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# Urban Water Management – A Transformation Strategy for KWSB



Hisaar Foundation  
Think Tank on the Rational Use of  
Water  
Zohair Ashir & Daniya Khalid

## Summary

### Urban Water Management – A Transformation Strategy for KWSB

By Zohair Ashir & Daniya Khalid

- 1.0 Introduction:** Karachi is the largest city of Pakistan with a population estimated to be close to 20 million. Karachi Water & Sewerage Board (KWSB) is a service based consumer oriented organization responsible for production, transmission, treatment and distribution of potable water to the citizen of Karachi, managing sewerage system to ensure hygienic environment and collection of revenue for sustained economic viability. However, by all accounts, the water situation in Karachi and the functioning of KWSB has deteriorated over the last decades where it now needs major transformation and reform. This paper sets out to address the key issues and offers an alternate for solving the current situation faced by KWSB from a governance perspective. The focus of this paper is more on providing solutions rather than analyzing problems which have been amply documented elsewhere.
- 2.0 Problem Statement:** Karachi and KWSB face a number of chronic problems:
- a) Poor governance and management (weak Board, poor leadership, lack of accountability and performance recognition, absent modern HR practices, and policies,
  - b) Lack of autonomy and political interference,
  - c) Outdated infrastructure and operating systems (no investment strategy, neglect in maintenance and monitoring of work ,
  - d) Deficiencies in water quality and access,
  - e) Rising water demand and decreasing water supply,
  - f) Financial mismanagement (poor revenue collection, no accountability for Non-Revenue Water, irregular tariff regime),
  - g) No or limited customer focus or service delivery.
- 3.0 Recommendations for Transformation:** These recommendations are based on a thorough review of international and local examples of best practices and the experiences of Hisaar Foundation Think Tank members who bring a varied blend of water experts and specialists from other areas (economists, management, academia, engineering, law and media ). Most of all, it reflects a studied approach of those who have lived and grown with the city of Karachi.
- A.** There is no need to “re-invent the wheel”. We should consider the study undertaken by Asian Development Bank, “ Good Practices in Urban Water Management by ADB, 2012” as a case in point which can show us a path to making KWSB perform efficiently. This study focuses on eight cities of Asia in the water sector with varying degrees of how they achieved their transformation. The cities examined include Colombo, Bangkok, Singapore, Jamshedpur, Kuala Lumpur, Shenzhen, Phnom Phen and Manila. The city of Manila bears strong resemblance to Karachi and is used as model for adaptation by KWSB.
- B.** As part of its ‘modernization and turnaround strategy’, we strongly recommend entering into an arrangement through a transparent process of deregulation and divestment. The government/KWSB should clearly define its aim and objectives to enter into such an agreement. The government to remain an Asset owner and Regulator.
- C.** An amended model of public private partnership is required -- Government Investor Public Partnership (GIPP) which allows ownership and interest of the government, operating and management role for an investor with reasonable return on investment and representation of publicly elected city officials on the Board of the entity.
- D.** The primary goal of this transition is to focus on the governance and institutional reform and creating an enabling environment with focus on service delivery, customer satisfaction, investment strategy and infrastructure development and strong emphasis on revenue collection.
- E.** Under the agreement with the Investor/Contractor, pro-poor and interests of the underserved population may be secured through “ guarantees of participation” and concessions.
- F.** Goal- must be to provide safe piped water to all residents with continuous water supply on 24x7.

# Urban Water Management – A Transformation Strategy for KWSB

By Zohair Ashir & Daniya Khalid

## 1) Introduction

Karachi is the largest city of Pakistan with a population estimated to be close to 20 million. It is also the commercial hub of the country contributing over 20% of GDP and the largest employment base in Pakistan. Karachi is ranked among the top 25 mega-cities of the world<sup>1</sup>. However, due to the highly multifaceted aspects of its evolution, economy, population mix, ethnicity and socio-political positioning, it has become one of most difficult cities to govern. The weakening of governance over the years has resulted in sharp decline in all services - education, health, solid waste, water and transportation etc.

In the context of Pakistan, it is said that as goes Karachi, so goes the well-being and growth of the country. So for Pakistan, it is critical that Karachi should become among its best managed cities. Among the many infrastructure and governance challenges the city faces, foremost among them is the worsening situation of the water supply sewerage and its management by Karachi Water and Sewerage Board (KWSB).

This paper sets out to address the known challenges and offers solutions for the government and Karachis's multiple stakeholder groups to consider and adopt. This paper addresses this issue from a governance perspective. It is a strong belief of the Hisaar Foundation's Think Tank for Rational Use of Water<sup>2</sup>, that many ills of Pakistan can be linked to poor governance and weakening of the institutions. It is also our conviction that by resolving the governance aspect of the problems in water, most of the attendant problems associated with water supply and management can also be solved --- non-availability of water, lack of autonomy, financial burden, lack of investment, infrastructure woes, non-revenue water (NRW), water pricing, equitable water distribution and customer focus.

We have taken the example of KWSB as a model for demonstrating the problems and solutions which could be cited as typical of the challenges faced by other urban areas of Pakistan. In other words, what may work for KWSB can be applied to other urban water utilities of Pakistan.

**Table 1. Major Water Utilities by Cities**

City and Water Utility	Current Total Population (estimate in millions)	Total Households (estimate in millions)	Budget (rupees in billions)
Karachi - Karachi Water and Sewerage Board (KW&SB)	16.62	3.66	32.9
Lahore- Water and Sanitation Authority (WASA), Lahore	8.74	1.46	13.79
Faisalabad- Water and Sanitation Authority (WASA), Faisalabad	3.56	0.56	2.09
Peshawar- Water and Sanitation Services Peshawar (WSSP)	1.73	0.39	5.5
Quetta- Water and Sanitation Authority (WASA), Quetta	1.1	0.22	0.85
<b>Total</b>	<b>31.75</b>	<b>6.29</b>	<b>55.13</b>

*While we have undertaken a brief situation analysis of the water supply in the city, we have purposefully not dwelt at length on the discussion of the problems as they have been amply documented in the body of work on Karachi, and the policy makers and planners are all well aware of the challenges. Rather our focus has been on identifying solutions and decisions required to move forward.*

The information and data reviewed for this paper comes from desk research, available data and studies on the water sector, insights of Hisaar Foundation's work with KWSB over the years. Other relevant

<sup>1</sup> The population estimate for the Karachi urban area has been substantially reduced because the results of the 2017 census indicate that the previously reported figure was high.

<sup>2</sup> The Think Tank is a multi-stakeholder platform which provides national leadership in Pakistan on the crucial issue of promoting the rational use of water, its improved management and providing policy directions.

