional sources of water should also be found.
- SITE has 3000 consumers.
- All textile processing plants are potential clients.
- There is a great need to improve the system of bulk water supply. Action on complaints (of water shortage), repairs, billings, and quality and quantity of water need to be improved.

3.4 Karachi Port Trust

KPT House, Karachi

Person Interviewed: Mr Khadim Hussain Solangi, Water Officer, KPT

- KPT supply water to ships.
- There are 93 members of staff at KPT working on the water supply system, including an Assistant Executive Engineer, Sub Engineer, Head Mason, Meter Readers, etc.
- Total supply is 3,670,851 gallons per day (KWSB) and 293,000 gallons per day (from other sources). Total overall is 3,963,851 gallons per day.
- The tariff is Rs.44/1000 gallons (domestic), and Rs. 73/1000 gallons (commercial).
- Shortage is a common problem.
- Water is supplied through 13 connections:

CASE REPORT 2: KARACHI

Site No.	Consumer No.	Size of connection	Location
01.	03-01	12" Ø	Lines area CNT Reservoir
02.	03-02	12" Ø	Lines area CNT Reservoir
03.	03-03	6" Ø	Queens Road
04.	03-04	6" Ø	CIBA Laboratories
05.	03-05	6" Ø	Shah Nawaz Company West far
06.	03-06	6" Ø	Naval Dockyard
07.	03-07	9" Ø	N.M. Road
08.	03-08	9" Ø	Club
09.	03-09	9" Ø	Boat Basin
10.	03-10	12" Ø	Manora
11.	03-11	6" Ø	Sandspit
12.	03-12	2" Ø	KPT flats, Keamari area
13.	03-13	4" Ø	OP-IV

- The existing system needs to be improved. Water pressure needs to be enhanced.
- The following is a summary of water rates payments to KWSB:

Year	Amount paid to KWSB	Average quantity of water supply per day
1989-90	Rs.5.90 million	1.10 mgpd
1990-91	Rs.4.22 million	0.79 mgpd
1991-92	Rs.3.89 million	0.73 mgpd
1992-93	Rs.7.26 million	0.817 mgpd
1993-94	Rs.3.28 million	0.718 mgpd
(6 months up to December 1993)		

- Charges paid for supply of water by Bowsers::

Year	Expenditure of water through bowers	Average number of bowers per day
1989-90	Rs.2.15 million	40 Nos.
1990-91	Rs.6.19million	136 Nos.
1991-92	Rs.7.32 million	159 Nos.
1992-93	Rs.6.29 million	138 Nos.
1993-94	Rs.3.01 million	132 Nos.
(up to December 1993)		

- KPT's 1960s-sanctioned water quota = 1.5 mgd =(1250 Bowsers) = (1,50,000 gpd)
- Presently getting through KWSB min. = 0.7 mgd = (583 Bowsers) = (7,00,000 gpd)
- KPT facing shortfall of 1960 quota = 0.8 mgd = (666 Bowsers)

SECTION 3: PROFILES OF SELECTED BULK WATER CONSUMERS

- KPT actual present requirements = 3.5 mgd
- KPT facing shortfall of present-day requirement = 2.8 mgd = 2333 Bowsers
- KPT spends for supply of water = Rs.1 million per month through Bowsers = 264 Bowsers per day
- KPT requires supply of 666 Bowsers to meet shortfall of 1960 quota and 2333 Bowsers to meet present-day requirements.
- Water need escalates at the rate of 10 per cent [per year approximately].
- KWSB will not be able to fulfil its obligations.
- Shortage of supply and lack of pressure is a major problem.
- Initially KWSB used to supply water at domestic rates. Now it has increased to commercial rates.
- KPT supplies 300 bowsers of 1100 gallons each to its retail clients.
- A desalination plant may be developed to resolve the shortage.
- The finances of KWSB need to be restructured. More capital should be spent on development work.
- KPT provides ½" connections with meters. However the lack of supply often retards the performance of the system.
- KWSB's supply system should be computerised.

