

# WATER DESALINATION

- ▶ **GRI 2-6 Activities, value chain and other business relationships**
- ▶ **GRI 203-1 Infrastructure investments and services supported**
- ▶ **GRI 303-1 Interactions with water as a shared resource**

ACWA Power, the world's largest private water desalination company

## Accelerating our growth

Global demand for water is increasing and it is estimated that by 2050, around 2.5 billion people will face water scarcity. Given that 40% of the world’s population lives within 100 kilometres of a coastline, efficient and sustainable seawater desalination can provide a solution. In fact, large scale seawater desalination capacity is expected to grow by 60-70% to over 80 million m³/day by 2027 (source: GWI and the Company's estimates).

In a world where access to clean, potable water remains a pressing challenge, with the strain on freshwater resources caused by an increasing population, ACWA Power stands out as the world’s largest private company for desalination, dedicated to not just meeting the world’s water needs, but to reshaping the very nature of water provision. Since its inception, ACWA Power has led efforts to develop innovative solutions, while setting new benchmarks in providing safe drinking water to communities around the globe.

Since 2007, ACWA Power has reduced the levelised cost of water by nearly 45% and has developed highly efficient Seawater Reverse Osmosis (SWRO) technology, used at most of ACWA Power’s water

assets. Furthermore, numerous projects within the company’s portfolio harness renewable energy sources, driving down energy requirements for water purification. Over the past decade alone, ACWA Power has managed to reduce Specific Power Consumption (SPC) at our plants by an outstanding 87%.

ACWA Power’s water portfolio currently comprises 19 assets, spread across four GCC countries, with a contracted capacity of 8.1 million m³/day, constituting 20.6% of its total portfolio in terms of project cost. We can serve the demand of 20% to 50% of the local population in each of the four countries where we operate. All our plants are designed, built, and operated to adhere to Product Water (PW) standards, satisfying the stringent requirements of the world’s largest offtakers.

As the global leader in water desalination, ACWA Power remains committed to capturing our fair share of the growth opportunities in developing economies, as part of the Company’s ambitious 2030 plan to triple assets. We will continue to innovate, focus further on SWRO technology, reduce power consumption and tariffs, and create new projects.



## Facts and figures

### Proven track record



**The largest SWRO plants in the world**  
(Guinness World Record holder)



**The lowest water desalination tariff in the world**



**The first hybrid solar PV SWRO plant in the world**



**The largest hybrid solar PV SWRO in the world**



**The first and only 100% green SWRO plant in the world**

Globally, partners value ACWA Power’s innovative approach, giving us a world-leading track record in winning bids, and an enviable international asset portfolio



**First company to switch to 100% RO in a power-desalination IWPP project**



**First company to introduce spiral wound membranes in a large-scale SWRO**



**First solar-desalination pilot plant based on forward osmosis and CSP in advanced planning stage in KSA**



**First company in GCC to investigate nanofiltration as pre-treatment for seawater RO and for magnesium salt and sodium chloride salt production**



**First large-scale solar-assisted SWRO plant with on-site electricity generation using PV**



**Lowest energy consumption for large scale RO in GCC and world-wide based on normalised seawater conditions**



**First deployment of AI in a large-scale SWRO plant in GCC with real bottom-line savings**



**Application of in-house developed first-of-a-kind simulation and optimisation tool to achieve lowest LCOW**

40

R&D projects

19

pilot assets in KSA and abroad

11+

patent applications

Local talent – EWA

## 2024 awards



Winner  
**Lowest Carbon Footprint in Desalination – Taweelah IWP**  
IDRA Sustainability Award



Winner  
**Reliability Excellence – Rabigh 3**  
SWPC Forum Award



Winner  
**Private Sector Operational Excellence – Shuaibah 2**  
SWPC Forum Award



Winner  
**Desalination Company and Plant of the Year – Jazah**  
Global Water Summit Award



## Energy transition takes speed and scale

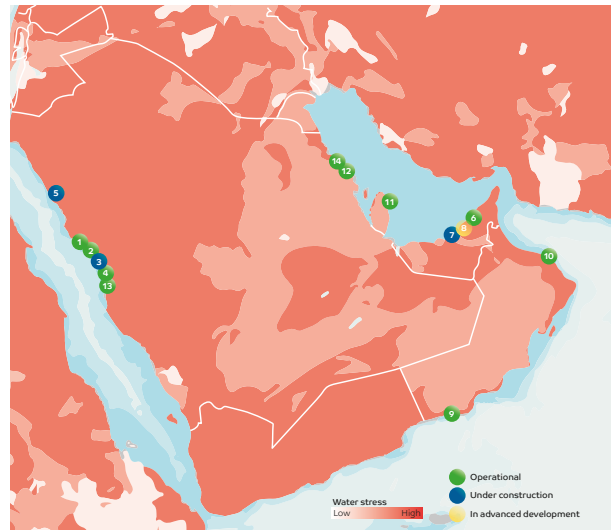
A litre of water for nearly everyone on the planet.