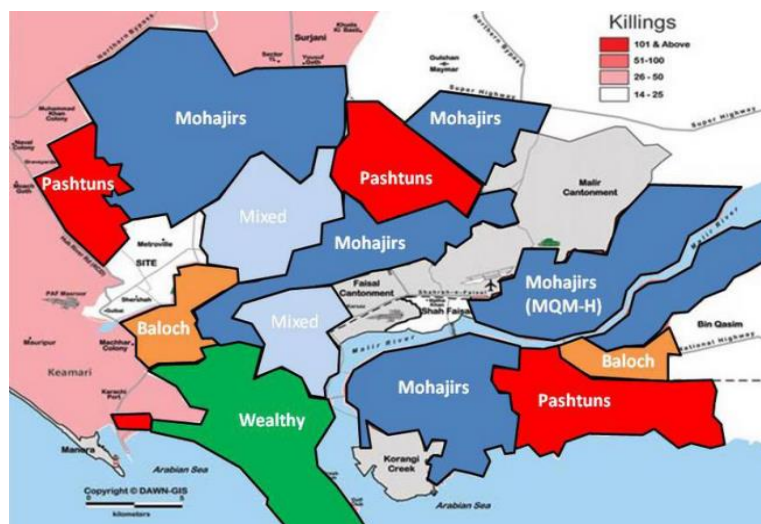
documents reviewed were the National Water Policy 2018, Sindh Drinking Water Policy 2017, and Sindh Sanitation Policy 2017. Most importantly, we have also relied upon the expertise and knowledge of the Think Tank members who bring their experience in this area.

## 2) Brief Situation Analysis - Karachi Today

Karachi today is a highly polarized and fragmented city politically, socially and economically. The city is making news headlines on poor governance, poor quality urban planning, aging infrastructure, political unrest and frequent law and order disruptions.

The capital of Sindh province, Karachi is the commercial hub of all of Pakistan and holds a significant economic status due to its ports. The city is also known as the financial capital of the country and handles 95% of Pakistan's foreign trade and almost 90% of the head offices of the banks, financial institutions and multinational companies. The country's largest stock exchange is Karachi-based, it also comprises about 40% of the total banking and insurance sector of the country. Karachi contributes 20% of GDP<sup>3</sup> and adds 45% of the national value added. Being a major industrial city Karachi retains 40% of the total national employment in the large scale manufacturing sector<sup>4</sup>.

**Fig 1. Ethnic Demographic Matrix of Karachi**



Source: Dawn News

Being the financial and commercial capital, the city attracts people from all over the country. The provisional result of the 6<sup>th</sup> national census show that Karachi's population has increased to 16 million<sup>5</sup>. While the number of migrants to the city increases daily, the city is not well equipped to deal with the inflow of mass population influx and the demand this places on water.

Earlier analysis revealed that 50% of Karachi's population lives in informal settlements *katchi abadis*<sup>6</sup>. Now, despite the fall in city's percentage of population living in poverty from 23% to 9% over the years 2005-2015, Karachi houses 9% of Sindh's population living in poverty. These average statistics however do not capture areas of high poverty scattered throughout the city.

Despite perceptions of insecurity and unfavorable living conditions in Karachi, the city remains a favorite hub for economic migrants. The city's population growth rate has declined to 2.4% per year<sup>7</sup> but a high provincial urbanization rate of 52.2% translates into people moving to Karachi and stressing the already limited resources. Karachi is the "go to" place for rest of the country for perceived economic well-being.

## 3) Water Use in Karachi

<sup>3</sup> The World Bank, Karachi Neighborhood Improvement Project, Nov 2016

<sup>4</sup> Political Turmoil in a Megacity: The Role of Karachi for the Stability of Pakistan

<sup>5</sup> Other estimates realistically place this number around 20 million claiming that the census left out one district of Karachi due to demarcation and political issues

<sup>6</sup> Sindh Katchi Abadi Authority 2002

<sup>7</sup> 6th Population & Housing Census-2017 [As on January 03, 2018]



Karachi has been grappling with many problems during the past three decades but water supply and sanitation remains a core issue.

Access to water and quality of service is extremely deficient. Water supply is highly irregular and inequitable with decline in the amount of water available in the last 10 years. The average water availability often ranges from 2 to 4 hours a day for those fortunate to have piped water supply (mostly in the old and central part of the city) whereas the most affluent neighborhood of Karachi (Defense Housing Authority) and those in *katchi abadis* (estimated to be about 50% of the population) rely on water delivery through private contractors on need basis. Supply of water to Karachi from two major sources has declined. According to recent KWSB projections, the Indus River supplies approximately 500 MGD against its quota of 650 MGD and the Hub dam which is designed to provide 100 MGD provides a minimal flow of 10 MGD. After accounting for other water sources and system losses the total supply of water to Karachi is estimated to be 500 MGD. It has been reported that during water system breakdown and repair the water supply further reduces to 332 MGD<sup>8</sup>.

**Table 2. Water Availability in Karachi**

Current estimated population	16 million
Total average available supply	550 MGD
Water loss	50-30 MGD
Net available supply	500 MGD
Demand	1100 MGD
Current short fall (demand – supply)	600 MGD
Non-revenue water (NRW)	40-60%
Additional water required every 5 years for next 15 years at current projection rates	100 MGD
Water requirement per capita	54 gallons
Water currently available per capita	25 gallons
Water demand by 2025	1350, MGD <sup>9</sup>
Average duration of water supply available	2-4 hours/day

Source: Karachi Water Supply and Sewerage Board

An official sectorial breakdown of the water usage in the city does not exist; KWSB supplies a fixed amount of 130 MGD to the Industrial sector of Karachi. The rest 370 MGD is utilized by domestic and commercial consumers as well as municipalities, parks and essential services such as hospitals, and schools, etc. Current estimates show that 25 gallons water per capita is being supplied to Karachi's citizens against a projected demand of 54 gallons per capita per day.<sup>10</sup> Many parts of the city and the households, from the very poor to the affluent areas rely on water delivery through commercial operators, mostly illegal and often referred to as the 'water mafia'. The water distribution system is in poor and outdated condition, on an average 40 – 45 years old with extremely corrosive infrastructure. Most

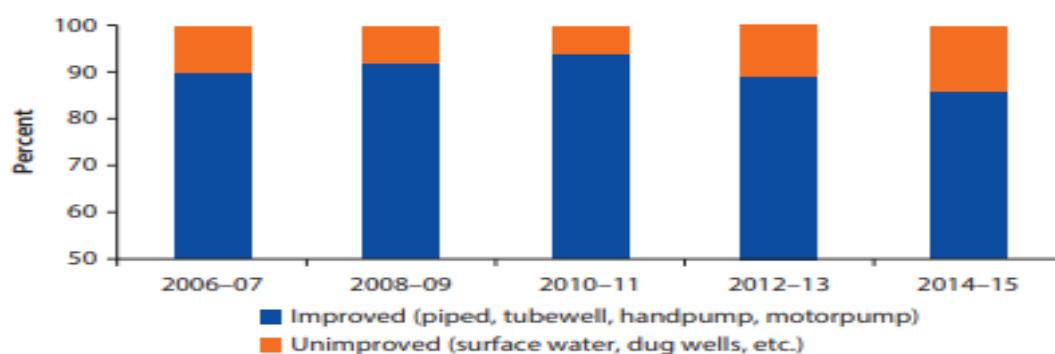
of the water transmission and distribution lines of Karachi Water and Sewerage Board were mostly installed during the 1960s and 1970s and have completed their designed life.