3.5 Export Processing Zone

Landhi Extension, Off. National Highway, Karachi

Person Interviewed: Nasir Hadayat Khan (Engineer)

- Water supply from KDA/KWSB began in 1981.
- EPZ aims to obtain sufficient quantity of water from KWSB to supply its consumers/factories.
- A staff of five is employed to operate and maintain the water system including a pump operator, plumber, pipefitter, and helper. Senior staff include the Deputy General Manager, Assistant Manager (Mechanical), and Supervisor (Works).
- The weekly need is 8,500,000 gallons.
- There is an underground reservoir of 1,300,000 gallons, 125,000 gallons in overhead tanks, and 500,000 gallons in the pipelines.
- EPZ pays a bill of Rs.10 million per month.
- KWSB is fulfilling its responsibility to a great extent.
- EPZ paid in full to obtain the 52" connection. Rs.15.2 million was paid to KDA for development.
- The system is working satisfactorily.
- In future an additional 0.5mgd will be required.

- EPZ supplies water to its 65 consumers (factories). Two or three factories are added every year.
- Water is supplied at commercial rate.

3.6 Civil Aviation Authority

Quaid-e-Azam International Airport, Karachi

Person Interviewed: Mr Mujahid Hussain

- The present terminal building began receiving bulk water supply in 1990.
- A staff of 20, including General Manager Works, Director Airport, and Superintending Engineer (Civil) work on operation and maintenance.
- The daily demand is 900,000 gallons, half of which is needed for Jinnah Terminal and the other half for the residential areas.
- For Jinnah Terminal a commercial rate of Rs.73/1000 gallons is charged. Rs. 44/1000 is charged for the domestic consumption.
- Shortage in supply is a continuing problem.
- Unauthorized connections are also a major problem. Two connections are available, 12" with RCC piping and 10" (which comes from Malir and these lines have been infested with several illegal connections on the way).
- In future 600,000 gallons per day will be required (for Jinnah terminal) and 800,000 gallons (for residential areas).
- At present, the needs are sufficiently met. However with the rise in the city's population, the demand will increase.
- KWSB needs to improve its bulk water supply system by checking illegal connections and leakage.
- KWSB charges much more than they actually supply.
- The main users are the Jinnah terminal users and the 800 residential units in the same area.
- The residential units are gradually expanding. Some people are building extra rooms while the others are becoming more dense because of additional residents.
- In most cases, KWSB's billing is done on the basis of average consumption pattern.

3.7 Aga Khan University Hospital

Stadium Road, Karachi

Person Interviewed: Chief Engineer (Mechanical)

- The connection was obtained in 1984.
- The agreement for the water supply service entailed the supply of desired quantities of water as per the present and future needs of the hospital.
- AKUH has automatic pumping stations.

SECTION 3: PROFILES OF SELECTED BULK WATER CONSUMERS

- Water supply system staff includes Director Maintenance, Maintenance Managers, Chief Mechanical Engineer, Shift Engineers, and Shift technicians.
- The daily water need is 0.6 million gallons.
- KWSB is fulfilling its obligations satisfactorily.
- Supply is provided through three connections; a 8" bulk connection and two connections of 4" each.
- In 10 years, the water need will double.
- AKUH is negotiating a tariff revision proposal with KWSB.
- Patients, visitors, and staff are the main clients.
- To improve their performance KWSB should hire management consultants.

3.8 Printing Corporation of Pakistan Press

University Road, Karachi

Person Interviewed: Mr Banaras Khan (Engineer)

- PCP obtained their first bulk connection in 1977. There are 6 or 7 O&M staff, including a chief organiser, manager, maintenance engineer, and technicians.
- The existing bulk water need is for 0.45 million gallons per day.
- Supply is through a 4" dia line. PCP has a reservoir of 75,000 gallons.
- PCP has no complaints against KWSB.
- The supply feeds 185 residential quarters and the press building.
- The present quantity and quality of supply is satisfactory. Future supply needs will remain much as they are.

