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### Company profiles

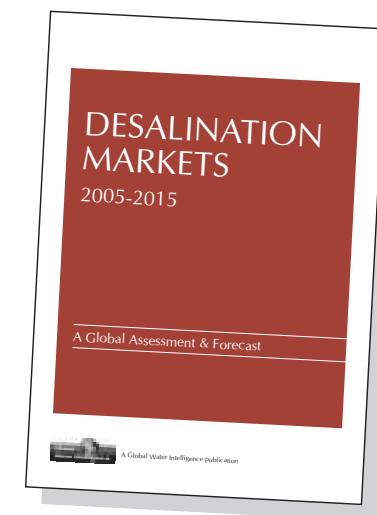
How are the major players exploiting the growth in the desalination sector? Desalination Markets 2005-2015 has original profiles of more than 70 leading desalination companies: consultants, developers, EPC contractors, and equipment suppliers. Additionally the report carries an overview of the financial and professional firms involved with desalination.

All profiles have been written specially by GWI's independent editorial team. The companies covered include:

Abdel Warith	Kuljian Corporation
Abu Dhabi Islamic Bank	Lahmeyer International
AES Corporation	Marubeni
Al Zamil Group	Metito International
Al-Bawardi	Milbank, Tweed, Hadley &
Al-Kawther	McCloy
ANZ Investment Bank	Mitsubishi
Bank Muscat	Mitsui
Bank of Tokyo-Mitsubishi	Mizuho Corporate Bank
Bechtel	Morrison & Foerster
Black & Veatch	Mott MacDonald
Cadagua	Norton Rose
CH2M Hill	Ondeo Degrémont
Citibank	Pall Rochem
Clifford Chance	PB Power
CMS Energy	Poseidon Resources
Denton Wilde Sapte	PricewaterhouseCoopers
Desal Co/Consolidated Water	Pridesa/RWE
Doosan Heavy Industries	Sadyt
Dow Chemical Company	Sasakura Engineering
Ernst & Young	Sidem/OTV
Fichtner	SIDMAS
Fisia Italmimpianti/Impregilo	Siemens
GE Water Technologies	Simmons & Simmons
Gulf International Bank	SMBC
Hitachi Zosen	SNC Lavalin
HSBC	Société Générale
Hyder Consulting	Sogex Oman
Hydranautics	Sumitomo Corp.
Hyflux	The Law Firm of Yousef &
HypoVereinsbank	Mohammed Al-Jadaan
Hyundai Engineering &	Toray Industries
Construction	Total
IDE Technologies	Toyo Engineering Corp.
Inima	Toyobo Corp.
International Power	Tractebel
Ionics	VA Tech Wabag
Ishikawajima-Harima Heavy	Veolia Water
Industries (IHI)	Veolia Water Systems/US
Itochu Corporation	Filter/ Enerserve
Kindasa Water Services	Weir Westgarth
Koch Membrane Systems	White & Case
Kubota Corp.	

# DESALINATION MARKETS 2005-2015

A Global Assessment & Forecast



A Global Water Intelligence publication

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See inside!

## Desalination: what's in it for you?

Desalination is the biggest growth opportunity in the international water sector today. If you are going to make the most of it you will need to know:

- How big is the potential market?
- How fast will it grow?
- Which regional markets have the best potential
- Who stands to benefit
- What are the risks?
- Which individual project opportunities should you be pursuing?

*Desalination Markets: 2005-2015* provides the answers.

Based on original research by the highly respected *Global Water Intelligence* editorial team it assesses the outlook for the sector on a project by project, and country by country basis to provide an essential strategic planning resource. With more than 250 fact-filled pages, the report brings together the key national and regional data with expert analysis of the structural, political and financial issues that will shape the industry over the next decade.

You won't find this information anywhere else. Without it, can you be serious about your company's future in desalination?

## Country profiles

The core of the report comprises 28 country profiles assessing the potential market for desalination over the next decade until 2015. Official data for projected demand and supply is the starting point. This is analysed in the context of other issues affecting the expansion of desalination capacity: the structure of the local water sector; tariff arrangements; financing arrangements, and a full listing of proposed desalination projects, leading to a forecast figure for the additional desalination capacity expected by 2015.

The countries profiled in the report are:

- Algeria ■ Australia ■ Bahrain ■ Bahamas
- Chile ■ China ■ Cyprus ■ India ■ Iraq ■ Israel
- Italy ■ Kuwait ■ Libya ■ Mexico ■ Morocco
- Netherlands Antilles ■ Oman ■ Palestine
- Pakistan ■ Qatar ■ Saudi Arabia ■ Singapore
- Spain ■ Trinidad and Tobago ■ Tunisia
- United Arab Emirates ■ USA ■ Yemen ■

More than 50 other countries are covered in regional summaries covering the Caribbean, Central Asia, Africa, the Mediterranean, and the Far East

## The Players

### Ownership

Know who you are really dealing with.