**Fig 2. Percentage of Karachi's Population with Access to Drinking Water from Improved Sources**

<sup>8</sup> Water supply to Karachi half of its quota to around 332 mgd [https://dailytimes.com.pk/342594/water-supply-to-karachi-half-of-its-quota-to-around-332-mgd/amp/?\\_\\_twitter\\_impression=true](https://dailytimes.com.pk/342594/water-supply-to-karachi-half-of-its-quota-to-around-332-mgd/amp/?__twitter_impression=true)

<sup>9</sup> Karachi City Diagnostic, City Sustainability and Inclusion, Service Delivery, World Bank, July 2016

<sup>10</sup> Karachi Water Supply and Sewerage Board, June 2018



Source: Pakistan Social and Living Standards Measurements Survey and World Bank staff calculations.

Other sources of water supply at Karachi include shallow groundwater and deep groundwater which are heavily exploited for domestic as well as industrial use. Excessive pumping of groundwater through boreholes and wells, leads to an encroachment of the interface between seawater and freshwater. The contamination by salty seawater further deteriorates potable groundwater quality in the coastal aquifer.

Currently up to 60% of city population has no access to public sewerage system and less than 10% of wastewater of the city is being treated. About 30,000 people, mostly children, die each year in the city due to consumption of contaminated water. The quality of water is substandard; according to a recent study conducted by Pakistan Council of Research in Water more than 90% samples collected from various places in Karachi were declared unsafe for drinking purposes.

The water problem is further compounded by the decline in the institutional capacities to manage the system. Chronic mismanagement, lack of leadership, political intervention in day to day affairs of KWSB, poor planning, corruption (people, practices, policies and protocols), rising gap between demand and supply, lack of compliance is rampant. KWSB is treated like an employment exchange.

#### 4) Karachi Water Stakeholders

Ensuring Karachi's water security requires actions beyond the water sector alone. It calls for sustainable urban development is called for where the optimal use of water resources by all sectors is ensured. The significant water challenges facing the city of lights cannot be overcome without the proactive participation of all stakeholders, i.e. government, public, non-government organizations, academia and research institutions, corporate sector (including water distribution companies), water mafia, businesses and Industries, community and political leaders and international organizations.

##### 4a) Karachi Water and Sewerage Board (KWSB)

KWSB is responsible for providing water supply to all of Karachi. KWSB mission states that it is a service based consumer oriented organization responsible for production, transmission, treatment and distribution of potable water to the citizen of Karachi, managing sewerage system to ensure hygienic environment and collection of revenue for sustained economic viability.

KWSB's prime responsibility is the development and regulation of water supply and collection and disposal in the city of Karachi. It enjoys very limited autonomy and relies on the provincial government for all the key decisions (budget, tariffs, hiring, regulation, etc). Currently it has 13,500 employees. KWSB's main responsibilities (according to KW&SB Act, 1996 and SLGO, 2001) can be summarized as follows:

- Produce and supply potable water
- Sanction of water and sewerage connections and water supply to tankers
- Levy and collect fees for water and sewerage services
- Make regulations with approval from government

- O&M and construction of water and facilities
- Regulate water supply and inspect water and sewerage connections
- Prepare and submit to government for approval, tariffs and other charges

Based on the existing governance structure, KWSB needs to work in close cooperation with other city agencies to ensure efficient services, including those agencies that manage their own 'systems'. A Board chaired by the City Nazim, is responsible to the GOS for the functioning of KWSB, whilst the MD-KWSB takes responsibility for overall day-to-day operations

KWSB has been struggling in its responsibilities for production, transmission and distribution of potable water to the citizen of Karachi and managing sewerage system within the city. KWSB actually manages more water than numerous smaller countries of the world and hardly ever receives recognition for this feat.

Only one third of the city comes under local government and thus under direct supervision of KWSB. The rest of Karachi's land is owned by federal government and six cantonments. These are supplied in bulk by KWSB. In this one third area, poor billing and collection processes further undermine the performance of KWSB, much behind the global standards. Only 70% of the KWSB water bills are distributed of which only 30% of the consumers pay<sup>11</sup>. Operating inefficiencies are split between revenue under-collection and distribution losses. The complex and outdated tariff structure also contributes to the general chaos.

The aging infrastructure aggravates the challenges with old network and assets and poor water distribution and sanitation systems and poor quality of drinking water. It is estimated that Karachi loses almost one third of its water supply to leakage and theft. Due to absence of metering in most parts of the city, the non-revenue water is estimated to be at 40% to 60%.

Much like many other government organization, KWSB suffers from poor staff productivity and human resource management issues. It has around 13,000 employees or 6.5 employees per 1000 connections, more than twice the international benchmark of 2.0 employees per 1000 connections for the developing countries. Out of the total expenditure of KWSB over 90% goes to staff salaries, benefits, allowances leaving very little room for investment in infrastructure and modernization.

As stated earlier, the KWSB main challenge is one of governance and institutional reform. Without a viable framework clearly aimed at modern practices of governance, KWSB will continue to suffer due to poor mismanagement and lack of leadership as it does now. Without reforming the governance structure, the much needed investment will not be for the improvements in services and infrastructure.

Over the years, the investment required by KWSB to keep updated and meet the rising demand for its services has not been forthcoming. The current investment is insufficient to close the gap in terms of access and quality and to ensure universal access to safe and affordable drinking water. Due to lack of autonomy and clarity on institutional alignment (City District Government Karachi or Provincial) and the political interference in management and operations KWSB service delivery is severely compromised. It is in unhealthy financial state (gap of USD 9 million/month), yearly expenditure US\$ 106 million vs. US\$ 60 million revenue (yearly electricity bill of US\$ 66m), payable debt to KE-US\$ 320m. KWSB has a high ratio of Non-Water Revenue estimated at 60% (or US\$ 240 million in 2015) as compared to Ho Chi Minh City 30%, Manila 17% and Singapore 5.5%.

