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Baseline Survey

Gadap Town Karachi

Water Aid Project

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 **WaterAid**

Project Area



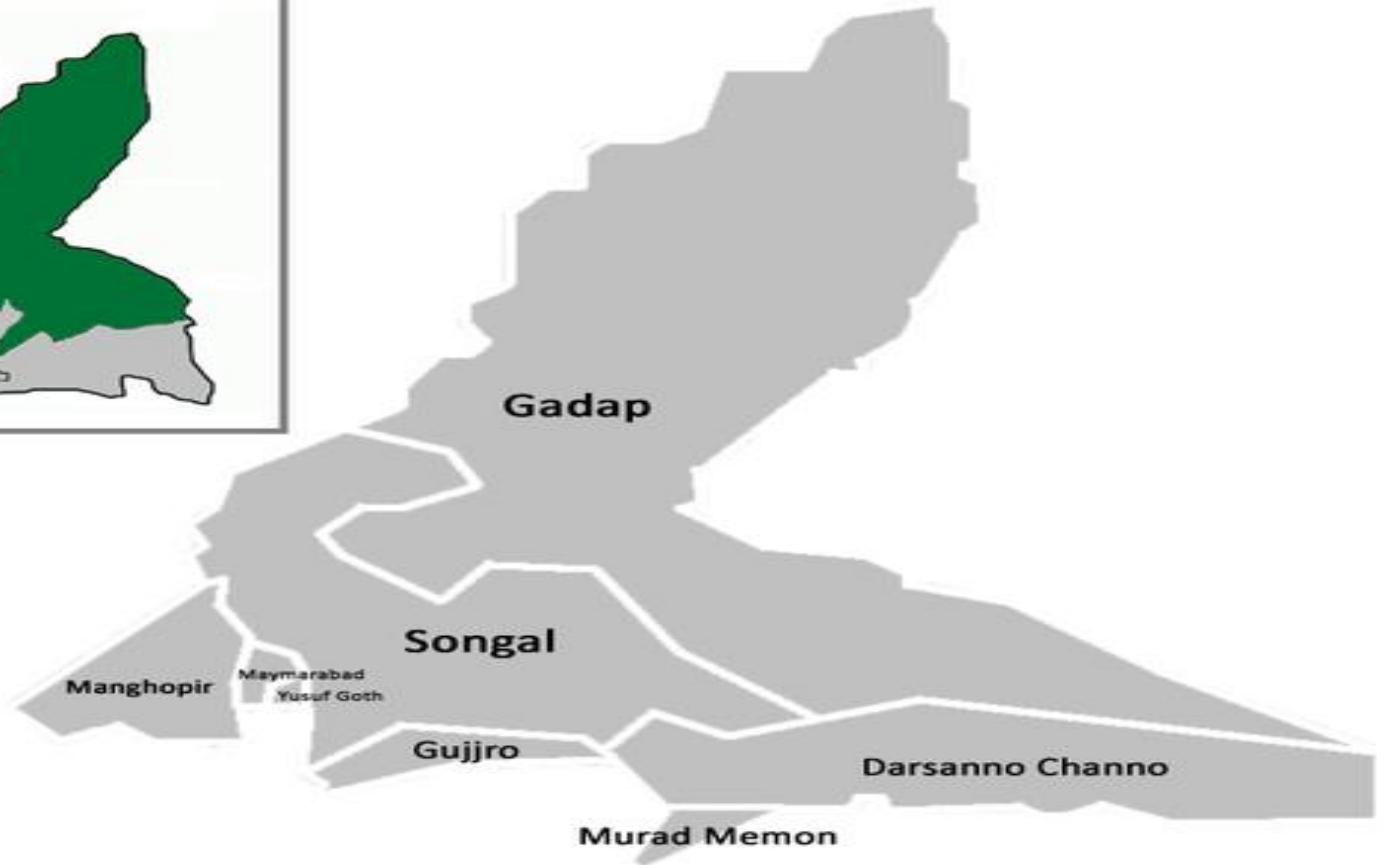
- Karachi is the largest city of Pakistan and is spread over an area of more than 3500 sq.km.
- Annual growth rate is 4.8
- Estimated Population of Karachi is Total 18,529000 (18m)
- Gadap Town is located in Malir District of Karachi in East.
- The estimated population of Gadap Town is 473,199.
- The selected population of the three Union Councils for the study is 134900. Union wise the population distribution is (UC 4) 35000; (UC 6) 29106 and (UC 7) 70794.