ACWA Power's  
**8.1**  
million m<sup>3</sup>/day  
water capacity

is approximately equivalent to  
**a litre of water a day**  
for the world's 8.197 billion population.

### ACWA Power water desalination portfolio

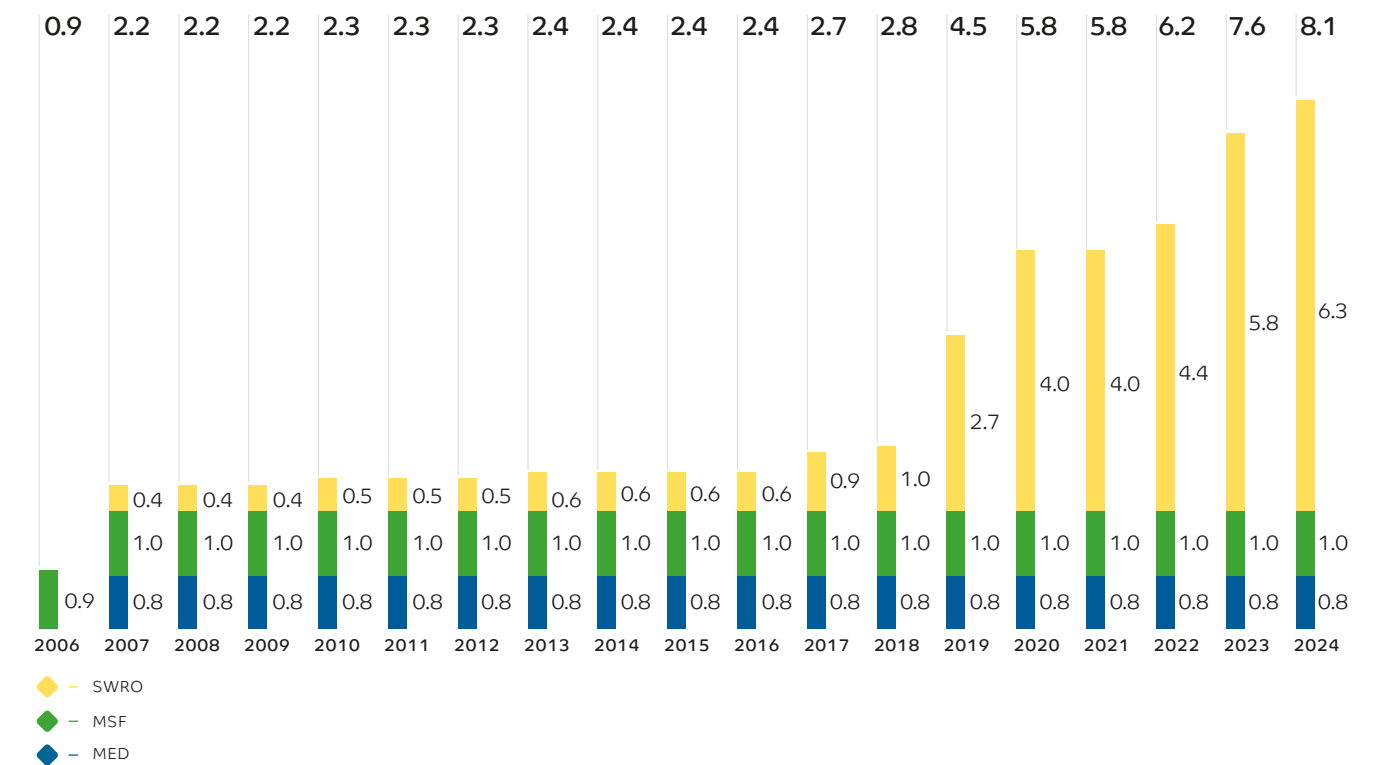
Water desalination plants are located in the extremely high water-risk region, where we are making a positive impact by distributing potable water to water-scarce regions. ACWA Power's desalination assets are in the Middle East, an area of extremely high water-risk.



