How Corruption Threatens Karachi’s Water Supply

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Contemporary South Asia
Spring 2018
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Scope of Research:
By 2025, Pakistan is projected to deplete her water supply.1 By 2040, she will become the most water stressed country in all of South Asia.2 A 2014 study published by the Nature Conservancy listed Karachi, the industrial hub of Pakistan, as the sixth most water stressed city in the world.3 Official statements and media reports place the city’s demand at 1,100 million gallons per day (MGD) and their supply at 550 MGD, a stark deficit.4

However, much of the available water never actually reaches consumers due to theft and loss caused by corruption. By utilizing various journalistic accounts and investigative reports, I will outline the impact that petty and grand corruption has had on the availability of drinking water and propose several reforms that should be adopted to tackle the city’s water crisis.

The Political Economy of Water:
Much of Karachi’s residents rely upon the informal economy to obtain public services. After independence, the city’s political elites sought to create a welfare state that provided its citizenry with subsidized housing, health, education, and jobs.5 But a las, this was not to be. The newly created state lacked the adequate infrastructure needed to devise and implement policy as well as generate revenue, immediately creating a stark demand-supply gap for public utilities. This was exacerbated by the city’s burgeoning population that more than doubled from 435,000 to over 1 million following the influx of Indian migrants after partition.6

This demographic pressure, coupled with improvements in public health that decreased child mortality and green revolution technologies that drove farmers towards the cities, weakened the state’s capacity and prevented them from servicing the entire population.7 Thus, consumers were forced to engage with middlemen, such as non-state actors or corrupt bureaucrats, to obtain public goods.8 9 As the state’s capacity weakened over time, non-state actors emerged and obtained a semblance of political power that allowed them enter into quid-pro-quo arrangements with the bureaucracy and political establishment at the expense of the public. Through this lens we will analyze Karachi’s water crisis.

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2 “Top 33 Water-Stressed Countries: 2040,” World Resources Institute, data visualization by Mattocks, Young, and Reig, accessed March 8, 2018. 
http://www.wri.org/blog/2015/08/ranking-world%e2%80%99s-most-water-stressed-countries-2040
6 Ibid.
7 Ibid.
8 Ibid.
The State of Water in Karachi:
The city obtains water from two main sources; the River Indus and the Hub Dam. These two sources provide water to all 14 of Karachi’s towns. Figure 1 in the Appendix breaks down the source and supply-demand for each city based on 2008 estimates. The majority of Karachi’s towns, save for Orangi and Baldia, receive water from the Indus River. In February of 2016, the Hub Dam reached it’s “dead level” and has struggled to supply the city since.

The Karachi Water and Sewage Board (KWSB) is responsible for the production, transmission and distribution of water, maintenance of the sewage system, initiation of development schemes, and the collection of revenue. However, despite its mandate, the board has been accused by the Sindh High Court of corruption and pandering to the city’s Tanker Mafia, an informal cartel that steals water from the main supply and distributes it to residents at inflated prices.

In the 1990s, the KWSB was unable to deliver water amidst a shortfall in rain. Thus, the board established a series of hydrants throughout the city from which commercial tanker trucks would fill up from and distribute water to residents in need. Instead, the introduction of private tankers kick-started a burgeoning and illicit business where illegal hydrants have sprouted around the city. These hydrants siphon water from the main supply that is then resold by the tankers.

The Tanker Mafia’s Role in Water Distribution:
There are two ways the tankers can obtain water. The first is through a structured system involving a hydrant owner who connects his hydrant to a water source through a series of pipelines and issues contracts to each tanker. In exchange for noninterference, the hydrant owner provides a commission to the person whose water is pilfered away. Alternatively, tankers visit pits filled with ground or rainwater, pay a “munshi” or contractor for access, and

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14 Also referred to as Water Mafia.
18 Hussain & Shelley, 10
19 Hashim, Al Jazeera
21 Ibid.
extract water through a portable pump. These arrangements have been found in Orangi Town, Mauripur and Baldia Town, where private individuals have set up illegal hydrants that divert KWSB water into pits or cemented reservoirs. This results in inflated prices and consumers, who are already connected to the pipelines, being charged twice. Since the water that is supposed to flow through KWSB pipelines is being stolen, consumers end up paying both their utility bill and the water tanker to meet their demand.