Area Map



GADAP TOWN, KARACHI

8 UNION COUNCILS



Objectives of Baseline



The study have two objective:

- 1. To access safe drinking Water services to 134,900 people.**
- 2. To assess status & access to WASH services among 69,000 students.**

Study Design



- The research study design was Quasi Experimental Trial.
- Descriptive cross-sectional survey was conducted.
- Sampling technique was Multistage Random Sampling.

Data Sources



Data was collected from Study Population using different approaches:

1. Desk Research
2. Community Base survey
3. School Assessment

Data Sources



Data was collected from Study Population using different approaches:

1. Desk Research

- UNPD (2008) World Urbanization Prospects, The 2007 Revision. Department of Economic and Social Affairs. Population Division, New York.).
- Handbook of population census, GOP (1985), in Salman Qureshi, The fast growing megacity Karachi as a frontier of environmental challenges: Urbanization and contemporary urbanism issues, Journal of Geography and Regional Planning Vol. 3(11), pp. 306-321, November 2010
- 1998 District Census Report of Malir District, Population Census Organization, Government of Pakistan, Islamabad, October 1999.
- www.kwsb.gos.pk/sitePdf
- THE SINDH GOVT. GAZETTE EXT APRIL 24, 1996 (PART-IV-A, Provincial Assembly of Sindh, Notification, Karachi, the 24th April, 1996, Government of Sindh).
- Karachi Strategic Development Plan 2020, KCDG
- Government of Pakistan, Draft National Drinking Water Policy 2009, p.3
- Water Quality Monitoring Report 2006 by Pakistan Council for Research in water Resources)

Data Sources



2. Community Base survey

- 06 FGDs with each Male and Female population were conducted separately in all three UCs.
- IDIs with 05 Local Govt officials at Town level (Superintendent Engineer & Executive Engineer of Water and Sewerage of KWSB) and 02 NGOs representative (URC & HISAAR Foundation) were conducted.
- 276 Mother of under 5 years old children were interviewed and Observed.

3. School Assessment

All 509 schools located in Gap Town were assessed.



Desk Research

The UN Human Rights



- Provision of safe, filtered, potable water in adequate quantity is one of the fundamental duties of the Government. This provision stems from UN Human Right Policy. In October 2010 the Human Rights Council through resolution A/HRC/RES/15/9 affirmed the right to safe drinking water and sanitation. It also clarified the legal basis of these Rights: **“the human right to safe drinking water and sanitation is derived from the right to an adequate standard of living and inextricably related to the right to the highest attainable standard of physical and mental health, as well as the right to life and human dignity.”** (resolution A/HRC/RES/15/9)
- **Millennium Development Goal 7, Target 10** :explicitly states: *to halve by 2015, the proportion of population (urban and rural) without sustainable access to improved water sources i.e. piped and hand pump water.*

The Constitution of Islamic Republic of Pakistan Recognizes the Right to Water



- In Pakistan there is no explicit constitutional right to water but the Supreme Court in 1994 has interpreted the constitutionally protected right to life and dignity to include the right to a healthy environment. It recognized that *the constitution protects the life of its people and obliges the State to secure the well-being of the people and to provide for all citizens, within the available resources of the country, facilities for adequate livelihood and basic necessities of life.* Under this ambit, regarding access to safe drinking water, the Supreme Court specified in a case in 1994, that mining companies have violated the rights of citizens by polluting local drinking water supplies.
- **The Court expanded Art. 9 of the right to life and said: “*the right to have unpolluted water is a right of every person, wherever he lives.*”**

Sindh Water Laws



- West Pakistan Water and Power Development Authority Act 1958
- West Pakistan Water and Power Development Authority (Amendment) Ordinance 1964
- West Pakistan Water and Power Development Authority (Amendment) Act 1967
- West Pakistan Land and Water and Power Development Board (Reclamation Fee) Rules 1965
- West Pakistan Land and Water and Power Development Board (Authority for Payment from Board Fund) Rules 1966
- Karachi Water Management Board Ordinance 1981
- Sindh Canal and Drainage Act 1991 (may be no such law)
- Canal and Drainage (Extension to Rohri Canal Area) Act 1991
- Karachi Water and Sewerage Board Act 1996

Karachi Water and Sewerage Board (KWSB)



- Provincial Assembly of Sindh passed the **Karachi Water and Sewerage Board** Bill (No. PAS/Legis-B-6/96) in April 1996.
- The Karachi Water and Sewerage Board Act, 1996 (Sindh Act No.X of 1996) for the supply of water and disposal of sewerage in Karachi Division¹⁰.