3.9 Sindh Medical College, Karachi

Person Interviewed: Mr Rizwan Hussain (Engineer)

- SMC obtained their connection in 1973.
- O&M staff includes Executive Engineers, Assistant Engineer, Sub Engineer, and seven workers.
- From the main KWSB line of 36", SMC has two connections of 2" each. One supplies water to the college and the other to the girl's hostel.
- With the extension or addition of new spaces such as a library and a fourth floor, the need will also increase.
- The availability of funds is the main problem in sustaining the settlement.
- Water is consumed by the 3000 students of the college, and the teaching and administrative staff. The student population intake will decrease by 10 per cent annually.

- Although connections from the trunk lines of KWSB are not allowed, the SMC has a connection which is efficient.
- Illegal connections, suction pumps, and water quality are not good.

3.10 Pakistan Railways

City Railway Station, Off. I.I. Chundrigar Road, Karachi

Person Interviewed: Mr Fazal Illahi (Engineer)

- The supply existed before 1947, and both the City and Cantonment Stations were established around the same time.
- The O&M teams includes a Divisional Engineer, Assistant Engineer, Inspector of Works, Assistant Inspector of Works, and Supervisors, 81 people in all.
- The water supply need is 28,286,190 gallons per month.
- The monthly water bill is Rs.750,834.
- There is usually a shortage of water, which affects the performance.
- PR has a 12" connection for the Cantt. Railway Station and one connection near PIDC house of 3" dia meter. Supply is, however, insufficient.
- The need for water is increasing. For washing alone, 50,000 gallons per day is consumed.
- The systems needs repairs and maintenance, as in some parts it is badly damaged.
- KWSB does not listen to our complaints or requests for regular supply.
- 'Less supply more payment' is the usual problem.
- Station, passengers, washing of engines, filling of water tanks, specially trains, diesel engines workshops, railway hospital, school, hostel, class four staff, 2000 officer's bungalows, class III & IV staff constitute the clientele.
- The number of both passengers and worker's residences are increasing. Obviously the demand is also increasing.
- Pakistan Railways pay Rs.15.8 million [per month]for water supply, but it does not get the corresponding service.
- KWSB should guard the supply lines. A great deal of water is being stolen but no vigilance is exercised.

3.11 Jinnah Post Graduate Medical Centre (PAK PWD)

Person Interviewed: Mr Karim Buksh (Engineer)

- Obtained connection before partition.
- Operation and maintenance staff include sub engineers, lineman, and plumber.
- Daily need is 9 million gallons.

SECTION 3: PROFILES OF SELECTED BULK WATER CONSUMERS

- The agreement is that KWSB supplies water twice a day, but the nighttime supply is not given.
- JPMC has two connections of 9" each.
- Medical and surgical blocks, residential areas, and construction works are the main areas where water supply will be needed in the future.
- As the metres are out of order, KWSB over bills.
- The main recipients of water are the 28 wards, 48 operation theatres, casualty area, etc. Patient numbers are increasing.
- KWSB's supply is not always up to the desired level.
- Bills and tariffs are among the major issues that are important.

3.12 OJHA Institute of Chest Diseases

University Road, Karachi

Person Interviewed: Mr Qazi Ahmed Asif (Administrative Officer)

- The supply to residential units, which were built 110ft from one another, is the main clientele.
- Five people work on water supply O&M. They include three supervisors, two helpers and an electrician.
- The daily need is 27,000 gallons.
- Two connections are available; 2½" for residences and 4" for offices and hospital.
- New buildings are now applying for their connections.
- The hospital's own system is completely damaged.
- The patients, residence's colony, middle school, clinic, 10 wards (50 beds each), doctor's mess, and nursing mess are the main users.
- Generally there is no great problem of supply.

3.13 Pakistan Machine Tool Factory

Off. National Highway, Karachi

- The bulk water connection was obtained in 1967.
- A staff of 12 people is responsible for O&M headed by a Deputy General Manager DGM (MRS).
- PMTF possesses only one overhead tank of 60,000 gallons capacity.
- One connection is provided for the supply.
- No problems exist regarding the services of KWSB.
- No plans exist for further increase in water requirements.
- Occasional scarcity of water is a problem.

- PMTF has no problem with billing and tariffs.