KWSB's financial challenges arise due to poor billing and accounting systems coupled with labor inefficiency. KWSB charges a flat rate water tariff based on floor areas of domestic properties rather than a consumption based tariff structure. Minimum water tariff of residential/domestic unmetered up 60 square yards PKR 97 per month while for 1501-2000 square yards is PKR 2391 per month and 50% of ground floor added for additional stories<sup>12</sup>. The water bills collection in past 5 years declined from 61% to 59%<sup>13</sup>. The ratio between water connections and staff is very low from the international benchmark (2 person/1000 connection), 6.5 employees per 1000 connections -twice the international benchmark.

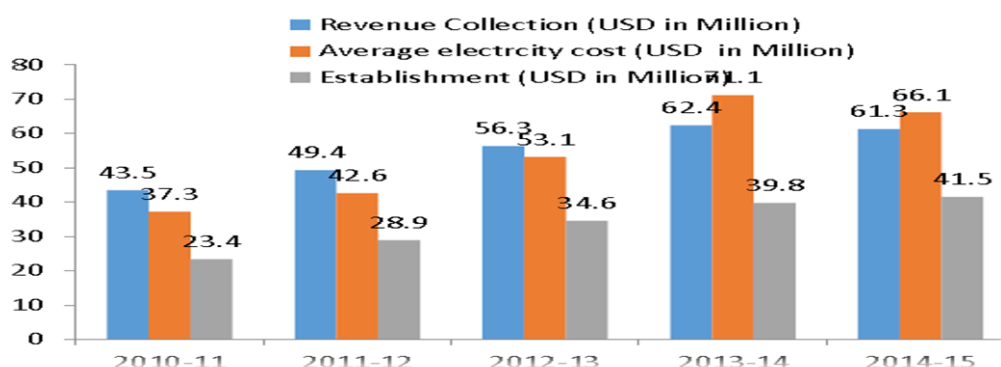
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<sup>11</sup> Karachi Water Supply and Sewerage Board, June 2018

<sup>12</sup> <http://www.kwsb.gos.pk/View.aspx?Page=45>

<sup>13</sup> Karachi City Diagnostic, City Sustainability and Inclusion, Service Delivery, World Bank, July 2016

**Fig3. KWSB's Revenues and Major Expenditure Items**



**Source:** World Bank analysis, based on primary data collected from KWSB.

In addition, many service providers do not even cover the costs of operation and maintenance due to low tariff and poor efficiency, the service providers strongly depending on government subsidies and external funding. About US\$ 65 million was invested in last 10 years which is inadequate and insufficient to ensure universal access to safe and affordable drinking water by 2030 as outlined by SDG 6. According to the 2008 JICA study, US\$ 250m/year investment for 10 years is recommended –which is 0.6% of Karachi GDP, while the international best practice is 2% of GDP-USD 1000m/year.

In order for Karachi to achieve Sustainable Development Goal 11: Make cities inclusive, safe, resilient and sustainable, the water situation of the city cannot be ignored. It is imperative that the cities' administration reforms the water utility to address the water crisis that the city faces today and in future.

### KWSB plans for Future

The authors and Hisaar Foundation Think Tank also invited officials of the KWSB to offer their viewpoints regarding KWSB. In an off-the-record meeting some senior officials of KWSB shared their views and its proposed plans.

According to KWSB they have developed a "Strategy to Improve Service Delivery and Financial Viability", recently. Under the proposed plan they have set targets for service delivery, institutional development, financial viability and private sector participation till 2030 with interval based accomplishments of some of the milestones. On paper and planning wise it has some interesting initiatives, such as, appointment of "market based Chief Executive Officer", re-composition of Board of Directors with representation from the customers, affordable tariff for "all customers", metering of customers with volumetric tariff charge, establishment of investment financing cell O&M outsourcing strategy, etc.

However, this strategy still does not answer the key weakness of the existing KWSB which is lack of autonomy and independence from government interference, instilling a culture of accountability and performance, full corporatization of KWSB, regulating private sector participation, service delivery improvements, financial and human resource management strategies needed for "change" in terms improving staff productivity, pricing water for efficiency and revenue collection.

KWSB officials cite the 2008 comprehensive study carried out by Japan International Cooperation Agency (JICA), "Study on Water Supply and Sewerage System in Karachi in The Islamic Republic Of Pakistan" carried out in conjunction with KWSB. While it indeed is a complete and multi-faceted document addressing all the key issues afflicting KWSB at the time but the fact remains that even that excellent work was not implemented or taken forward by the provincial government at the time because the government is not willing to given autonomy and independence to the water utility of the city. Many of the recommendations and plans given that study remain valid even today after 10 years but the will of the government is not present to carry out those far reaching and meaningful reforms. The study provides, overview of existing conditions and identification of major problems, water demand forecast for Karachi, water supply master plan, sewerage master plan, improvements of management system (with



focus on human resource, financial management and technology), project cost and implementation schedule of master plan, evaluation of master plan and selection of priority project and feasibility study. If ever, the government wishes to undertake sincere reforms of KWSB, this study can still serve as a very useful guide and tool.

However, it is our contention that all of the above cannot be achieved without disengaging the politicians of Sindh government from the day to day affairs of the KWSB and inviting a third party to operate KWSB in an independent and accountable manner to carry out the much needed changes and improvements in KWSB.

### **4b) City District Government Karachi (CDGK) and Karachi Metropolitan Corporation (KMC)**

The 'Karachi Joint Water Board' was constituted in 1953, that was responsible for the first major expansion of Karachi's water supply system; taking bulk water from the Indus River. From 1957, the Karachi Development Authority (KDA) took responsibility for bulk water supply and the Karachi Metropolitan Corporation (KMC) became responsible for water distribution and sewerage within the city. At that time a number of other agencies took responsibility for managing their own 'systems', including the 'Cantonment Board' and other major government organizations such as the Armed Forces, the Karachi Ports Trust (KPT) etc.

As there was no single agency to plan and execute water and projects at that time, in 1983, the Sindh Government introduced the 'Sindh Local Government (amended) Ordinance, 1983' to bring responsibility within one agency, the KMC at that time, who became responsible for provision of services, the raising of funds and taxes and for the expansion of 'systems'. The 'Karachi Water and Sewerage Board Act, 1996' was enacted, which served to separate KWSB from KMC and placed them under the government of Sindh as an autonomous body.