**Ownership**  
Listed on the Osaka Securities Exchange Section 2 since 1994.

**Company data**  
Operating loss of ¥126 million on net sales of ¥9.57 billion (\$90 million) for the year to end of March 2003. Sales by segment are:

Segment	% of sales
Marine Equipment	22%
Industrial Equipment	21.5%
Water Industry	20.1% (includes desalination)
Acoustics & Thermostat Equipment	0.4%
Other	

**Desalination interests**  
Desalination is included in the Water Industry division although it accounts for only a small percentage of sales. Sasakura has around 350 employees, mostly in Japan.

**Company data**  
Sasakura was founded in Osaka in 1949 and exported its first MSF desalination plant to the Arabian Oil Company in 1966. It began the manufacture of RO desalination plants in 1971. Since then, the company has expanded its range of products and diversified into operations including acoustics & noise control, vacuum vapour compression (VVC) seawater plants and large-scale MSF plants designed by Sasakura and Hyundai Engineering & Construction. This group is one of the bidders for Kuwait's 225,000m<sup>3</sup>/d Subiya MSF plant. The agreement combines Sasakura's engineering and process design know-how with Hyundai's capability as a plant manufacturer. It also allows Sasakura to work on large projects without being exposed to the higher risks.

**Strategy**  
Sasakura also has a 27.5% stake in ACWA Power & Sasakura Ltd., a joint venture company with (Itochu Corporation and ACWA Power). The Riyadh-based company has been set up to target the rehabilitation and maintenance markets in Saudi Arabia and the Gulf.

### Company data

Companies often like to appear larger and more successful than they are. What is the truth?

### Desalination interests

Which parts of the value chain is the company involved in? Sometimes there is a difference between ambitions and reality.

### Strategy

Where is the company really going? GWI's editorial team gives its expert view.

### Projects

What is the track record?

### Market share

Where does the company stand?

### Key staff

Who should you be in touch with?

### Further information

How do you take things from here?

**Projects**  
1972 - 180,000m<sup>3</sup>/d Lok On Pui MSF desalination plant from the Hong Kong government.  
1979 - 470,000m<sup>3</sup>/d Jubail Phase 2 MSF desalination plant in Saudi Arabia from the government of Bahrain.  
1983 - 46,000m<sup>3</sup>/d RO desalination plant from the government of Bahrain.

**Market share**  
Sasakura is hardly visible in the RO market. Its share of the niche tube-type drilling market for marine vessels is estimated at 50-60% (equivalent to \$20-50 million). Its main competitors in this field are Alfa Laval, South Korea's Dong-A, and Meaco of the USA.

**Key staff**  
Toshihiko Sasakura, president

**Further information**  
Internet: www.sasakura.co.jp  
Tel: +81 6 6473 2131

## The Scene

### Key Indicators

The basic information about the country, its water status and its desalination industry.

### Sector structure

How does the country's water industry work?

### Tariffs

How much are people paying for water at the moment? How dependent on subsidy is the desalination sector?

### Demand

Projected water demand and supply data to 2015 and beyond from official sources discussion of the nature of the projected water deficit.

### Future desalination plants

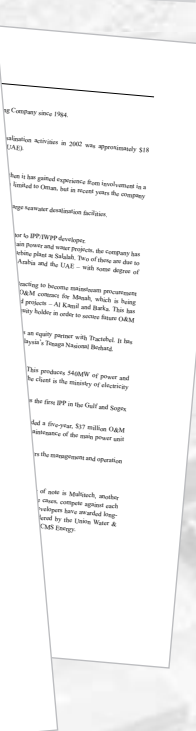
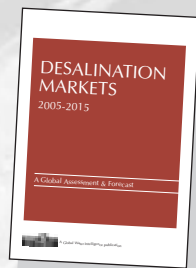
Full listing of proposed desalination projects, and their current status, supported by analysis of the outlook for their construction.

### Financing

The outlook for financing major desalination projects.

### Additional capacity forecast

Projected additional desalination capacity by 2015 with supporting notes.



