

Sustainability & Non - Retrogression in the realization of

The Human Rights to Water & Sanitation in BAHRAIN

The purpose of this report is to provide a brief on the Kingdom of Bahrain's sustainable and non - retrogression practices with respect to "the human right to safe drinking water and sanitation", in response to the request for information from the UN Human Rights Special Rapporteur on the human right to safe drinking water and sanitation (Reference: srwatson/2012/JS, Dated 19/12/2012)

The water & sanitation sector in Bahrain is coordinated through various governmental agencies including:

- The Electricity & Water Authority (EWA), responsible for ensuring sufficient, safe, acceptable, and affordable water for domestic and industrial use.
- The Ministry of Municipality Affairs & Urban Planning (Engineering & Water Resources Directorate) responsible for the development and management of the Bahrain's ground water resources.
- The Ministry of Works, responsible for sanitary water network and all sanitary services in Bahrain.
- The Ministry for Health (Public Health Directorate) for ensuring implementation of water health standards.

Bahrain has long back achieved the "Millennium Development Goal" target of 100 % of the population having access to safe drinking water. The major challenge posed by the financial crisis, have been successfully tackled, by giving priority to development initiatives. There was no compromise on public spending for essential social and economic issues including Water and Sanitation.

Measures Adopted in Response to the Financial and Economic Crisis:

There was no reduction in the financial support, subsidies, increase in tariffs or funding levels to the water sector during or due to the financial crisis, but on the positive side there have been many legislative & progressive policy measures formulated and aimed towards integrated Water Resources Management that

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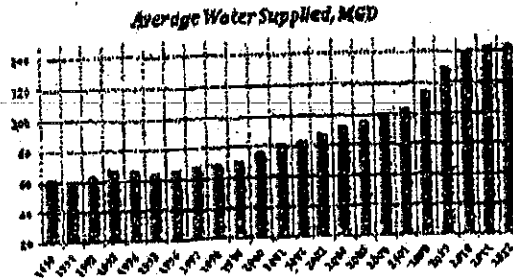
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are in the process of being adopted towards conserving water and promoting sustainable practices.

In fact the water supply which was around 104 MGD in 2007 has risen steadily to 144 MGD in 2012, a rise of 28% due to the Kingdom's sustained investment and proactive policies to maintain vitality in the water and sanitation services sector.

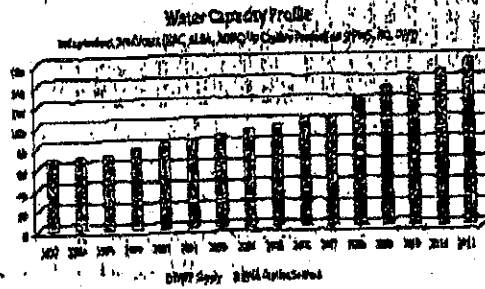


The water supplied to domestic consumers continues to be subsidized (Presently to the extent of greater than 80%), with the tariff being maintained at the same level for more than twenty years, in spite of increasing input costs.

The natural source of water in the Kingdom of Bahrain is limited to ground water with an annual recharge of 100 Mm³ (143 m³/capita) and expected to decline to 89 m³/capita by year 2025.

The private sector participation process was initiated in 2007, in response to the challenges of economic growth and limited access to capital. Even under the time period of the global financial crisis, the financial stability in the Kingdom attracted quite a number of investors for this privatization process.

Initially the new plants for production of Electricity & Water were privatized later new capacity additions through Independent Water & Power Producers (IWPP's) route has been successfully integrated into the Kingdom's water supply network. Presently about 70%



of the water produced is in the IWPP's, set to increase to more than 80 % in the next few years.