Bulk Water Supply System



- Reserves in the nearby Hub Dam;
- Pumping of piped water from the Indus River near Thatta City, about 160 km away from Karachi.
- Exploitation of relatively adequate-quality potable water in selective zones within the city, by pumping wells and dug wells;

Demand and Supply



Current Demand:	1080 MGD
Current Supply:	670 MGD
Short fall:	430 MGD
Water Loss:	35%

Water Supply Sources



<u>Sources</u>	<u>Quantity (MGD)</u>
<u>INDUS</u>	
Greater Karachi	280
Gharo	028
K-II	100
Additional	040
K-III	100
<u>HUB DAM</u>	090
<u>DUMLOTEE Wells</u>	002
<u>OTHERS</u>	
Steel Mill	022
PQA	008
TOTAL	670

Water Losses



Water	Quantity (MGD)
Total water supplied	670
Water Loss Reduction @ 35%	234.50
Available water supply	435.50

Water losses due to the technical factors such as water pipe leakage estimated to be 20 percent. Some 15 percent water losses occur due to other reasons termed non technical losses: unbilled (assumed thefts). Though technically 80 percent water is available from the network; but by corollary the actual quantity of water loss in the system is 35 percent; therefore actual available water to the legal consumers is far less. Available water to legal consumers may be approximated around 65 percent.

Future Demand



Projected Water Demand by Type of Customer, 2005-2020 (MGD)¹⁵

Type of Demand	Years			
	2005	2010	2015	2020
Population (million)	15.12	18.93	23.13	27.55
Domestic water demand (MGD)	414	518	633	752
Other users water demand (MGD)	33.8	423.0	518.0	616
Total water demand (MGD)	752	941.0	1151.0	1368

Standard for drinking water



The National Standard for the country envisages drinking water in two categories:

- **For Urban population.**

The quantity is 120 Liters per person per day.

- **For Rural population**

The quantity is 45 Liters per person per day.

Water Quality



- Bulk water is conveyed to the city via open canals from the main storage
- The water is treated and made safe for human consumption (drinking, domestic & industrial uses).
- KWSB maintains a higher level of 2.00 ppm¹⁷ residual (free) chlorine at the reservoir outlets;
- Monthly 900 - 1000 water samples are collected for bacteriological analysis
- Tests are carried out in KWSB laboratory at COD Hills Filtered Plant.
- periodically samples are also tested at the Karachi University and PCSIR.

Water Filtration Plants & Treatment Capacity



Treatment Plant	Capacity (MGD)
COD Filter Plants (70 + 45	115MGD
Pipri (New) Filter Plant	50MGD
Pipri (Old) Filter Plant (25 +25)	050MGD
NEK (old) Filter Plant	025MGD
NEK (New) Filter Plant	100MGD
Hub Filter Plant	080MGD
Gharo Filter Plants (10 + 10	020MGD
TOTAL	440MGD

At Present Approximately 640MGD of water is being supplied to the city of Karachi (except Steel Mills & PQA) out of which 440 MGD is being filtered at the following 7 Water Filtration and Treatment Plants (Table 2,) According to KWSB 60% of the bulk water supply is filtered, and the remaining 40% is disinfected through chlorination. Due to these inadequate filtration capacities for water treatment, the water quality is compromised.

Water quality reported by PCRWR



Water samples were collected from 28 sources in Karachi that covered the major part of the metropolis.

- Only two sources were found to be safe.
- It was noticed that 86% of the water samples were contaminated with Coliforms and E.coli.
- 7% of the samples had high Sodium, Chloride and Sulphate ions more than allowed under permissible limits.
- Similarly 4% of the samples were found with an excessive ionic concentration of Calcium, Magnesium , hardness, K, F & TDS and 18% were identified having high levels of Iron.
- About 64% of the samples had excessive aluminium while 4% of the samples had high Nicle contents.
- 11% of the samples were found with high levels of Nitrous Oxide and one sample (4%) was found with an excessive level of Fluoride.