'Devolution Plan', the 'SLGO, 2001' was introduced which placed KWSB under the CDGK. CDGK established the 'Water and Sanitation' Department' headed by an Executive District Officer (EDO). As the KWSB Act, 1996 was not revoked, the Water and Sanitation Department – CDGK and KWSB are one and the same entity; whereby the Managing Director of KWSB is the EDO Water & Sanitation – CDGK. Post 1996, KWSB was unable to generate the revenue for its operation and maintenance and had to rely on subsidies from KMC<sup>14</sup>. Water supply at Karachi is a shared responsibility between KWSB, KMC and various cantonment boards that get their bulk water from the KWSB and perform functions within their own areas.

After a period of unrest, post August 2016 elections at Karachi, under local government both KMC and District Municipal Corporation (DMC) were functioning to provide municipal functions within six districts of urban Karachi. The local governments are unable to exercise autonomy as there is a high financial dependence on fiscal transfers from government of Sindh. Thus, the water supply functions within Karachi are highly fragmented between various provincial government departments and city's local agencies which give rise to institutional misalignment and lack of ownership of the water situation in the city.

### **4c) Unofficial Water Market ('the Water Mafia')**

The inefficiency of formal water provision bodies has led to a range of water vending practices that provide water to the non-piped and underserved areas of the city. This informal parallel market operates with linkages to the formal city system. These vendors receive bulk supply of water both unofficially and officially from the formal system. Other sources include leaking pipelines, community public places such as mosques. For a fee, water can be obtained from the informal market which comprises of commercial water tanker services, animal carts, push carts and private owners of underground water tanks.

This informal market has given way to a number of profitable solutions for all stakeholders involved other than the urban poor. Due to their limited purchasing power, they buy water in small quantities and end up paying the most. It has been estimated that buying water from the animal cart after a series of middle men purchases costs up to 40 times higher than buying from the KWSB tanker itself<sup>15</sup>. During

<sup>14</sup> Governance, Decentralisation and Poverty Eradication: the View from Orangi, Karachi, Arif Hasan

<sup>15</sup> UNDP – World Bank Water and Sanitation Program, A Glance at Water Vending Practices in Karachi

November, 2017 in order to regulate the unofficial water market, KWSB fixed rates that the commercial water tanker service providers could charge such as \$0.016 (USD 1= Rs 123.65) per gallon for a thousand gallons<sup>16</sup>, however the water mafia charges are often higher than these rates with shortage of supply and the bribes to be paid often cited as the reason for price hikes.

The inefficiency and unregulated informal market has risen due to the water demand far exceeding the supply and a lack of water resource development by KWSB. These water market inefficiencies further widens the gap between the city's rich and the poor.

#### 4d) Domestic Consumers

As KWSB is supposedly a customer oriented organization, the citizens of Karachi are its main stakeholders. In Karachi's water sector, citizen's bodies and civil society groups have had little representation in matters related with policy making, planning, and implementation of schemes and projects in the water sector in Karachi. Issues that are crucial and important to the demand side, including tariffs and performance standards, are not adequately addressed. In 2010 in collaboration with World Bank's Water and Sanitation Program KWSB made an attempt to bring about social accountability in form of a pilot program of Citizens Report Card (CRC). The CRC collected consumer feedback and it showed that KWSB's services were least satisfactory with only 6.5% of the users rating it as satisfactory and above. The results concluded that both users and utility staff want improvement in systems and services provided. While KWSB does have programs and complaint cells in place for consumers to report issues to, lack of credible follow up actions creates mistrust between the consumers and utility providers.

#### 4e) Businesses and Industries

The other major stakeholders in Karachi are the businesses, industries and cantonment bodies along with some community based organizations. There is little information or data available on them vis a vis water utilization and while they are significant players for KWSB, to make any meaningful or conclusive assessment of their take on water issues. There is limited interaction either from the various business bodies and industries to enter into any relationship with KWSB both in terms of supply of water or offering to conserve water voluntarily to help with the saving of water resources. KWSB on an infrequent basis have few times attempted to involve these stakeholders to participate with them on a policy level but these attempts have not been fully thought through or reached any meaningful conclusion. This group will form an important element of future engagement on water issues in Karachi.

#### 5) Inquiry by Supreme Court of Pakistan for Sindh (Sindh Water Commission)

A Supreme Court of Pakistan bench established the Sindh Water Commission (SWC) on December 27<sup>th</sup>, 2016 under Justice (retd) Amir Hani Muslim in a petition filed by Shahab Usto (Advocate) vs Government of Sindh. The salient responsibilities given to SWC as given in the Terms of Reference were:

*"To record its findings in regard to providing/supply of clean water to the residents of Sindh besides the deteriorating condition of sanitation in Sindh AND to examine the statutory role played by Sindh Environmental Protection Agency on the issues mandated by the Sindh Environmental Protection Act, 2014"*

The SWC began its work in earnest immediately after its formation and to its credit compiled and submitted a comprehensive report on its findings on February 25<sup>th</sup>, 2018. This report and its findings pertain to whole of Sindh but we are confiding its findings and recommendations to Karachi only as it's the subject under review.

In its salient finding it notes with deep concern the deteriorating situation in Karachi water supply and management and the general apathy of the government of Sindh and KWSB towards citizens of Karachi. There is a huge gap between demand and supply. Quality of water in Karachi has deteriorated due to constant discharge of industrial untreated effluent mainly by the industries located in SITE Kotri. Among

<sup>16</sup> Karachi Water and Sewerage Board

its other findings, it noted that KWSB claims regarding chlorination were false as was the claim that 6 out of 7 filter plants were functional. The unchecked construction of high rise buildings has been adding to the woes of Karachi to have clean drinking water and better sanitation. Though Karachi has three Treatment plants, mostly outdated, its capacity at full functioning is to treat only 151 MGD out of more than 450 MGD due to non-availability of required conveyance system to carry sewage up-to the sewerage plants.

The Commission has made impressive progress in addressing some of the key issues facing the citizens of Karachi. It has been able to rehabilitate some of the water supply and drainage projects. Karachi is set to receive 165 MGD additional supply of water by the end of 2019 through two new schemes one of which, 65 MGD plant at Pipri, will become operational by December 2018. The second one, a 100 MGD plant at Dhabeji will begin supply from December 2019. The Commission's role in highlighting and pursuing this initiative is highly commendable. The commission noticed the basic design flaws in the sewage treatment projects. The commission also brought into forefront the issue of untreated municipal and industrial sewage which is being released in freshwater bodies, including the Indus River, canals and distributaries. On its orders, the provincial government has approved the PC-I of treatment facilities initially for 10 districts of Sindh. It was instrumental in getting some of the closed filtration plants to function again with work on some others still in progress. The commission has gotten approved the establishment of five combined effluent treatment plants (CEPT) in Karachi. It has managed to get some of the incinerators repaired during this period. On Commission's intervention the functions of PHED and SEPA have been strengthened and much needed resources provided to them for improvements.