In total, 10,000 tankers operate in the city. They make 50,000 trips, steal 10 million gallons of water, and generate a combined revenue of Rs150,000,000 ($1.43 million) every day. In a year, this adds up to $507.6 billion. The tankers have even formed a union called the All Karachi Water Tankers Ittehad.

Corruption within the Karachi Water and Sewerage Board:

To understand the relationship between the KWSB and the Tanker Mafia as well as how corruption has affected the distribution of water, we must differentiate between petty and grand corruption:

- **Petty corruption** is the “everyday abuse of entrusted power by low- and mid-level public officials in their interactions with ordinary citizens, who often are trying to access basic goods or services like hospitals, schools, police departments and other agencies,” and;
- **Grand Corruption** consists of acts “committed at a high level of government that distort policies or the central functioning of the state [in order to enable] leaders to benefit at the expense of the public good.

The Tanker Mafia should be thought of as product of both petty and grand corruption that arose under the backdrop of poor governance within the KWSB. The KWSB is divided into seven subsidiary departments. In each department, there is potential for exploitation.

- **Bulk Water Supply:** Provides water from reservoirs to underground tanks through a series of pipelines.
- **New Water Connection:** Approves installation of water connections.

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22 Ibid.
21 Ibid.
24 Ibid.
27 Kunbhar, Dawn
28 Ibid.
• **Construction Design and Civil Maintenance**: Builds pumping stations, reservoirs, tanks, and lays water supply lines.

• **Water supply**: Supplies water to residential, commercial, and industrial units.

• **Accounts and Recoveries**: Prepares contractor and consumer bills.

• **Purchasing**: Purchases miscellaneous items including heavy machinery.

• **Mechanical Maintenance**: Performs machine maintenance

In the *Bulk Water Supply Department*, staff are bribed by the tanker trucks to provide access to the supply lines. In the *New Water Connection Department*, officials take bribes to provide water lines to households at faster rates than through the official process. In the *Water Supply Department*, the quantity of water allocated to residential, commercial, or industrial areas is controlled by a “key man” who, by adjusting a valve, determines the amount and duration of water received in an area. Thus, the key man is incentivized to grant water to patrons who please and pay him and deny it to those who can’t. Finally, in the *Accounts and Recoveries Department*, corrupt officials issue inflated bills and demand bribes to rectify these “errors.” Given that water consumption is unmetered and dependent upon plot size rather than consumption, consumers aren’t able to challenge their bills.

Based on data collected by the Orangi Pilot Project in 2008, the majority of Karachi’s towns, with the exception of the relatively affluent DHA and Clifton areas, suffer from a scarcity in water. The Tanker Mafia’s entire operation depends upon the informal economy – which was outlined above – and petty corruption.

While following two separate tanker trucks for his article ‘A Day in the Life of a Water Tanker,’ Junaid Ahmed observed drivers bribing police officers who knew that “the sight of a water tanker” meant “more money in bribes.” Ahmed writes about driving towards Baldia Town with a full tank before being stopped by a police officer. Within 20 seconds, the driver pulls out 200 rupees, hands it to the officer, and drives away – without a single word being spoken. The driver remarked that, “if we don’t hand them [the police] some bribe, they would not allow us to enter Hub City or will throw us behind bars.” Even the Rangers, a paramilitary police force, entrusted to manage the hydrants for the KWSB, have been found to sell water at double the official price to tankers and residents on the informal market.

The issue of petty corruption involves the city’s residents as well. Residents, facing a scarcity in water, can bribe a key man to increase their supply or approach an official from the *New Water Connection* to quickly obtain a water connection. Alternatively, residents can drill their own

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32 Ibid.