3.14 Karachi Shipyard and Engineering Works

Person Interviewed: Mr Ali Hassan (Administrative Officer)

- The 6 inches dia connection was obtained in 1951. Six persons working in O&M.
- The monthly requirement is for 1,300,000 gallons. The rate is Rs.73 per thousand gallons.
- Shortages during peak hours is a problem. At least 50 tankers are needed in such situations.
- Only one connection of 6 inches exists.
- Provides water to ships only.
- No problems as shipyard supplies water to ships.
- The tankers are needed only during shortages.
- Downsizing in KWSB is a major issue.
- Research is necessary before any restructuring is undertaken.
- Water tariffs in the past were as follows:

October 1996	Rs.43/1000 gallons
November 1996	Rs.56/1000 gallons
April 1998	Rs.73/1000 gallons

3.15 National Fibre Ltd

Person Interviewed: Mr Zakir Ali

- Began receiving water from KMC/KWSB from 1978.
- Justification for bulk supply is that the manufacturing requires large quantities of water.
- The only staff managing operations is a valve man.
- The present supply is 100,000 gallons per day, but we need 200,000. In emergencies 200 tanker loads of water are purchased.
- The shortage of water is a serious problem.
- Two connections of 3 inches dia are provided.
- More water reserves need to be tapped for Karachi.
- As the demand is high more water supply per day is required.
- No problem exists about tariffs.
- Restructuring the bulk water supply department will be very useful.
- If KWSB improves its service, the complaints and criticism will obviously decrease.

3.16 Darus Salam Cooperative Housing Society,

Korangi, Karachi

Contact person: Mr Farooq Saleh (Civil Engineer)

- The connection from the city system was obtained in late 1970s.
- Only two plumbers are employed as operations and maintenance staff.
- Fifty houses exist in the society.
- KWSB is fulfilling the area's water needs satisfactorily.
- No visible problem in the service observed.
- Sometimes the bulk grating and screen gets clogged.
- The future need for water will increase due to the rising population.
- Infrastructural development will also be needed to cope with the future rising demand.
- Billing and payments are fairly regular.
- The existing clientele are the resident society members. New plot-owning society members will be the future clientele.

3.17 Karachi Awami Markaz

Shahrah-e-Faisal, Karachi

Contact person: Mr Naeemuddin Khan (Engineer)

- Karachi Awami Markaz (KAM) was connected to KWSB's system eight years ago.
- The agreement with KWSB is to obtain water for commercial purposes.
- The total maintenance staff is 35. They work in three shifts with 13 persons/shift.
- The total existing requirement is 6,000-7,000 gallons/day.
- The KAM has to obtain three tankers daily.
- Water is not supplied satisfactorily by KWSB. Lack of adequate supply pressure and routine shortage of water are the main problems.
- There is one metred 1¼"-diameter connection provided by KWSB. It is insufficient.
- As more than 10,000 people visit the area, the water requirement is on the rise.
- The main uses are supplying the AC plant, washrooms, fountains, and restaurants.
- KWSB's bulk supply system is not working efficiently.
- There is no problem about tariffs.
- Restructuring the KWSB bulk water supply may be a good option.

3.18 Liaquat National Hospital

Stadium Road, Karachi

Contact person: Mr Mohammad Nawaz (Maintenance Engineer)

- The connection was obtained in 1958.
- Water is a basic need of the patients.
- There is a maintenance and operation staff of eight – one supervisor and seven workers.
- The daily requirement is for 125,000 gallons. Presently supply varies between 38,000-50,000 gallons per day. The shortfall is recovered by purchasing six to eight tankers of water daily.
- The supply from KWSB is not continuous.
- Only one 3" connection is available.
- The need for water will increase. It is expected that there will be a need for 200,000 gallons per day in five years.
- KWSB will only be able to fulfil the future demand if additional lines are procured.
- Patients and related nursing staff constitute the main source of water consumption.