Water Capital & Network Capital Project implementation towards capacity and network augmentation did not suffer any rollbacks or postponements during the financial crisis and all the projects planned during this period were

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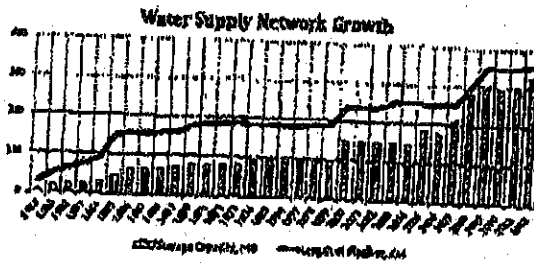
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commissioned and have contributed to increased system reliability and supply. Approximately BD 94 Million has been invested by the Kingdom of Bahrain during the last five years in the development of the Water Supply network & related capital assets.



Ensuring Human Rights Compliance

There have been no reduction or curtailment in the expansion of water supply and the network during the financial crisis. Steady investments and expansion plans in line with the projected economic growth through the integrated master plan have been implemented in the Kingdom of Bahrain.

Sustainability

The supply-driven approach has effectively demonstrated its inability to deliver groundwater sustainability in the Kingdom of Bahrain; therefore, EWA's Strategic approach for the Domestic Water Supply has been to shift towards demand management and conservation of the available resources.

To reduce further depletion of the ground water, additional non-conventional sources (Desalinated Water) of water have been developed by constructing additional desalination plants. The overall Desalination capacity stands now at 186 MGD with the commissioning of first phase of Al-Dur Power & Water Company capacity of 48 MGD and is expected to reach the level of 234 MGD by 2016 after the construction of the second phase. This will cover the Kingdom's forecasted demand of 205 MGD until the year 2020. Limiting supply to the production capacity available has resulted in better management of the water resources. The long lead time to get the capacity additions online also poses unique challenges for demand management.

Currently, most of the original groundwater reservoir under steady-state conditions has been lost to salinization. Therefore, realizing the conditions of the groundwater resources and their limited capacity, the Government policy with regard to water use was to allocate groundwater exclusively for the agricultural sector and to reduce groundwater dependency for the municipal sector. In this context a prime ministerial order was issued in May 1994 to maintain a ceiling

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for groundwater production by the municipal sector to no more than 30MGD, and EWA has a further reduced target of 16 MGD from 2008 in line with EWA's strategic objective of maintaining Groundwater as a Strategic Reserve. Further the groundwater abstraction both for domestic and agricultural purpose is metered and monitored against these set targets to conserve this precious resource for future generations.

A separate Directorate for Electricity & Water Conservation has been established within EWA to implement conservation plans and inculcate a culture of sustainability. A dedicated leak detection unit functions in identifying wastage and to initiate necessary step(s) to eliminate wastage and water losses in the water supply network.

A Key Performance Indicator driven monitoring mechanism is in place to ensure that operational and strategic priorities are continuously being monitored to bridge any gaps towards the identified strategic measures, some of the key KPI's include Water Supply Availability, Water Complaints Resolution etc.

Presently 95 % of the areas in the Kingdom of Bahrain, receive water quality in compliance to the GCC/ WHO Standards and this is set to reach 100% by the end of this year, with the completion of currently underway transmission/distribution projects to expand the network to reach the newly developed areas.

Various organizational transformation initiatives have been taken up in EWA, including HRM processes realignment, financial management system reliability enhancement and business process realignment to reflect the redefined organizational priorities of building World Class Infrastructure & Increased Operational Efficiencies, Customer Satisfaction at the center of all activities, Develop Human Capital towards Continuous Growth & Development for Global Competitiveness & Managing Talent.

Kingdom of Bahrain**Ministry of Works:****Sanitary Engineering Sector in the Kingdom of Bahrain:**

The Sanitary Engineering Sector is responsible for planning, implementing and managing all public sanitary engineering services in the Kingdom of Bahrain in accordance with the National Strategic Master Plan, Outlook 2030 and the National Master Plan for Sanitary Engineering Services 2030, which was prepared in 2010.

In fulfilling its role in the Ministry's mission and vision, the Sanitary Engineering sector is working towards providing world-class sanitary engineering services across the country.