While this is all very commendable and good news for the citizens of Karachi, the Water Commission did not provide any long term or sustainable systemic solutions to what ails KWSB. At best it is one time judicial intervention not a permanent administrative/management readdressal of the core problems besetting KWSB --- ineffectual governance. This, at best has provided a short term relief to the people of Karachi but a long term, systemic overhaul of the KWSB is still awaited.

The role played in this development by the Petitioner, Advocate Shahab Usto is most constructive and an example of what citizen's activism, if pursued with sincerity and persistence, can achieve - State organs have responded and activated the government officials to deliver on their responsibilities.

### 6) Lessons Learnt and Good Practices for Water Governance

It is time for us to look how other mega cities like Karachi have solved their water problems. While it has been reported by the World Water Council that the urban utilities in one third of the developing countries lack the revenues to fund their operations and management, we have examples of successful transformations of water utilities from around the world that have been able to bring in efficiency to their systems and generate revenues to provide water to their customers successfully. In particular, we would like to highlight the study undertaken by Asian Development Bank, "Good Practices in Urban Water Management"<sup>17</sup> as a case in point which can show us a path to making KWSB perform better.

This study focuses on eight cities of Asia in the water sector with varying degrees of how they achieved their transformation. The cities examined water utilities in Colombo, Bangkok, Singapore, Jamshedpur, Kuala Lumpur, Shenzhen, Phnom Phen and Manila.

The water problems in Asia's cities are similar. These include sources and uses of raw water, the large proportion of water loss in distribution networks, intermittent supply, and the quality of tap water. In some cities, the excessive use of groundwater resources has caused serious environmental problems, including rapid depletion of groundwater, deterioration of water quality, and land subsidence. Common problems and challenges faced by the water utilities are:

- Only a portion of the urban population is covered by the water utility.
- Rapid urbanization results in inadequate water supply.
- Water supply provided by the utility is intermittent.

<sup>17</sup> Chiplunkar, Anand, Kallidaikurichi Seetharam, and Cheon Kheong Tan. Good practices in urban water management: decoding good practices for a successful future. Asian Development Bank, 2012.

- Non-revenue water is high.
- Water is often not potable.
- Asset management is poor or lacking.
- Low tariffs hamper water supply connections to the poor.

All of these are symptoms of the fundamental reasons for these problems – **which are inadequate leadership and governance.**

This study shows rapid progress in performance improvement and service delivery achieved by these selected utilities relative to their historical and regional contexts. Though the cities selected have varying degrees of ownership but one of the common factors in the improvements made was the corporatization for better accountability. The study also indicated that improvements in performance were made in availability of water; metering; management of non-revenue water; cost recovery; revenue collection efficiency; staff productivity and sanitation.

How was all this achieved? The common theme observed in all the eight utilities were the initiatives undertaken to address the following:

Fundamentals	Service Delivery	Financial and Human Resource Management:
<ul style="list-style-type: none"> <li>• Having dynamic leadership at top</li> <li>• Use of integrated water management policy</li> <li>• Corporatization of water utilities (PPP/strategic investor)</li> <li>• Regulating private sector participation effectively</li> </ul>	<ul style="list-style-type: none"> <li>• Increasing coverage and improving water availability</li> <li>• Reducing non-revenue water</li> <li>• Securing clean, safe and reliable water supplies</li> <li>• Adopting the practices of demand-side management</li> <li>• Improving the wastewater and sewerage systems</li> <li>• Monitoring and reporting effectively</li> </ul>	<ul style="list-style-type: none"> <li>• Improving staff productivity</li> <li>• Pricing water for efficiency and sustainability</li> <li>• Improving revenue collection Setting wastewater tariffs</li> </ul>

One of the cities studied was Manila, which given its demographics and problems was most similar to Karachi and the challenges being faced by KWSB. A brief summary of Manila is presented as a case study for adapting improvements in KWSB.

### Manila, Philippines – A case study for adaptation by KWSB

Metro Manila has an estimated population of 14 million, very similar in size to Karachi with high density of shanty neighbourhoods (akin to *Katchi Abadis* in Karachi). With a high population density of 18,000 persons per km., the deteriorated infrastructure, and land use pattern made Metro Manila's highly vulnerable to natural disasters. While the city grew rapidly the provision of infrastructure, enforcement of building codes, and adherence to development standards lagged resulting in a poor administration and governance.

Metro Manila Development Authority was the an administrative body tasked by the Metropolitan Waterworks and Sewerage System (MWSS) as the main corporation providing water and sewerage services in Metro Manila area. The privatization of MWSS in 1997 was led by President Ramos, was the largest privatization exercise of water utility in the world. From a single water utility run as a government corporation subject to government accounting, auditing, and civil service rules, the operation of Metro Manila's water distribution and sewerage system was divided into two concession areas emanating from the left and right banks of the Pasig River. East concession served by Manila Water Company, Inc. (MWCI) and west concession area was served By Maynilad Water Services, Inc (MWSI).



Table 3 and 4 below highlight the similarities in water problems faced by Manila (1996) and Karachi (2018). For Manila post privatization (2002 and 2005) indicators such as water availability improved to 21 hours from 17 hours a day and non-revenue water was reduced to 35% of production from 61% in case of MWCI.

**Table 3. Water Services in Manila Compared with other Major Asian cities (1996: Pre- privatization, 2002 and 2005 Post privatization)**

City	Population (millions)	Water Availability (hours/day)	Coverage (%of Population)	Nonrevenue Water (% of production)	Staff/1000 Connections
<b>1996</b>					
Manila	10.6	17	67	61	9.8
Singapore	3.0	24	100	7	2.0
Hong Kong, China	6.3	24	100	36	2.8
Seoul	10.6	24	100	35	2.3
Kuala Lumpur	1.4	24	100	36	1.4
Bangkok	7.3	24	82	38	4.6
<b>2002</b>					
Manila		21	79	62	4.1
MWCI		21	82	53	4.1
MWSI		21	79	69	4.1
<b>2005</b>					
Manila		21	85		
MWCI		21	84	35	2.6
MWSI		21	85	68	3.5
<i>MWCI = Manila Water Company, Inc., MWSI = Maynilad Water Services, Inc., NRW = nonrevenue water.  Source: All data, except population data are from Fabella (2006) and Bernarda and Tang (2008), Population data are from Wu and Malaluan (2008).</i>					

**Table 4. Water Services at KWSB Compared with other Major Asian cities**

Unit	Karachi
Area km <sup>2</sup>	3,780
Population In millions	16
Water supply - Piped coverage (% of population)	55
Water supply - Average availability (Supply hours/day)	2 – 4
UFW/NRW (% of total supply)	60%
Wastewater- Sewerage coverage (% of population)	< 60
Financial - Operating ratio (Op. exp./ Op. rev.)	1.77
Revenue collection efficiency (Collect/bill%)	59%
Human Resources (Per 1000 connections)	6.5

*Source: World Bank Transforming Karachi into a Livable and Competitive Megacity*

Under a public-private partnership (PPP) arrangement the Government remained the owner of fixed assets. The Contractor was responsible for monitoring and reporting the assets according to government rules and accounting standards. During the duration of the concession agreement, the Operator had the full use of the infrastructure, including moving assets, at no charge other than the agreed concession fee. Any new investment undertaken by the partner would eventually be turned over to the PPP at the termination of the concession agreement. Other key features of this arrangement were:

- Provision of 24-hour uninterrupted water supply to all connected customers by 30th June 2000.