Section 4

Interview of KWSB Personnel

There is a separate department in KWSB that manages the bulk water supply system. The following are excerpts of the interviews taken from some of the selected KWSB personnel (names of the staff are kept confidential):

4.1 Mr A

Executive Engineer, KWSB

- The bulk water supply department comes under the Water Supply Division of KWSB (except finance and establishment).
- Total staff is 900¹, of which 550 are in water supply. The Chief Engineer, Superintending Engineers, and Executive Engineers are the main officers.
- The bulk supply system has several problems, the main ones being: vertical and horizontal growth; development of *katchi abadis*; old age of the system (40 years), and short supply across the system.
- Illegal connections within the bulk supply system are another issue.
- KWSB gives priority to leakage control. It is a major source of water loss for bulk consumers.
- The system needs to be upgraded and expanded.
- The bulk supply unit does not require any restructuring.

4.2 Mr B

Superintending Engineer Transmission, KWSB

- The transmission section employs 1371¹ staff members, including a Chief Engineer Transmission, one Superintending Engineer (lifter plants) and one Superintending Engineer (transmission).
- Total actual supply was 458 mgd [from Indus] + 100 mgd from Hub.
- The need for water is 820 mgd for 2000.
- The present transmission and bulk supply system is very old. It needs emergency improvemen.

1. Both the officers quoted different staff strengths. However no document could be found to authenticate the figures.

- Most of the complaints are related to distribution.
- Partial repairs such as stitching are not a good solution.
- Finance is the main problem.

4.3 Mr C

Executive Engineer,

Billing Department, KWSB

- In billing department 100 people are employed. Mid-ranking officials such as Executive Engineer, Billing Officer, and Assistant Engineers are some key personnel.
- At present there are 725 clients of the bulk supply system including military installations.
- The main bulk clients include Pakistan Steel, Port Qasim, Union Councils, Landhi Korangi Industrial Area, KPZ, KPT, etc. The PTCL, Cantonment Boards, Shipyard, etc. are all also on the list.
- As the system is not expanded, the supply output remains unaltered despite rising need.
- It is difficult to recover bills from public sector/government agencies.
- The private sector usually pays their dues on time.
- The billing rates are much lower than the actual cost.
- The unwillingness of government departments to pay bills is a major problem.
- Despite non-payments, the supply continues.
- Political groups and Collective Bargaining Agents (CBA) are playing a very vital role in the poor performance.

4.4 Mr D

Superintending Engineer,

Water Pumping Unit, KWSB

- KWSB has deployed a staff of over 3000 people to run the bulk water supply system (including transmission).
- Government installations, defence authorities, armed forces, and the industrial sector are the main clients.
- As KWSB is not able to increase the transmission, the bulk water supply is greatly affected.
- KWSB has grave problems in its billing department which causes conflict and adversely affects the revenue.
- The KIII project to add 100 mgd need to be initiated without delay.
- KWSB does not require restructuring. It is working efficiently. Only certain practices need to be improved.

SECTION 4: INTERVIEW OF KWSB PERSONNEL

- KWSB can only rely on the Indus source. Hub River does not possess enough potential due to its dependence on rainfall.

Section 5

Analysis

5.1 Terms of Reference

The terms of reference for the large consumers were formulated according to the specific requirements of the consumer. These terms of reference include the nature and extent of services to be provided by the KWSB as well as the billing, recovery, and tariff conditions. The terms of reference of the military installations was kept strictly confidential. The consumer's specific requirement prevailed even on the contractual conditions. It was reported that in some cases proper terms of references did not exist. As the KWSB was formed in 1983, most of these institutions were already connected to the bulk network and thus continued to obtain the same services without any revision of tariff and billing modes.

A standard procedure of bulk supply connections is adopted for the medium and small-scale consumers.² The consumers notify their respective water requirements which is approved by the KWSB after necessary review. They continue to obtain the water according to the prescribed rates and tariffs. Backup maintenance and upkeep is in the normal clauses of the contracts, but it is seldom fulfilled by KWSB in situations of breakdowns or scarcity of water. Very large consumers, such as Pakistan Steel Mills, had to construct part of the supply infrastructure themselves. For medium and small-scale consumers, KWSB provides the connections up to the property line. Internal piping and management is done by the consumers themselves.