### ACWA Power's desalination assets

		m <sup>3</sup> /day	COD
1	Rabigh 3 IWP	600,000	Q4 2021
2	Petro-Rabigh IWSP	133,920	Q2 2008
3	Petro-Rabigh (Phase 2) IWSP	54,480	Q1 2018
4	Rabigh 4 IWP	600,000	Q1 2026
5	Shuaibah IWPP	880,000	Q1 2010
6	Shuaibah Expansion IWP	150,000	Q4 2009
7	Shuaibah 2 IWP	250,000	Q2 2019
8	The Red Sea Project	33,000	Q2 2024
9	UAQ IWP	682,000	Q3 2022
10	Taweelah IWP	909,000	Q1 2024
11	Hassyan IWP	818,000	Q2 2028
12	Salalah IWP	114,000	Q1 2021
13	Barka 1 IWPP	91,000	Acquired
14	Barka 1 Expansion IWP	45,460	Q2 2014
15	Barka 1 Phase II Expansion IWP	56,826	Q1 2016
16	Al Dur Phase II IWPP	227,000	Q2 2022
17	Jazlah IWP	600,000	Q1 2023
18	Shuaibah 3 IWP	600,000	Q1 2025
19	Marafiq IWPP	800,000	Q4 2010

### Water portfolio evolution, million m<sup>3</sup>/day



## Scaling up SWRO technology at speed

In 2009, ACWA Power seized on SWRO as a potential replacement for traditional, oil-fired thermal co-generation methods of desalination, and launching our 150,000 m<sup>3</sup>/day SEPCO IWP in KSA. This was followed by the development of two large commercial SWRO plants on the west coast of KSA over the next three years. These projects successfully demonstrated efficiency with significantly lower SPC, and marked a permanent shift from thermal co-generation to SWRO.

We have invested heavily in developing, applying and refining the technology and effectively reshaped the entire market. With conventional energy prices increasing significantly, ACWA Power developed integrated plants that combine the environmental and commercial benefits of reverse osmosis with renewable energy sources (PV). This advanced integration led us to develop some of the world's largest SWRO plants, while continuously breaking records for the world's lowest levelised water tariff by significantly reducing SPC in our plants through

big data analytics, advanced simulation tools, the integration of solar PV and a focus on Levelised Cost of Water (LCOW).

Two of our operational water desalination plants, Taweelah IWP in the UAE, the world's largest efficient RO facility, and Jazlah IWP (Jubail 3A) in KSA, have successfully integrated on-site captive PV plants. This integration has reduced grid power dependency by approximately 25%, achieving the lowest specific power and cutting over 2.5 million tonnes of CO<sub>2</sub>e emissions annually.

We maintain our competitive edge by treating each project as unique and by developing the best solution for that particular plant. NOMAC's experience of running the plants, and improving them on a continuous basis, provides us with a wealth of experience that advances our knowledge, capabilities, and technology. This experience is the basis for our continuous innovation to optimise our plant design, apply the latest proven technology and leads to successive reductions in SPC.

[Sustainability review/Water management \(page 128\).](#)

19  
Assets

4  
countries

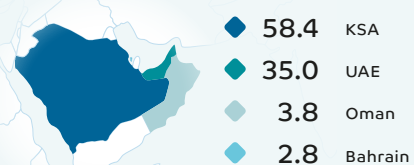
### Contracted capacity

8.1  
million m<sup>3</sup>/day

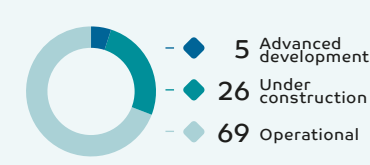
### Capacity in operations

5.6  
million m<sup>3</sup>/day

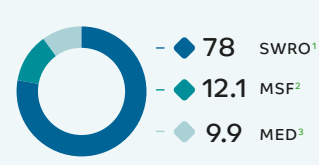
### Capacity by region, %



### Water portfolio by status, %



### Capacity by technology, %



ACWA Power produces 30% of the total  
desalinated water in KSA

<sup>1</sup> Seawater Reverse Osmosis

<sup>2</sup> Multiple Stage Flash distillation (thermal desalination)

<sup>3</sup> Multiple Effect Distillation (thermal desalination)