33 Ibid., 377

34 Ibid.

35 Ibid., 378

36 Ahmed, Junaid, *Dawn*

37 Hussain, Nazia, and Shelley, Louise, 11.
wells, purchase bottled water, or buy unfiltered water from a private tanker. Since there are so few pipes connecting households to the bulk supply and where there are connections, residents receive less than expected due to leakages or theft, they are forced to engage in petty corruption and/or participate in the informal economy to make ends meet.

Thus we need to ask ourselves – is corruption a natural byproduct of water scarcity?

Is there Enough Water to Go Around?
The standard answer provided by the KWSB is yes – there is a gap between supply and demand and this incentivizes bureaucrats and police officers to engage in rent seeking and provide water to residents in need. Above, I cited a figure that placed the city’s demand at 1,100 MGD and supply at 550 MGD. However, these figures, as well as the claim that there a shortage in water, ought to be viewed with a dose of skepticism.

In March of 2018, the Managing Director of the KWSB told the Sindh High Court that for a city of 22 million people, the board needs to supply 1,188 MGD, of which only 650 MGD is available. However, on the KWSB’s website, they list the city’s demand to be between 720MGD and 972MGD for a population of 18 million and their total supply to be 670MGD. Today, after the census has finally been completed after 19 years, the population of the city was found to be 14.9 million. Given that the population is less than 22 or 18 million, clearly the demand should be lower than 1,188, 1,100, 972, or even 720 MGD.

On the issue of supply, some facts ought to be noted. On the KWSB’s website, they place the city’s total water supply at 670MGD. A component of this is the Hub Damn, which once provided 90 MGD of water, but has now run dry. (The Hub Dam also supplied water to Orangi and Baldia, the two densest and poorest towns, suggesting that the 2008 data shown in Figure 1 needs to be adjusted). Another source of water is Port Qasim Authority and the Karachi Steel Mill, which collectively divert 30 MGD away for industry. Thus, the total water available for the city’s residents is 550 MGD, the most commonly cited figure. This, however, ignores the 35% of water, or 234.50 MGD, that is lost due to leakages or theft, bringing the water that consumers actually receive through the KWSB to 285.5 MGD.

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According to the Chief Justice Mian Saqib Nisar, “water is available in Karachi, but only through tankers at exorbitant rates.” F. H. Mughal, writing for Dawn, argues that there is sufficient water available in Karachi but the KWSB uses water scarcity as an excuse to cover-up their role in servicing the mafia. He argues that the “KWSB deliberately does not provide water to many areas” and “creates” an “artificial water crisis,” forcing residents to buy water from the tankers who then pay commissions to officials within the KWSB.

One way to know this for sure is to determine the city’s water demand and supply and see whether there is a scarcity or not. This is impossible to do since the KWSB’s website hasn’t been updated in 5 years! By using the Wayback Machine, an online tool that preserves timestamps of internet pages, I found that the last time the KWSB updated their Quantum of Services, their numerical breakdown of water source and destination, was in 2011. (Refer to Figures 2-9 in the appendix). The makes me wonder whether water is scarce at all?

Mohammad Tariq Sadozai, the president of the All Karachi Water Tankers Ittehad, argues that “the quantity of water required for the city is available in the system, but the KWSB is unable to provide that water to the citizens.” In a 2015 press conference at the Karachi Press Club, he remarked that “this water shortage is just artificially created to fill the pockets of certain high-ups in the government.” He added that “[i]t is strange that the KWSB bulldozes a hydrant and a few months later another hydrant comes up in the very same place.”

In November of 2016, the Anti-Corruption Establishment (ACE) found that several KWSB officials were “involved in [the] misappropriation of industrial and commercial water connection funds” and had accepted bribes to provide water connections. In December of 2017, the ACE sought permission to register a case against 11 senior KWSB officials for ‘patronizing illegal hydrants’ in the city. Of the accused was Tabish Raza Hasnain, the Executive Engineer Works who, according to the report, worked “in connivance with contractors and the mafia” by providing connections to illegal hydrants. A simple google search of “Anti-corruption establishment KWSB” will return results of several mid and high level corruption scandals within the KWSB involving officials accepting bribes to provide water connections.

