

# Marmore Infrastructure Report

## 2013

### Kuwait Water

Containing consumption and spurring investments

#### Research Highlights

Examining and analyzing the status of Kuwait Water sector highlighting the demand, supply and investment trends. The report also presents growth drivers and key learning points.

## **Research**

---

M.R. Raghu CFA, FRM | Head of Research  
[rmandagolathur@markaz.com](mailto:rmandagolathur@markaz.com)

Porcko P | Intern

## **Support**

---

Jeneviva Lasrado | Secretary, Research  
[jlaserado@markaz.com](mailto:jlaserado@markaz.com)

Fatima Priya | Office Manager - Administration, Research

Nael Aboul Huda | Manager, Media & Communications

## Disclaimer

This report has been prepared and issued by Marmore MENA Intelligence Ltd (Marmore), a fully owned research subsidiary of Kuwait Financial Centre "Markaz" K.P.S.C. Marmore is a private limited company registered with the Registrar of Companies in India.

This Report is owned by Marmore and is privileged and proprietary and is subject to copyrights. Sale of any copies of this Report is strictly prohibited. This Report cannot be quoted without the prior written consent of Marmore. Any user after obtaining Marmore's permission to use this Report must clearly mention the source as "Marmore." The Report is intended to be circulated for general information only and should not to be construed as an offer to buy or sell or a solicitation of an offer to buy or sell any financial instruments or to participate in any particular trading strategy in any jurisdiction.

The information and statistical data herein have been obtained from sources we believe to be reliable, but no representation or warranty, expressed or implied, is made that such information and data is accurate or complete, and therefore should not be relied upon as such. Opinions, interpretations, estimates, and projections in this report constitute the current judgment of the author as of the date of this Report. They do not necessarily reflect the opinion of Markaz or Marmore or other identified parties and are subject to change without prior notice. Neither Marmore nor Markaz have an obligation to update, modify, or amend this report or to otherwise notify a reader thereof in the event that any matter stated herein, or any opinion, projection, forecast, or estimate set forth herein, changes or subsequently becomes inaccurate, or if research on the subject company is withdrawn.

This Report may not consider the specific investment objectives, financial situation, and the particular needs of any specific person who may receive this report. Investors are urged to seek financial advice regarding the appropriateness of investing in any security or investment strategy discussed or recommended in this report and to understand that statements regarding future prospects may not be realized. Investors should note that income from such securities, if any, may fluctuate and that each security's price or value may rise or fall. Investors should be able and willing to accept a total or partial loss of their investment. Accordingly, investors may receive back less than originally invested. Past performance is not necessarily indicative of future performance.

Markaz may seek to do business, including investment banking deals, with companies covered in its research reports. Markaz may have interests in the areas covered in this research report. Markaz, Markaz managed entities, its clients, or its employees may have from time to time long or short positions in any security, derivative or other types of assets referred to in this research report. As a result, investors should be aware that Markaz may have a conflict of interest that could affect the objectivity of this report.

This report may provide the addresses of or contain hyperlinks to websites. Except to the extent to which the report refers to website material of Markaz and Marmore, Markaz has not reviewed the linked site and takes no responsibility for the content contained therein. Such address or hyperlink (including addresses or hyperlinks to Markaz's or Marmore's own website material) is provided solely for your convenience and information, and the content of the linked site does not in any way form part of this document. Accessing such website or following such link through this report or Markaz's or Marmore's website shall be at your own risk.

For further information, please contact 'Markaz' at P.O. Box 23444, Safat 13095, Kuwait; Email: [info@e-marmore.com](mailto:info@e-marmore.com); Tel: 00965 22248280; Fax: 00965 22495741.

## Table of Contents

<b>1.</b>	<b>Executive Summary .....</b>	<b>6</b>
<b>2.</b>	<b>Industry Overview .....</b>	<b>9</b>
<b>3.</b>	<b>Demand Dynamics in Kuwait.....</b>	<b>11</b>
<b>4.</b>	<b>Water Supply Sources in Kuwait.....</b>	<b>18</b>
	Developing Ground Water .....	18
	Desalination.....	19
	Wastewater Treatment .....	21
<b>5.</b>	<b>Water Usages In Kuwait.....</b>	<b>24</b>
<b>6.</b>	<b>Market Structure &amp; Tariffs.....</b>	<b>26</b>
<b>7.</b>	<b>Investments in Water Sector .....</b>	<b>28</b>
<b>8.</b>	<b>Kuwait Project Scenarios.....</b>	<b>30</b>
	Future Projects.....	30
<b>9.</b>	<b>SWOT .....</b>	<b>32</b>
<b>10.</b>	<b>APPENDIX.....</b>	<b>33</b>