Sanitation in Bahrain

Sanitation as part of sanitary engineering services is understood as the collection, transport, treatment and disposal or reuse of domestic treated wastewater and industrial waste, both liquid and solid, as well as storm water. Sanitation in Bahrain is characterized by good levels of access and service quality. Over one million people in Bahrain have access to wastewater systems with more than 93 percent of the country's population relies on access to sewerage in urban and rural areas. The Government of Bahrain has stated its commitment to achieving the Millennium Development Goals (MDGs) related to sanitation. In order to do so, more people will require improved sanitation services and more treatment systems will be constructed all over the country according to the National Master Plan for Sanitary Engineering Services 2030. The primary aim of the ministry of works is to maximize public health protection through an integrated preventive management framework for safety applied from the point of household generation to wastewater treatment producing a high level treated wastewater quality.

Service provision:

The provision of sanitation services in Bahrain is the responsibility of Ministry of Works according to law number 33/2006.

Policy and Regulations

Policy and regulatory responsibilities for the water and sanitation sector are shared among several ministries according to their laws. While the Ministry of Health is responsible for water quality-related aspects and responsibility for the urban sector is shared between the Ministry Housing, Ministry of Municipalities and the Ministry of Works. The ministry of works has a role in planning investments for sanitary engineering services according to the National Master Plan for Sanitary Engineering Services 2030 in coordination with the concerned ministries. The Ministry of Industry and Trade also has some responsibilities for the regulation of industrial wastewater and pollution prevention from industrial sector. The Environmental Agency has also a role in Sanitation through Working Groups and coordinates between departments and with other stakeholders and the enforcement and the implementation of monitoring programs to control pollution sources in the Kingdom.

Strategies and Policies:

Most strategies for the sector are formulated at the national level. Law enforcement has to be enhanced to avoid any weakness, especially for environmental sanitation. In 2012/ the Ministry of Works, Ministry of Health and the Environmental Agency have started working together in order to launch a roadmap to develop a mechanism for cooperation to improve the enforcement of issued regulations to minimize the

impact of industrial wastewater and reducing discharging untreated industrial wastewater to sewer systems and enhance wastewater reuse and recycle. It is also to enhance the construction of new and expanded sewerage networks in the industrial zones and the importance of the pretreatment of industrial wastewater. MOW is also planning to cover remote areas in the Kingdom with sanitation systems according to the National Master Plan for Sanitary Engineering Services 2030. This will depend on the success of using the community-based decentralized wastewater management systems in every area with small wastewater treatment plants, typically using the appropriate technology. In addition to decentralized sewer systems, also the construction of septic tanks for every individual house is required as a good alternative where connections to sewer systems are not feasible.

Legal framework:

Relevant laws include Law No. 33/2006 for sanitary engineering services and other related regulations issued based on this law which cover the responsibility of the ministry of works on wastewater management. This law aims at integrated and sustainable services to be considered in the wastewater management planning strategy and clarifies the responsibilities of the Ministry of Works.

Wastewater collection

The sewerage system collect domestic wastewater, trade waste and the raw sewage from different establishments and transports it to the waste water treatment works. The sewerage systems were built as conventional gravity flow systems with intermittent lift stations. The high groundwater tables, high salinity of the ground water and raw sewage and the climatic conditions result in excessive deterioration of pipes and installations which results in poor service and very high maintenance expenditures. Industries often discharge wastewater into municipal sewers, which can complicate wastewater treatment unless industries pre-treat their discharges. The high investment cost of conventional wastewater collection systems are difficult to afford in Bahrain. According to the mandate of the ministry of works about 93 percent of Bahraini population has access to sewer systems at the end of 2012.

Domestic Wastewater treatment:

The sanitary Engineering sector is responsible for the collection, distribution and treatment of wastewater in the kingdom. Currently there are 11 sewage treatment plants that are owned or operated by the ministry of Works in the kingdom of Bahrain and several of the existing plants are overloaded. The major sewage treatment facility is the Tubli Water Control centre with a design treatment capacity of 200,000 cubic meters per day and receiving now about 300,000 cubic meters per day.