- Compliance with Philippine National Standards for Drinking Water (DOH) within 12 months of the commitment date (1<sup>st</sup> August 1998).
- Provision of free water for fire-fighting purposes and other public purposes as requested by local governments in the concession area.
- Provision of septic and sanitation cleaning services in the service area (e.g., emptying of domestic septic tanks and sludge disposal at least every 5 years).
- Provision of mandatory household connections to a public sewer.
- Compliance with national and local environmental laws related to wastewater treatment.
- Address customer complaints.
- Adoption of terms of legal and regulatory framework with clearly defined roles between the government and the operator.
- Development of new sources of water is a major provision in the concession agreement.
- Attainment of organizational efficiency as per the milestones set in the concession agreement.
- Achievement of financial viability against an agreed upon investment plan and infrastructure improvement plan.
- Focus on customer services with quality standards defined in the concession agreement.
- Adoption of Pro-Poor Strategy: A program for low income groups designed to help households with low incomes and without land tenure to gain access to water through direct connections.

### **The Impact and Benefits Post-Privatization**

- For the public, one of the immediate benefits was the lowering of water tariffs by anywhere from 18% to 54%.
- Water coverage rose from 67% to 79% of the population, increasing further to 84% by 2005.
- Water availability to customers went up from 17 hours of service per day on average to 21 hours, a 23.5% increase over the base year service.
- Households with access to 24-hour water service rose from 25% to 99% during 1997–2008.
- Staff per 1,000 connections dropped from a high of 9.8 in 1996 to 4.1 in 2002 and declined further to 2.6 by 2010.
- Reduction in Non-Revenue Water through better management and oversight.
- Water connections for the urban poor and un-served segment, increased with the introduction of innovative social programs to provide for water service connections at affordable rates.
- There was a marked improvement in the financial resource management of the companies Improved customer relations, with resolution of customer complaints being addressed immediately, establishment of a call center and other customer focused initiatives
- The water consumption based tariff structure of MWCI is categorized into Residential and Business categories where the low income households consuming less than 10 cubic meter of water are entitled to a 40% discount on their basic charge<sup>18</sup>.

## **7) Some Examples of Pakistan's Success Stories in the Public Sector**

But in recent times, some sectors or industries have shown encouraging and positive results through de-regulation and privatization for the benefit of the consumers. Some of these examples offer a pathway to how KWSB may be rescued from its current declining condition.

<sup>18</sup> Manila Water Company Inc. Tariff rates <https://www.manilawater.com/storage/files/1/2018%20Tariff%20Table.jpg>

At one time or the other getting decent telephone service in Pakistan was difficult. As a matter of fact, not too long ago getting a simple landline connection in Pakistan was considered an achievement of sorts for many Pakistanis. Today, however, telephone connectivity is considered one of the best in the region and the revolution of mobile phone has made the old beaten model of PTCL telephone service outdated and irrelevant. The ‘deregulation and privatization’ of the telecom sector has benefitted Pakistanis widely and across all the socio-economic lines. It has become a, “win-win” proposition for the consumers, government and the service providers.

Similarly, banking was a hardship industry for most Pakistanis until the 1990s, known for inefficiency, poor customer service and corruption. Our well established banks nationalized in the 1970s saw a drastic drop in service quality and access for the common man. After the deregulation of the banking sector, some of the major banks, UBL, HBL, MCB and Allied Bank to name a few have prospered and provide greater access to customers with good service standards. This has resulted in many of the foreign and multi-national banks being squeezed out of this market by the ever increasing efficiency and growth of Pakistani owned and operated banks. This is another example of, “win-win” situation and a success story for consumers in Pakistan.

**Table 5. Examples of Transformation of Pakistani Organizations**

Entity	Pre-Privatization (profit after tax)	Current Stature (profit after tax in billions)	Number of Employees before Privatization	Number of Employees after Privatization
UBL-Bestway	267 million loss	21.96	22,500	13,000
HBL-AKFED	4.1 billion loss	31.80	31,000	19,000
KE-Abraaj	8.11 billion loss	3.73	17,436	10,603
PTCL-Etisalat	27 billion	1.86	64,000	26,000
MCB-Mansha	231 million	25.55	8,000	10,601

In case of Pakistan Telecommunication Co Ltd (PTCL), in 2005, Etisalat offered \$2.598 billion for a 26% management stake in state-owned telecom organization. Etisalat sought to reform the organization by minimizing the employee strength, bringing in investment and proficient management to improve responsiveness towards consumer demands. Privatization of PTCL is much criticized in terms of profitability but the organizational environment has been positively impacted. Information technology advancement, product expansions, customer oriented culture have improved significantly post privatization. But lot more needs to be done in this instance, especially fulfillment of outstanding amount due from Etisalat to Government of Pakistan.

Electricity supply and availability is still a bane and a major source of impediment and pain for most Pakistanis. While it still remains a challenge and country continues to suffer on this count, Karachi has witnessed an improved electricity supply.. Karachi Electric (KE) is the only example of privatization of a major public utility in Pakistan. It can be argued that this transaction is a successful one from the stakeholder’s perspective. Even though, “buy-out” could have been better negotiated and interests of consumer protected, but the failure to do so lies with the government of the time and subsequent ones who did not manage the transition effectively.

Nonetheless, in the case of KE, the city of Karachi has gained much from this transaction. . Customer service has improved greatly and you get an attentive hearing and response from the service provider. The KE has brought improvements, investment and institutionalization to the electricity supply in Karachi. More needs to be done but at least a more sustainable and beneficial path has been defined.

The de-regulation of public organizations in Pakistan is majorly driven by a macro-economic focus rather than a reform-driven with emphasis on improving access and quality of services. From being a burden on the government and cited as examples of inefficiency and declining services, these organizations are a source of income for the government. In the year 2015, they paid over PKR 56 billion to government in taxes.