### Tables and Charts

Tables		Charts	
4.1	Water Withdrawal by source(10 <sup>9</sup> M3/Yr )	3.1	Total water withdrawal per capita (m <sup>3</sup> /yr)
4.2	Kuwait Installed seawater desalination capacity in 2010	3.2	Total renewable water resources per capita(m <sup>3</sup> /yr)
4.3	List of technology used by respective desalination plants in Kuwait	3.3	Total Potable water consumption(in 1000MIG)
4.4	Waste water treatment plants by 2011	3.4	Total freshwater withdrawal as % of total actual renewable water resources
5.1	Number of fresh water Consumers	3.5	Total urban population in Kuwait in Thousands
5.2	Number of Brackish water Consumers	3.6	Arable Land in Hectares
6.1	Working Sectors in Ministry of Electricity & Water	3.7	Kuwait - Crop Production Index
6.2	Water Rates collected by Ministry of Electricity & Water	3.8	Production of top three crops in Kuwait in 1000 tonnes
6.3	Saudi Arabia Water Tariffs	3.9	GDP Contribution Sector Wise
10.1	Stages involved in Reverse Osmosis distillation process	4.1	Total renewable water resources (M m <sup>3</sup> /yr)
		4.2	Desalinated water productivity of GCC countries
		4.3	Desalination Plants in Kuwait
		4.4	Existing Sewage treatment plants, 2010
		7.1	Investments in Water Projects utility-wise in Kuwait(US \$m)
		7.2	Kuwait Water- Value of investments and stages from 2005-2014(US\$m)
		10.1	Multi-Stage Flash Distillation working layout

## 1. Executive Summary

Globally fresh water presence is about 3% of the the total water present on Earth. Water is not evenly distributed over the globe. Fewer than 10 countries possess 60% of the total fresh water available and definitely GCC would be the other extreme, with countries like Kuwait possessing almost nill internal renewable water resources.

Kuwait recorded the highest water consumption per capita per day and the value was 500 litres.

Kuwait recorded the highest water consumption per capita per day and the value was 500 litres, which is very much indicative of its demand range. Kuwait in terms of its water withdrawal seems to be low at 374 m<sup>3</sup> per year per capita, but the availability of renewable water resources stands at 7 m<sup>3</sup> per year per capita, which is also very low compared to its GCC peers.

Potable water is mainly consumed by Municipalities, as Potable water finds its use among residential places. Potable water consumption in 2011 stood at 128,236 MIG (Million Imperial Gallons). Municipalities are mainly urban cities and the urban population in Kuwait has increased by 35% from 1990 to 2011. With increasing population and changing usage trends the consumption of potable water is estimated to be 142,230 MIG in 2015. This value along with percentage of withdrawal of Potable water to availability of renewable resources (2,465%), highlights the heat of demand for fresh water in near future.

Agriculture is also a major sector that withdraws substantial amount of water. Sulaibha farms are government owned farms, which are supplied with Brackish water. Brackish water is highly saline, which is not suitable for municipal consumption. Brackish water consumed in 2011 stands at 19,265 MIG. Though the arable land in hectares has decreased from 12 to 11 from 2002 to 2008, the crop produce has been exhibiting increasing trend. The crop production index, which is produce by keeping cultivated land area constant, has been increasing from 109.4 in 2008 to 155.3 in 2011. These all indicate the possibilities for an increase in withdrawal of water by agriculture sector.

Of other two sectors Industrial sector is a much smaller consumer of water. Water finds its use in refineries and water is lost in sludge and evaporation.

The number of residential consumers is highest with a percentage of 93.3%, and most of the residential consumers are private.

The total investment in water sector between 2005 to 2014 stands at 5279 million USD.

The refinery capacity has increased from 889.2 thousand barrels per day in 2009 to 936 thousand barrels per day in 2010. This sudden increase would really increase industry's demand for water.

On supply side there is very little or almost nil internal renewable water resources. The annual precipitation stands at 121 cm which is very meager when compared to the prevailing demand. Desalination and Sewage treatment plants are the alternative sources of water. Total desalination capacity as of 2010 is around 423.1 MIGD (Million Imperial Gallons per day). Sewage treatment plants are taken care by Ministry of public works. Sulaibha facility is the only plant producing RO treated wastewater as of 2011 and its output is 3,40,000 cm/day.