5.2 Tariff and Billing

With the exception of the very large consumers, a standard rate of tariff prevails for bulk consumers. The tariff is specified into four categories (see Table 3). With very few exceptions, the bulk consumers found the tariffs satisfactory, however they were critical of the billing and recovery procedures. Many consumers were of the view that KWSB charges excessively, and that the supply was less than the allotted/contracted quantity. There were no remedials for any decline in the service. For example KPT and Pakistan Steel have to own and manage a fleet of water bowsers to supplement their water needs. Other consumers have to buy from private water vendors. There were several chronic billing disputes that are still not resolved. The Defence Housing Authority did not pay its water bills for about three years, which was a big setback in KWSB's accounts. Similar happenings with respect to other bulk water clients cause financial difficulties for KWSB.

2. No hard and fast definition exists for large, medium or small scale consumers. However, according to KWSB staff, small scale bulk consumers are those whose requirement is less than 100,000 gallons per day; medium scale are those who consume less than 500,000 gallons and large scale are consumers who use more than 500,000 gallons.

Industrial and commercial consumers are willing to pay higher tariffs for greater water quantities. However, as water is in limited supply, their demands cannot be met.

5.3 Operation and Maintenance

Almost all the consumers have arrangements to carry out routine operation and maintenance of the infrastructure on their premises. KWSB staff does provide backup support but only in emergencies. Only when a breakdown occurs will KWSB staff undertake repairs. Routine maintenance is almost absent on the part of KWSB. KWSB is also unable to check the water thefts from the supply lines to the bulk consumers which hinder in the supply to a great extent.

5.4 Client/Consumer Satisfaction

The bulk consumers were critical of KWSB's inability to satisfy users' demands. A major issue in this respect was the inadequate quantity of supply. Abrupt and anomalous breakdowns, infrequent supply, poor quality of water, loss of supply pressure, and the inability of KWSB to respond to crisis situations were some of the common complains expressed by the consumers. It is obvious that KWSB is extremely constrained on the quantity that it can supply, an area where it will require new projects to augment its requirements. For the other areas, it was the absence and erosion in the management capacity of KWSB to respond to the consumer needs that was the problem.

5.5 Re-Structuring of KWSB

Few consumers thought KWSB needed to be restructured, but the alternative to this was not clear. Some consumers thought privatisation would improve KWSB's performance, how it would be done was not clear.

5.6 Future Requirements

According to the reported needs, there is a massive future demand for water in the bulk consumer sector. This demand is of two kinds. Many consumers planned to expand their operations. There are also several projects and new installations that are either planned or under consideration. However those consumers are skeptical of KWSB's ability to provide this water quantity even in the next five years. It was generally found that the bulk consumers located along the National Highway had fewer complaints related to supply as they were near to the main source of water pumping and distribution. The consumers in District West faced acute problems during the past three years when supply from the River Hub dried out.

5.7 Possibilities and Prospects of Public Private Partnership

From the existing situation the prospects of public private partnership in the bulk consumer sector are bright for several reasons. One, most of the bulk water consumers have a growing water requirement which the KWSB has been unable to meet, mainly because of the lack of capital to finance the increase in supply. It is very likely that many bulk consumers would enter into a partnership contract with KWSB to finance new supplies. Two, the performance of KWSB in revenue recovery could be enhanced if an better systems and contracts were worked out between the contracting parties. The high occurrence of disputes in the bulk supply sector can be controlled this way. And three,

SECTION 5: ANALYSIS

public private partnerships could be used to manage issues of operation and maintenance of the infrastructure related to supply and storage.

Section 6

Conclusions and Recommendations

The following conclusions can be drawn from this study:

1. It is apparent that bulk water supply will remain the most important and profitable of KWSB's services. The revenue losses and shortfalls that occur in the other sectors will be subsidised, at least partly, from the bulk water supply sector.
2. The bulk water supply sector possesses tremendous demand potential and has sound commercial feasibility. If all the demands were fulfilled then the revenue from the bulk supply sector could subsidise the losses and shortfalls from the other sectors. This approach could make KWSB financially viable. According to the estimates based on the interviews with bulk consumers and KWSB staff, there is a minimum unfulfilled demand of 100 mgd in the bulk sector which is rising at a rate no less than 10 per cent. Planned projects and enterprises in the commercial and industrial sector are a citation in this regard.
3. The KWSB has several managerial deficiencies in its bulk water operations. They adversely affect the trust of the consumers. Information regarding the closure of water services is not properly communicated to the consumers. Similarly the operation and maintenance plan of KWSB, which demands service closures, is not shared with the consumers and thus affects their operations.
4. Billing and tariff disputes are a major issue. In some cases, they have lead to court cases and litigation. One of the major reasons for this state of affairs is the non-standard tariff that is applied to consumers. This opens the way for prolonged negotiations and delays which affect the recovery of KWSB revenue. In addition most of the government agencies and authorities do not pay their dues promptly and hide behind their bureaucracy. The KWSB has ultimately to suffer from such unethical practices. The DHA is one example of a consumer that remained a defaulter of KWSB for a considerable period of time.
5. Bulk connections are prone to water theft. Often the bulk lines are broken and water is stolen. The line to Quaid-e-Azam International Airport is an example. In addition leaks are a common problem which further reduces the quantity of water actually supplied.
6. The absence of accurate metering is a concern for consumers. They remain skeptical of the amount supplied and are hesitant to pay the full amount. The KWSB has yet to convert all the bulk water supply connections to metered outlets.

7. The bowser service, which is run as the emergency or relief option in cases of breakdown or shortage, is grossly inadequate. Over time the operational fleet of KWSB bowsters has reduced considerably; at present it is less than 20. The bulk consumers have to manage and maintain a fleet of bowsters of their own. Alternatively the bowsters are obtained from the water vendors/contractors working in the market. This is an added disadvantage to the consumers.
8. KWSB inherited a large number of bulk consumers from KDA and KMC. There are many lacunae that exist in the contractual agreements that need to be revised, but due to managerial inefficiency it has not been done. In the majority of cases the KWSB suffers because of these contractual shortcomings.
9. The following are some recommendations in relation to the issues highlighted in the study:
 - a) KWSB must measure accurately the quantity of water supplied to the bulk consumers in order to follow up the consumer's use and needs. This will be the first step towards revenue generation and recovery.
 - b) The KWSB should explore the possibility of supplying water to the main heads of the bulk consumers (as is done in the case of SITE). The internal distribution and storage should be left to the consumers.
 - c) Management practices within KWSB need a great deal of improvement. Answering complaints, solving billing disputes, and answering requests for new connections are some pertinent issues where better management is desperately needed. As little improvement can be expected within the KWSB staff ranks, KWSB should appoint management consultants to improve its performance.
 - d) A pilot project should be instituted to test the validity of public private partnerships. This can be done with any of the large or medium-sized consumers. If successful, KWSB can gradually enhance service provision through this contractual mode.
 - e) Tariffs must be developed in consultation with bulk consumers. A standardised policy may be adopted to avoid confusion and conflicts between the KWSB and consumers. A Water and Sewerage Tariff Management Committee should be constituted comprising representatives of KWSB and bulk consumers. This will help reduce the disputes and deficiencies to a great extent.

Annex A

Survey Questionnaire for Bulk Water Consumers

1. Name of person interviewed

Post in KWSB

2. Can you briefly give me the background of KWSB's bulk water supply system?

3. When did this system start?

4. How many people are working in KWSB for O&M of bulk water supply system?

Can you provide a list of admin setup if available?

5. Who are your existing clientele in KWSB bulk water supply system? Give list if available.

6. Who are the potential future clientele of this system?

CASE REPORT 2: KARACHI

7. How much is the requirement of bulk water supply system as per existing clients?

8. What are the future projections for bulk water supply requirement?

9. Describe problems and issues in existing bulk water supply system?

10. Are there any complaints from the existing clientele of bulk water supply system?

Yes _____. No _____. If yes please give some detailed examples

11. How the KWSB is addressing those complaints from the clientele of bulk water supply system?

12. Is there any need of improvement in bulk water supply system?

Yes _____ No _____

If yes what kind of improvement is required _____

13. Is there any problem of recovery of charges from existing clientele of bulk water supply system?

14. What is your opinion about clientele satisfaction in bulk water supply system?

15. Are there any future plans for enhancement of existing bulk water supply system?

Yes _____ No _____ If yes please give some details _____

16. Are there any loopholes in existing bulk water supply system?

17. Is there any way of taking some remedial measures against these loopholes?

18. What are the source of bulk water supply system?

19. Are these water source enough for existing system or for future?

Yes _____ No _____.