Water Diseases



Group of Disease	Examples
<p>Water-borne disease: Disease transmitted through water/ “dirty-water“ that has been contaminated by human ,animal ,or chemical wastes .</p>	<p>Cholera, Typhoid, Bacillary dysentery, Infectious hepatitis etc</p>
<p>Water-washed (water scarce) disease: Caused by lack of water and thrive in conditions where freshwater is scarce and sanitation poor.</p>	<p>Scabies, Skin Sepsis, Ulcers, Leprosy, Lice & thyphus, Dysenteries, Ascariasis, Parathyphoid etc</p>
<p>Water-based disease: Caused by aquatic organisms that spend part of their life cycle in the water and another part as parasite of animals.</p>	<p>Thread worm etc</p>
<p>Water-related insect vector disease: Transmitted by vectors-insects or other animals .</p>	<p>Yellow fever, Dengue fever, Malaria etc</p>

Water Disease



- Water Water-related diseases are a human tragedy , killing millions of people each year (account for 80% of all deaths in developing countries).
- Many diseases may be transmitted via the fecal-oral route ,and that occurs when human fecal is ingested through drinking contaminated water or eating contaminated food .
- In Pakistan, the mortality rate for children under age five is 101 deaths per 1,000 children. This mortality rate is responsible for 15 to 18 percent of all deaths of children under age five, making diarrhea one of the biggest killers of children (WHO, 2007). Unsafe drinking water, inadequate sanitation, and poor hygiene are the main causes of diarrhea in children. (ADB 2004; UNDP 2006a).



Household Findings

(UC 4, 6 & 7 of Gadap)

Data Sources



Community Base survey

- 06 FGDs with each Male and Female population were conducted separately in all three UCs.
- IDIs with 05 Local Govt. officials at Town level (Superintendent Engineer & Executive Engineer of Water and Sewerage of KWSB) and 02 NGOs representative (URC & HISAAR Foundation) were conducted.
- 276 Mother of under 5 years old children were interviewed and Observed.

Water Supply



- Major sources of water is piped water at 93%
- Purchase of water for drinking purpose by 9% household respondents.
- According to government official, 70-80% population have access to tap water

Water Supply



- Supply of piped water is in average 7 hours per day.
- Majority of the FGDs participants in UC 4 said water supply is 30 days in a month and 24 hrs in a day. In UC 6, Majority response they received twice in a week for 6 hrs. In UC 7 Majority of group participants use water tanker.
- According to officials, supply in 72 hrs should be for 16 hrs, but actual supply is 10-12 hrs in 72 hrs.

Water Supply



- Only 17% community respondents received bill of average Rs. 257.
- According to official, UC 7 have 10,000 unit and UC 6 have 25000 unit on billing.
- The recovery in UC 7 is 10% and in UC 6 is 30-40 percent.

Diseases related to Water



Household Survey:

- Knowledge of disease; 31% Diarrhea, 51% stomach pain, 7% skin infection, 5% vomiting.

FGDs:

- Stomach pain, Vomiting, Diarrhea, Headache, Sore throat and Hepatitis are reported as disease related with water in children and adult population.
- Most of the respondent using water without boiling or other filtration. Some of the female respondents of UC 6, said; they boil water when their children became ill.



School Profile Findings

Category of School



Category of School	No School	Percent
Government	356	70
Non-Government schools	153	30
Total	509	100

Type of School



Type of Schools	Government (%)	Private (%)
Girls schools	22	5
Boys schools	55	5
Mix Schools	23	90
Total Enrolled students	30672 Boys: 53% Girls: 47%	21116 Boys: 54% Girls 46%

School Environmental & Hygiene



Variables	Government (%) N=356	Private (%) N=153
Open defecation	17	4
Pile of trash within the premises	13	3
Pile of trash in surroundings	19	9
Teachers trained on Health & Hygiene	8	10
Existence of Toilet facility	62	85
Functional toilets in number of schools	33	48
Toilet separate for Girls	30	59
Dustbin available in toilet	4	40
Hand washing facility available	5	53
Availability of soap at hand washing facility	2	47



THANKS