**Table 6. Tax Collection Post Privatization**

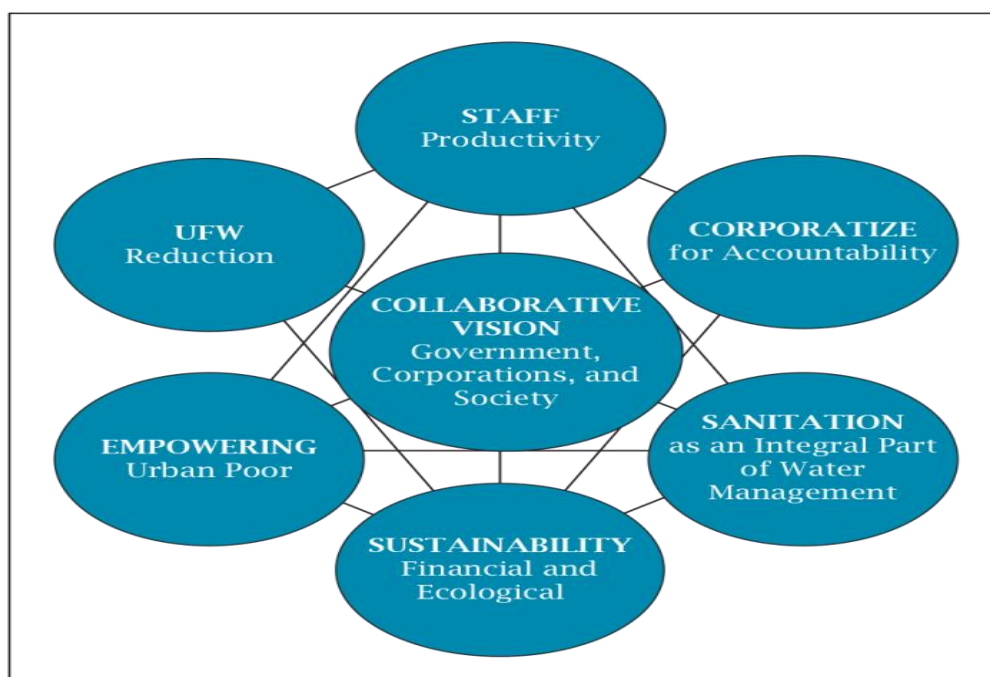
Entity	Year of Privatization	Ownership Status		Tax Paid last Year (in billion Rs.)
		Govt. (%)	Pvt. (%)	
UBL-Bestway	2002	49	51	15.94
HBL-AKFED	2003	49	51	21.77
KE-Abraaj	2005	26	74	0.46
PTCL-Etiscalat	2005	74	26	2.94
MCB-Mansha	1991	50	50	15.95

Good governance system demonstrated by adoption of good corporate governance practices builds confidence amongst stakeholders as well as prospective investors and provides stability and growth to the organization. These are few examples of where a public sector service is performing better and in line with the standards prevalent in more developed and prosperous nations.

## 8) Recommendations for KWSB “Turnaround” Strategy – 2018 to 2021

Based on the information and analysis provided in the previous sections, we recommend a strategy for KWSB which will bring reforms, performance improvements and organizational growth. This strategy has the following components

**Fig 4. Framework for Improvement of Water Utility**



The whole city of Karachi should be brought under KWSB service with no exception. KWSB must immediately plan to embark on a modernization strategy if it wishes to tackle the rising demand for its services in accordance with the international best practices. This drive towards modernization may be based on a deregulation model. As opposed to traditional model of Public Private Partnership, we suggest an alternate vehicle to be called “Government Investor Public Partnership (GIPP)” where government remains an Asset owner and Regulator. The government will retain a sizable shareholder with representation on the board to protect its interests:

- Government:* will be represented by bureaucrats or officials nominated by the government)
- Investors:* Representative of the investors/contractors to be contracted for operations of KWSB



- c) *Public*: will be represented by elected officials (city councillors and local body representatives or members from citizen's bodies). This may fully address the governance challenge that KWSB has been encountering for last many years and it now requires a bold and innovative method of dealing with it.

Primary goal of this transition should focus on the governance and institutional reform and creating an enabling environment with focus on service delivery, customer focus, infrastructure development and investment strategy.

1. For professional management, CEO and team will be hired from the market
2. To improve revenue streams, water bill may be made a part of the electricity bills which has a better recovery of consumer bills
3. Formulation of revised vision, mission, strategy and business plan for KWSB
4. Make financial sustainability the centre piece of its 'turnaround' strategy. This would require entering into new relationships with its partners, i.e. The provincial government, municipal bodies and independent private investors
5. The GIPP agreement should result in the corporatization for accountability of KWSB
6. Define a clear course of its action for engaging with the key stakeholders, especially a citizen's body for direct engagement with the customers and the citizens. This would also include initiating a continuous media campaign (social media, print, broadcast) and connecting with a new generation of users (under 40 years of age group which constitute the bulk of city's population)
7. Introduce new tariffs at appropriate rates to encourage water conservation
8. Licences for groundwater extraction
9. Ensure that under the agreement with the Investor/Contractor, pro-poor and interests of the underserved population are fully secured through subsidies and hiring of community members in the public works program.

The Concession Agreement or the Contract that the government enters into must be pro-poor with the following terms and conditions:

- a. Given the size of Karachi, consider appointing more than one Contractor/Operator. Competition will create its own dynamics (like in the telecom sector) to benefit the public
- b. Under this agreement, ensure induction of financial resources for investment into infrastructure and human resources. Also to bring more efficiency and accountability through this process leading to reduction of subsidies and lowering of service fee to the customers
- c. Involve investment of private capital to design, finance, construct, operate and maintain a project for public use for a specific term during which the investor is entitled to collect revenue from the users-agreement/ concession agreement
- d. Free state resources and brings in income and as well as taxes in the state coffers
- e. Goal- must be to provide safe piped water to all residents
- f. Continuous water supply for all 24 x 7
- g. Universal metering.
- h. Effective management of Unaccounted-for-Water and Non-revenue Water
- i. Cost recovery for sustainability and sustained service delivery
- j. Ensure high revenue collection efficiency through corporatization and modernization

- k. Provide free water for public service purposes (firefighting, emergency, etc.) as requested by local governments in the concession area
- l. Improved staff productivity resulting from modernization of HR practices and policies
- m. Address customer complaints – greater customer focus
- n. Obtain commitment from the Contractor/Operator regarding implementing a Pro-Poor program especially for those in the un-served segment of the population. Availability of new water connections for the under-served population
- o. The Contracting/Operating party has strong governance and management record to ensure delivery of the desired outcomes as agreed in the Concession agreement