If yes what can be done about it?

20. Is there any plan/projections for increasing the water sources of KWSB bulk water supply system for future demand?

21. What is your opinion about the restructuring of bulk water supply department?

22. Is there any need of restructuring of bulk water supply department?

23. In your opinion will there be a positive impact of this restricting?

CASE REPORT 2: KARACHI

-
24. What kind of affects it would create on KWSB its clients and service improvement, please comments
-
-

Annex B

Survey Questionnaire for KWSB Staff related to Bulk Water Supply System

1. Name of organization/clientele

2. Name of person interviewed

3. When did your organization get connection of bulk water supply system from KWSB?

4. What was the TOR for obtaining connection of bulk water supply system and its extension in future?

5. How many people working in your organization for O&M of bulk water supply system?

Can your provide a list of administrative setup regarding this issue if available

6. How much is your existing need of bulk water supply system?

Daily _____ Weekly _____ Monthly _____ Yearly _____

7. Is KWSB fulfilling your existing needs of bulk water supply satisfactorily?

Yes _____ No _____ If no why?

8. Is there any problem in provision of bulk water supply system from KWSB?

Yes _____ No _____ If yes briefly define its nature and extent?

9. What is your process of obtaining and distribution of bulk water supply system?

10. Are there any problems in O&M of bulk water supply system?

11. How much is your future needs of bulk water supply system?

12. Do you feel confident that KWSB will fulfill your future needs of bulk water supply system?

13. Is there any need of improvement in existing bulk water supply system of KWSB?

14. Is there any problem in obtaining or distribution of water through KWSB's bulk water supply system? or complaints from retail clients? please describe its nature and extent.

ANNEX B

15. Is there any problem of financial matters between KWSB bulk water supply system and your organizations?

16. Who are your existing clientele consumers of this bulk water supply system? Give list if available?

17. Who are the potential future clientele of this system?

18. How much is the requirement of water as per your existing clientele consumers?

19. What could be the future potential requirement of water as per projected clientele/ consumers?

20. In your opinion how efficiently the bulk water supply system of KWSB is operating?

21. In your opinion how efficiently the bulk water supply department of KWSB is operating? Are there any problems?

CASE REPORT 2: KARACHI

22. Do you feel that there is a need of restricting of KWSB's bulk water supply department? What kind of changes should occur?

23. In your opinion what kind of impacts would be generated through restructuring of bulk water supply department of KWSB?

24. How can you make sure the satisfaction of your retail consumers of bulk water supply system?

25. Do you think there is a need of service improvement in your bulk water supply system to your retail consumers? Define the nature and extent of service improvement that is required?

Annex C

Address of the Bulk Water Consumers Surveyed

S. No.	Name
01.	Pakistan Steel (PS), Bin Qasim, Karachi
02.	Defence Housing Authority, Phase-I, Off Korangi Road, Karachi
03.	Sindh Industrial Trading Estates (SITE), Karachi
04.	Karachi Port Trust, KPT House, Karachi
05.	Export Processing Zone, Landhi Extension, Off. National Highway, Karachi
06.	Civil Aviation Authority, Quaid-e-Azam International Airport, Karachi
07.	Aga Khan University Hospital, Stadium Road, Karachi
08.	Printing Corporation of Pakistan Press, University Road, Karachi
09.	Sindh Medical College, Karachi
10.	Pakistan Railways, City Railway Station, Off. I.I. Chundrigar Road, Karachi
11.	Jinnah Post Graduate Medical Centre (PAK PWD)
12.	OJHA Institute of Chest Diseases, University Road, Karachi
13.	Pakistan Machine Tool Factory, Off. National Highway, Karachi
14.	Karachi Shipyard and Engineering Works
15.	National Fibre Ltd
16.	Darus Salam Cooperative Housing Society, Korangi, Karachi
17.	Karachi Awami Markaz, Shahrah-e-Faisal, Karachi
18.	Liaquat National Hospital, Stadium Road, Karachi