Speaking to Asad Hashim, a journalist from Al Jazeera, an anonymous ex KWSB-chief said: “The mafia is very strong .... There is no doubt that the illegal connections that are made, our KWSB man knows about it. Even if it is an [illegal] connection within a building, he will know that a connection has been installed in the night.” Another anonymous KWSB official even said

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45 Ibid.
46 Ibid.
47 Kunbhar, Zulfiqar, Dawn.
51 Ibid.
that he had been asked to curb operations against illegal hydrants by certain members of the
government. Why do elements of the state pander to the Tanker Mafia?

**The Profitability of Water Theft:**
With the emergence of powerful non-state actors who service their populations, the state
assumes the role of referee and determines which groups, depending upon mutual gain, are
tolerable and which are not. For example, in Orangi Town, factions of the Tehreek-i-Taliban
Pakistan (TTP) administered illegal hydrants that were patronized by the tanker mafia until
they were shut down by the Rangers. Whereas in Lyari, Uzair Baloch, a notorious crime lord
and head of the People’s Peace (or Aman) Committee (PPC) was allowed to operate with
impunity so long as he provided the Pakistan People’s Party with votes. On the side of their
criminal activity, under Baloch, the PPC provided food stamps and ran schools and hospitals.
However, this arrangement broke down once Baloch began fielding candidates against the PPP,
prompting the Rangers to clamp down on his operations. In this scenario, the Tanker Mafia is
the non-state actor that elements of the state pander to.

Access to water, much like land, is a profitable enterprise. In fact, political parties jockey for
ministerial positions in land and water and exploit “insider information” to engage in land
grabbing of real estate intended for development. Thus, political parties work in collusion
with the mafia and the KWSB to obtain land, water and votes and share the spoils amongst all
involved – at the expense of those outside their constituency.

Farooq Sattar, the leader of the Muttahida Quami Movement (MQM), accused the PPP of
providing of water in exchange for votes and cited this as the reason for the water shortages in
his constituencies. In response, Saeed Ghani, a senator from the PPP, said “one particular party
[MQM], that enjoys a huge support in Karachi, is creating the crisis by puncturing main lines
and causing an artificial crisis.” While it is impossible to independently verify either of these
claims, it is likely that one, if not both, parties are guilty of colluding with the Tanker Mafia in
exchange for votes or water for their development projects.

**The Cycle of Corruption:**
Corruption only entrenches the power of the Tanker mafia by forcing the population to be
dependent upon them. When the Tanker Mafia bribes officials from the Bulk Water Supply
department, they inadvertently damage the water lines to fill their trucks, causing leaks and
contamination. The unavailability of water from the KWSB forces consumers to rely on the
tankers. At the same time, by puncturing the lies, sewerage gets mixed with the water supply.
Not coincidently, an independent study commissioned by the Pakistan Council of Research in

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52 Hashim, Asad, *Al Jazeera.*
53 Ahmed, Junaid, *Dawn.*
54 Hussain & Shelly, 13.
55 Ibid., 11
57 Ibid., 376.
Water Resources found that 90.7% of water in Karachi was “unsafe for drinking purposes.”\textsuperscript{59} As a result, consumers refuse to pay their bills. (The KWSB only collected 1/4\textsuperscript{th} of all their bills in 2016\textsuperscript{60}) In total, this contributes to a 59.3% deficit in the KWSB’s accounts.\textsuperscript{61} It should however be noted that the board’s largest defaulter is the federal and provincial government, the reasons for which are unknown.\textsuperscript{62} This prevents the board from performing maintenance, expanding their infrastructure, or raising wages.

Without funds to expand their infrastructure, the population will continue to depend on tankers to meet their needs. Without funds for maintenance, the board will be unable to purify their water. In fact, during the High Court’s investigations into the KWSB, it was revealed that 200 million gallons of water were delivered into the city unfiltered. At the Pipri filter plant laboratory, investigators discovered that there were no records of past testing analysis and the lab lacked the proper infrastructure needed to test for heavy metals in water that might be contaminated from industrial and domestic waste sources.\textsuperscript{63} According to KWSB officials cited in a \textit{Dawn} report, this is the result of “serious financial constraints.”\textsuperscript{64} This is corroborated by Farhan Anwar, an urban planner and architect, who told Aljazeera that the “lack of capital investment affects not just the ability to provide water, but to make sure that it is clean enough to be consumed.”\textsuperscript{65} Contaminated water will thus cause more consumers to renegade on their bills and further cripple the board’s account.