Several domestic waste treatments are in place and treating more than 400,000 cubic meters per day. Tertiary treatment provides the opportunity to treat wastewater to a standard that allows certain types of reuse of the treated effluent such as landscape, irrigation artificial ground water recharge...etc.

Most of Bahraini population has nearly an adequate access to wastewater treatment systems which increase the hygiene level and enhancing the living conditions for the population. Without proper construction and maintenance of these facilities, domestic wastewater is disposed ineffectively and increases the possibility of spreading diseases.

Septic tank

Septic tanks are used for wastewater disposal in residential areas and in industrial areas. They provide very limited treatment before transporting by tankers to the allocated site to be treated and emptying the septic tank is carried frequently.

Testing and monitoring wastewater:

Daily tests are being carried out at Tubli Wastewater Pollution Control Centre (WPCC) laboratory to determine most major characteristics of raw wastewater and treated wastewater. Weekly monitoring programs are implemented for all treatment plants to ensure compliance with standards. The capability of the laboratory will be increased aiming to have accreditation for the laboratory according to ISO17025 in the near future..

Water Quality Evaluation:

The generated data from the monitoring programs for wastewater are evaluated according to the national standards as well as international standards and guidelines. Appropriate decisions are taken based on the outcomes of these monitoring programs for improvement of the operational system and the reuse of the treated wastewater for the intended aspects.

Reuse of wastewater

The reuse of untreated wastewater in irrigation is prohibited in Bahrain. The reuse of treated wastewater is one of the main options being considered as a new source of water for irrigation in Bahrain. Reusing of treated wastewater is common for irrigation and other appropriate aspects in a well managed program through constructing a conveyance network for treated water from Tubli treatment plant to be used for irrigation and other intended uses. Tertiary treatment provides the opportunity to treat wastewater to a standard that allows certain types of reuse of the treated effluent such as landscape, irrigation artificial ground water recharge..etc. The reuse of treated wastewater in landscaping, especially on golf courses, irrigated agriculture and for industrial use is becoming increasingly widespread in Bahrain and it is governed by the international standards and guidelines.

Economic impact of inadequate sanitation

The economic costs associated with inadequate sanitation and unsanitary conditions represent the main obstacles to the improvement of living standard. An effort to provide adequate sanitation facilities in Bahrain is also challenged by the country's population increase. Such challenge can lead to greater costs for future development of wastewater systems and sewer network. However, the ministry of works through wastewater sector is managing this with the allocated budget to ensure the safe, efficient operation and maintenance of all sanitary facilities, including sewage networks and treated sewage networks. It ensures that the collection, treatment and distribution processes meet the set standards.

Water privatization in Bahrain:

The government of Bahrain has adopted privatization principles which allow private sector participation in wastewater management. Government of Bahrain had signed contracts with private companies to operate, and sometimes also to finance, their wastewater infrastructure such as Muharg treatment plant. Muharg project is the largest to treat 100,000 cubic meters per day for the first phase. Finance infrastructure, such as a water treatment plant, under BOO contract. The overall sanitary engineering services strategy is to increase capacity by decentralizing sewage treatment and build more plants around the country and have plants developed by the new private investment projects. The primary focus for the ministry is the upcoming Sewage Treatment Plant (STP) at Muharraq which is the flagship privatization project and the upgrading of the country's largest sewage treatment plant at Tubli. The agreement awarding the privatization of the Muharraq STP was awarded and signed on 02-02-2011. The project has three components and the plant is scheduled to be in operation in December 2013. It will be developed in

two phases with an initial capacity of 100,000 m³/day, expandable to 160,000 m³/day. The STP has been designed to cater to the increasing development surrounding Muharrag and to reduce considerable overloads at the Tubli STP.