The number of residential consumers is highest with a percentage of 93.3%, and most of the residential consumers are private. Other consumers who belong to industrial, commercial, agriculture and service sectors form 6.7%. So a sudden depletion in the fresh water supply will affect the residential consumers by a much greater magnitude than other consumers.

MEW (Ministry of Electricity & Water) owns and operates all existing power and water production facilities, transmission networks and distribution systems in Kuwait and sells electricity and water. Water tariffs are categorized based on type of consumer. It is just 0.02 Kuwait Dinar (KD) per 1000 gallons for Sulaiba farms and it is 0.85 KD for state facilities and companies.

The total investment in water sector between 2005 to 2014 stands at 5279 million USD. Of all water sector investments, water treatment plants saw highest investment at 3402 million USD. In 2010 many projects were undertaken and finished. The Construction of Sabiya Distillation Plants Projects Stage I & Stage II, Shuaiba North Distillation Plants and Shuwaikh Reverse Osmosis Desalination Plant took place.

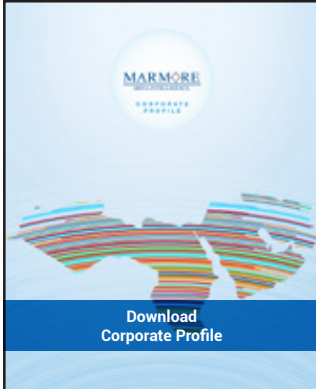
The Construction of Az-Zour North Distillation Plant Project is a huge and much awaited project in Kuwait. The purpose of this project is to supply & erect 15 multi stages Flash Distillation Units each of 17 MIGPD capacity with Recarbonation Plant, in addition to one Reverse Osmosis Desalination

Plant having 25 MIGPD capacity i.e. having total capacity of 280 MIGPD for the plant.

**This is the Executive Summary version of the full report  
To obtain full version, Kindly Click Here  
OR email us at [info@e-marmore.com](mailto:info@e-marmore.com)  
Would prefer talking to us? Call us at +965 2224 8280**



# About Marmore



## Organizational Background

Marmore MENA Intelligence provides research-based consulting solutions to help understand current market conditions, identify growth opportunities, assess supply/demand dynamics, and make informed business decisions.

Marmore is a fully-owned research subsidiary of Kuwait Financial Center 'Markaz'. Since 2006, Markaz Research has been at the forefront in disseminating thought-provoking, hard-data backed research reports. Marmore continues that legacy with a focused approach to providing actionable solutions for business leaders and policymakers.

Since its inception, Marmore has published over 700 research reports and covered more than 25 varied industries and infrastructure segments; all focused primarily on the GCC economies. (To view our Research Library, please [click here](#))

With over 30 policy and regulatory research studies published, Marmore has partnered with renowned regional think-tanks and opinion-leaders to publish some of these intellectually provoking policy research papers. These research studies aim to initiate dialogue and propose better solutions to existing economic conundrums. (To view our Policy & Regulatory research report, [click here](#))

Almost on a weekly basis, Marmore publishes thematic economic, industry, policy and capital market reports. Marmore has been recently conferred **"Research Provider of the Year - 2018" award by Global Investor, a Euromoney Group company.** To learn more, visit [www.marmoremna.com](http://www.marmoremna.com)

## Experience/Qualifications

Marmore is the only regional firm providing niche research based on strong analytics in areas that are less researched. Marmore provides full range of financial market, sector specific and economic and policy researches, as well. The different types of researches are availed based on the client's requirements. It is notable that Marmore research reports have regularly been used by various renowned institutions to better understand the MENA region.

*Marmore's strengths can be summarized as follows:*

- » Consistent track record of quality, in-depth research offerings;
- » Skilled team with extensive experience in advanced quantitative and qualitative analysis techniques;
- » Deep understanding of MENA market and access to wide-ranging database
- » Delivers high quality, client specific, insightful research reports; highlighting key client issues and uncovering key answers/opportunities for the clients.

 [www.marmoremna.com](http://www.marmoremna.com)

 /marmoremna

 @marmoremna

 [enquiry@e-marmore.com](mailto:enquiry@e-marmore.com)

 marmore-mena

 marmoreMENA