Finally, without sufficient revenue, the KWSB will be unable to pay their employees a meaningful wage that is sufficient to deter corruption. According to a report published by faculty at the University of Engineering and Technology in Karachi, after surveying several officials within the KWSB who had accepted bribes, the researchers concluded that to deter corruption, “100% - 200% increases in salaries” would suffice.\textsuperscript{66}

In the end, the lack of funds prevents the state from establishing control, the tankers emerge more in demand than ever, corruption continues so long as workers aren’t paid a meaningful wage, and consumers end up with water that is contaminated and expensive.

\textsuperscript{59} Ibid.
\textsuperscript{60} Toppa, \textit{The Guardian}
\textsuperscript{61} Hashim, \texti{Al Jazeera}.
\textsuperscript{62} Hashim, \texti{Al Jazeera}.
\textsuperscript{64} Ibid.
\textsuperscript{65} Hashim, \texti{Al Jazeera}
Concluding Remarks:
To address the water crisis, I propose two policies:

1) **The Tanker Mafia and the Illegal Hydrants need to be regulated and brought under the Fold of the Karachi Water and Sewerage Board.** As it stands, all their transactions are informal and represent a huge loss in government revenue that could be used to improve and expand the infrastructure and increase wages to deter corruption.

2) **Anti-Corruption Efforts need to focus on the patrons of the Tankers and the illegal hydrants.** The president of the Tanker Union was right – the tankers are simply transporting resources to residents in need. Instead of arresting tanker and hydrant operators, the Government should approach the hydrant and tanker owners with a deal – tell us who funds your work, we won’t press charges, and you can incorporate as a government employee under the KWSB. This should be followed up with aggressive prosecutions against members of the bureaucracy and political establishment who are found guilty of pandering to the mafia.

Policy 1 and Policy 2 are intended to improve the fiscal solvency of the board by diverting funds that the tankers generate from the informal economy into the public sector and by eliminating the special interests that pander to the mafia for their own personal or political gain. It is my hope that these policies can help Karachi address the water crisis before it is too late.
Appendix:

Figure 1: Table Showing Water Source, Availability, and Demand by Town

<table>
<thead>
<tr>
<th>Town</th>
<th>Water Source (2008)</th>
<th>Quota (mgd) (MGD)</th>
<th>Demand (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lyari</td>
<td>Indus River</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Saddar</td>
<td>Indus River</td>
<td>32</td>
<td>30</td>
</tr>
<tr>
<td>Kaemari</td>
<td>Indus River</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Jamshed</td>
<td>Indus River</td>
<td>30</td>
<td>14</td>
</tr>
<tr>
<td>Gulshan</td>
<td>Indus River</td>
<td>35</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area</th>
<th>Location</th>
<th>Number 1</th>
<th>Number 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shah Faisal</td>
<td>Indus River</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Malir</td>
<td>Indus River</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>Landhi</td>
<td>Indus River</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>Korangi</td>
<td>Indus River</td>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>Bin Qasim</td>
<td>Indus River</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Gulberg</td>
<td>Indus River</td>
<td>22</td>
<td>17</td>
</tr>
<tr>
<td>North Nazimabad</td>
<td>Indus River</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>Liaquatabad</td>
<td>Indus River</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>North Karachi</td>
<td>Indus River</td>
<td>35</td>
<td>20</td>
</tr>
<tr>
<td>Orangi</td>
<td>Hub Dam</td>
<td>40</td>
<td>12</td>
</tr>
<tr>
<td>Location</td>
<td>Place</td>
<td>Flood Height</td>
<td>Damage</td>
</tr>
<tr>
<td>----------</td>
<td>-------</td>
<td>--------------</td>
<td>--------</td>
</tr>
<tr>
<td>Baldia</td>
<td>Hub Dam</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Site</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td>Gadap</td>
<td>Indus River</td>
<td>8</td>
<td>3</td>
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<tr>
<td>Cantonment</td>
<td>Indus River</td>
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<td>22</td>
</tr>
<tr>
<td>DHA</td>
<td>Indus River</td>
<td>6</td>
<td>9</td>
</tr>
</tbody>
</table>
Figure 2: Screenshot of KWSB Quantum of Services from October 28, 2011