Cost recovery and wastewater tariffs

It does not exist yet in Bahrain, plans are underway to proceed to set appropriate tariffs and apply cost recovery principles. Tariffs should fully recover costs in the near future to ensure the sustainability of sanitary engineering services.

Investment and Financing

The sanitation sector in Bahrain is given a high priority at the national level to implement sanitation activities all over the country according to the National Master plan for Sanitary Engineering Services issued in 2010 which addressed all future expansions and new capital projects required for the sewage treatment systems.

Water Quality, the Environment, and Human Health

We will update standards for waste water, for industrial wastewater discharges to sewers and for treated wastewater reuse and support its enforcement. Bahrain, has adopted and adapted international water quality standards or guideline values developed by the World Health Organization (WHO), the United States Environmental Protection Agency (EPA), and others. The guiding criteria shall always be the provision of safe use of wastewater water and protection of the groundwater, environment and public health. The quality of treated effluent and the performance of the wastewater treatment plants are greatly affected by the influent water quality which may be of domestic or industrial source. The use of treated effluent offers challenges as well as opportunities. Performance of some treatment plants is inadequate resulting in low quality effluent that could have an adverse effect on public health. We will carefully monitor and upgrade treatment plant capacity and establish monitoring protocols to ensure reuse standards are set and maintained for each economic use. Such a program requires that equipped laboratories and qualified personnel be provided.

Ensuring Human Rights Compliance**Question 6:**

The government is aware of the importance of the Bahraini rights for having adequate sanitary engineering services. Each person and community has equal right to access basic wastewater services. Priority will be given to hot spots until reaching the Vision 2030.

It is the responsibility of the Ministry of Works which is in charge of wastewater management for providing sanitation services. The Ministry of Finance plays an important role in providing the required budget to implement wastewater projects and improve the existing systems. The MOW continue improving the sanitary services with the available budget and implementing rehabilitation programs for wastewater systems all over the country although there is budget constraints to protect the public health and the environment from the impact of wastewater.

Question 7:

Several actions have been taken to ensure and improve the existing sanitary services with the allocated budget for major treatment plant and minor treatment plants. The most important action which was taken by the decision makers is to expand and upgrade the Tubli Water Pollution Control Centre (WPCC) as a short term solution to the overloading of the existing plant in order to let the existing plant to return to operation within its original design parameters. The result of this will be to dramatically improve the environment and ecology in the Tubli Bay area. Also Urgent rehabilitation work has been conducted for hot spots by replacing and upgrading existing pipe work to reduce overflow and groundwater infiltration. Moreover, several projects have been implemented to develop and upgrade the existing treatment plants such as North Sirra STP, ALBA STP Al and others.

Question 8:

The ministry conducted a complete master plan for sanitary engineering services in 2010. This plan is the road map for managing wastewater system with high level decision making process. As result of this master plan, the final feasibility study for upgrading wastewater systems in Bahrain was completed by the consultant for the construction, operation and maintenance of Tubli WPCC in 2012. This project is scheduled to start under the privatisation programme in 2013.

Question 9:

Good management for the available resources to continue providing sanitary services all over the country. We will continue to expand the safe use of treated wastewater by building new wastewater treatment plants and exploring productive uses in Agriculture, industry, and urban landscapes. We will explore the potential for using treated wastewater for aquifer recharge as is done in other parts of the world. We will give particular attention on adopting and enforcing effluent and sludge standards for municipal and industrial wastewater treatment plants and for discharge from laboratories, hospitals, slaughterhouses, and other businesses. Concerns for public health and the health of workers shall be a focus in the programs of reuse of treated wastewater. Laboratories shall be maintained and properly equipped to provide reliable data needed to ensure safe use off treated wastewater.

Question 10:

Complaints from population have been considered directly from MOW by taking immediate actions if required. The participation of people or Community participation in Bahrain regarding sanitation services is carried throughout the involvement of their representatives at Parliament and municipalities in planning, decision making that responds to their needs.