Libya	
<b>Key indicator</b>	
Population	5,499,074 note: includes 1,665,514 non-residents (440,200 exp.)
Population growth rate	2.36% (2003 est.)
GDP/head	\$33.36 billion (2003 est.)
Sovereign credit rating	BB- (2002 est.)
Water abstraction/head	107.5 m <sup>3</sup> /head/yr
Natural renewable water/head	878.5 m <sup>3</sup> /head/yr
Water usage	Farms: 84% Homes: 13% Industry: 3%
Installed desalination capacity	415,000m <sup>3</sup> /d
Number of plants	19 (+ number plants applying for industry)

**Sector structure**  
Most normal desalination plants are operated by the General Electricity Company of Libya (GECOL). Total installed capacity design and prove O&M had been awarded to MSF plants and 25,000m<sup>3</sup>/d produced on no M&P basis. Libya's first normal desalination plant on Derna and Zawiya entered service in 1975. However, serious corrosion problems, flawed plant financing, allegations of Libya's installed desalination capacity only 142,500m<sup>3</sup>/d was available for use in 2000, due to other smaller normal plants are operated by the governmental sector. A number of local contractors also own desalinated brackish water and some food factories have installed electro-dialysis and ED/RO plants.

Desalinated water is mostly used to supply urban areas although some is used by oil companies and the chemical industry, undertaken by the General Company for Storage and Water in each region. There is little in the way of published data on individual treatment works for the local or international water supply. This is likely to be published data on agricultural treatment works with groundwater from desert well fields, the extensive brackish water to farms through a network of distribution pipes. The project is operated by the state-owned Great Man-Made River Authority (GMMRA). A preliminary agreement for the Great Man-Made River Water Utilization Authority, oversee the system of agricultural treatment and farm. Approximately 60% of GMMRA water is used by agriculture, 30% by municipalities and 2% by industry.

**Tariffs**  
Tariff data for Libya is already there is a charge for water but the tariff seems to apply to the bigger cities such as Tripoli and Benghazi which operate an existing tariff system. The tariff is around \$0.15/cu m for the first 20m<sup>3</sup>. Other cities are not metered.

**Demand**  
Libya is mostly a desert with a Mediterranean coastal strip stretching from Tunisia to the west to Egypt in the east. Annual per capita water consumption is 150m<sup>3</sup>/yr. The country has a total population of 5.5 million. The country has a total available water cover 10,000,000m<sup>3</sup>/d, or 3.55 million m<sup>3</sup>/yr. Most of this is locked in large Gulf aquifers in the south and east of the country.

Table 1. Available water	
Water resource	Availability (million m <sup>3</sup> /d)
Underground (non-renewable)	1.79 (16.3%)
Renewable	1.78 (16.3%)
Surface	0.16 (1.5%)
Discharge	0.14 (1.3%)
Treated wastewater	0.14 (1.3%)
Total	0.66 (6.1%)

Source: General Electricity Company of Libya

**Table 2. Future demand**

Year	2000	2015	2025
Water (million m <sup>3</sup> /d)	11.5	15.3	18.2
Agriculture (million m <sup>3</sup> /d)	1.7	2.7	3.9
Urban (million m <sup>3</sup> /d)	0.5	0.9	1.5
Industry (million m <sup>3</sup> /d)	0.5	0.9	1.5
Total (million m <sup>3</sup> /d)	13.7	18.9	23.6

Source: General Electricity Company of Libya

**Table 3. Projected water availability**

Year	2000	2015	2025
Desalinated (million m <sup>3</sup> /d)	13.7	18.9	23.6
Availability (million m <sup>3</sup> /d)	10.9	10.9	10.9
Deficit (million m <sup>3</sup> /d)	2.8	8.0	12.7

Source: General Electricity Company of Libya

**Table 4. New desalination projects**

Project	Capacity (m <sup>3</sup> /d)	Process
Derna	5,000	MED
Tripoli-West	10,000	MED + TVC
Zawiya	10,000	RO
Sabha	6,000	MED + TVC
Tripoli	5,000	MED
Benghazi North	5,000	MED
Gulf SW	20,000	MED + TVC
Benghazi	40,000	MED
Al-Azhar	40,000	MSF
Tripoli	250,000	MSF
Benghazi South	250,000	MED + TVC
Zawiya	40,000	MED + TVC
Misrata	40,000	MED + TVC
Zawiya continued	5,000	not defined
Total	39,000	not defined

Source: General Electricity Company of Libya

**Additional capacity forecast (2015): 1,600,000m<sup>3</sup>/d**  
Forecast in excess of planned capacity because of expansion of smaller facilities serving industrial sector and distribution that GMMRA project will not be completed as planned (due to rising water relative to cost of desalination).

▶ Turn to the back to see full list of companies profiled