<table>
<thead>
<tr>
<th>TOTAL QUANTITY OF SERVICES TO MANAGE AND LOOK AFTER:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVER 150 PUMPING STATIONS</td>
</tr>
<tr>
<td>OVER 4,600 KM OF PIPE LINES</td>
</tr>
<tr>
<td>OVER 100 MILLION GALLONS OF FUEL</td>
</tr>
<tr>
<td>BILLING AND RECOVERY OF 1.4 MILLION ESTABLISHMENT / CONSUMERS</td>
</tr>
<tr>
<td>OVER 400,000 VALVES</td>
</tr>
<tr>
<td>OVER 250,000 MANHOLELS</td>
</tr>
<tr>
<td>OVER 3,400 SQ. KM OF AREA B &amp; 18 MILLION KARACHI</td>
</tr>
</tbody>
</table>

**WATER SUPPLY**
- POPULATION: 18 MILLION
- MAXIMUM DEMAND (20-30 min) 972 MGD
- MINIMUM DEMAND (8-10 hr) 720 MGD
- AVAILABLE SUPPLY: 
  - Greater Karachi 280 mgd
  - Gharo 028 mgd
  - K II 100 mgd
  - Additional 040 mgd
  - K III 190 mgd
  - Steel Mill 022 mgd
  - PQA 008 mgd
  - HUB DAM 090 mgd
  - DUNIOTTE WELLS 002 mgd
- TOTAL: 670 mgd
- Water Loss Reduction 35%: 234.50 MGD
- Available Water Supply: 435.50 MGD

**WATER LOSSES (35%) Net Supply after accounting for Leakage / Pilferage / Non revenue water (NRW): 435 MGD**

At present a total 640 MGD of water is being supplied to the city of Karachi except Steel Mill B & PQA out of which 440 MGD is being filtered at:-

- COD Filter Plants (40 - 45) 115 MGD
- Pipri (New) Filter Plant 050 MGD
- Pipri (Old) Filter Plant (20 - 25) 050 MGD
- NEK (Old) Filter Plant 025 MGD
- NEK (New) Filter Plant 010 MGD
- Hub Filter Plant 080 MGD
- Gharo Filter Plants (10 - 10) 020 MGD

TOTAL: 440 MGD

GAP OF 212 MGD IN WATER SUPPLY AND FILTRATION CAPACITY

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Figure 3: Screenshot of KWSB Quantum of Services from September 21, 2012

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>OVER 150 PUMPING STATIONS</td>
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GAP OF 212 MGD IN WATER SUPPLY AND FILTRATION CAPACITY
Figure 4: Screenshot of KWSB Quantum of Services from September 5, 2013

Figure 5: Screenshot of KWSB Quantum of Services from September 23, 2014
Figure 6: Screenshot of KWSB Quantum of Services from April 25, 2015

TOTAL QUANTUM OF SERVICES TO MANAGE AND LOOK AFTER:
- OVER 150 PUMPING STATIONS
- 25 BULK RESERVOIRS ON INSTALLATIONS
- OVER 10,000 KM OF PIPE LINES
- OVER 900 MILLION GALLONS OF FLUID
- BILLING AND RECOVERY OF 1.4 MILLION ESTABLISHMENT / CONSUMERS
- OVER 400,000 WELVES
- OVER 250,000 MANHOLES
- OVER 3,600 SQ. KMS OF AREA & 18 MILLION KARACHI

WATER SUPPLY
- POPULATION: 18 MILLION
- MAXIMUM DEMAND (25% - 34% p.d.) 972 MGD
- MINIMUM DEMAND (10% - 34% p.d.) 720 MGD

- AVAILABLE SUPPLY
- INDUS SOURCE: 1,650 mgd
- Greater Karachi: 280 mgd
- Ghoro: 320 mgd
- K-III: 100 mgd
- K-III: 100 mgd
- Steel Mill: 100 mgd
- PQA: 220 mgd
- Hub Dam: 100 mgd
- DUNDLOTTA WELLS: 380 mgd
- TOTAL: 670 mgd
- WATER LOSS REDUCTION 35%: (-) 234.50 MGD
- AVAILABLE WATER SUPPLY 435.50 MGD

WATER LOSSES (35%) Net Supply (after accounting for Leakage / Pipework / Non revenue water (NRW) 435 MGD
At Present a total 640 Approx MGD of water is being supplied to the city of Karachi except Steel Mills & PQA out of which 440 MGD is being filtered at:-
- COD Filter Plants (30 - 45) 115 MGD
- Pipri (New) Filter Plant 050 MGD
- Pipri (Old) Filter Plant (25 - 25) 050 MGD
- NEX (New) Filter Plant 030 MGD
- NEX (New) Filter Plant 100 MGD
- Hub Filter Plant 030 MGD
- Ghoro Filter Plants (10 - 10) 020 MGD
- TOTAL: 440 MGD

GAP OF 212 MGD IN WATER SUPPLY AND FILTRATION CAPACITY
Figure 7: Screenshot of KWSB Quantum of Services from September 6, 2016

Figure 8: Screenshot of KWSB Quantum of Services from September 13, 2017
Figure 9: Screenshot of KWSB Quantum of Services from May 2, 2018 (Today)

<table>
<thead>
<tr>
<th>TOTAL QUANTUM OF SERVICES TO MANAGE AND LOOK AFTER</th>
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<tbody>
<tr>
<td>○ OVER 150 PUMPING STATIONS</td>
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<tr>
<td>○ 25 BULK RESERVOIRS ON INSTALLATIONS</td>
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<tr>
<td>○ OVER 10,000 KM OF PIPE LINES</td>
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<tr>
<td>○ OVER 900 MILLION GALLONS OF FLUID</td>
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<tr>
<td>○ BILLING AND RECOVERY OF 1.4 MILLION ESTABLISHMENT / CONSUMERS</td>
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<tr>
<td>○ OVER 400,000 VALVES</td>
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<td>○ OVER 250,000 MANHOLES</td>
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<tr>
<td>○ OVER 3,600 SQ. KMS OF AREA &amp; 18 MILLION KARACHI</td>
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<tr>
<th>WATER SUPPLY</th>
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<tbody>
<tr>
<td>○ POPULATION 18 MILLION</td>
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<tr>
<td>○ MAXIMUM DEMAND (≥ 30 - 54 gped) 972 MGD</td>
</tr>
<tr>
<td>○ MINIMUM DEMAND (≥ 30 - 54 gped) 720 MGD</td>
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<thead>
<tr>
<th>AVAILABLE SUPPLY</th>
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<tbody>
<tr>
<td>○ INDUS SOURCE :--------</td>
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<tr>
<td>○ Greater Karachi 280 mgd</td>
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<td>○ Gharo 028 mgd</td>
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<tr>
<td>○ K-II 100 mgd</td>
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<tr>
<td>○ Additional 040 mgd</td>
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<tr>
<td>○ K-III 100 mgd</td>
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<tr>
<td>○ Steel Mill 022 mgd</td>
</tr>
<tr>
<td>○ PQA 008 mgd</td>
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<tr>
<td>○ HUB DAM 090 mgd</td>
</tr>
<tr>
<td>○ DUMLOTEE WELLS 002 mgd</td>
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<tr>
<td>○ TOTAL: 670 mgd</td>
</tr>
<tr>
<td>○ Water Lose Reduction 35% (-) 234.50 MGD</td>
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</tbody>
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Available Water Supply 435.50 MGD