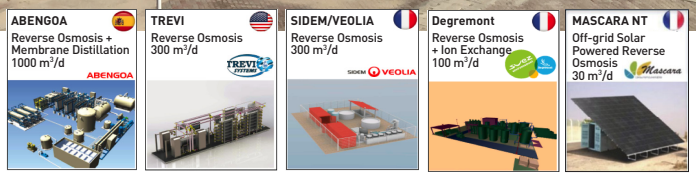


Renewable Energy Water Desalination Programme

Abu Dhabi, UAE



In 2013, Masdar launched a renewable energy desalination pilot programme to research and develop energy-efficient, cost-competitive desalination technologies powered by renewable energy. The project was officially inaugurated during UAE Innovation Week in November 2015.

Commercial partners – Abengoa, Suez, Veolia and Trevi Systems – each developed and operated a next-generation pilot seawater desalination plant in Ghantoot, Abu Dhabi. The four plants tested a range of innovative approaches to boost operational efficiency of reverse osmosis, a technique where salt water is purified through membranes. A fifth pilot was installed in October 2016 by Mascara Renewable Water, a unique off-grid solar powered solution without batteries, ideally suited for remote locations. The commercial partners operated the pilot plants for periods of between 12-15 months.

The Masdar Institute of Science and Technology, now a part of Khalifa University, also conducted five research projects on the pilot projects in collaboration with the commercial partners.

A Masdar report published at Abu Dhabi Sustainability Week 2018 on the results of the programme found that the solutions are up to 75 per cent more energy efficient than the thermal desalination technologies currently used in the UAE, delivering annual energy savings of as much as US$550 million.

The desalination project was sponsored by the Abu Dhabi Government, with co-funding provided by the industry partners. Masdar was leading the project management and coordinated the programme with key Abu Dhabi stakeholders.

Masdar is currently preparing for the development of several commercial desalination projects, which will use the piloted technologies.

Quick facts

- Pilot project test facility located in Ghantoot, 90 kilometres northwest of Abu Dhabi
- Five leading commercial partners developed and operated pilot desalination plants
- Achieved electric energy consumption of less than 3.6 kilowatt-hours per cubic metre of produced water (through membrane-based seawater desalination)
- Test plants produced 1,500 cubic meters of potable water per day
- Five R&D projects were delivered in collaboration with the Masdar Institute of Science and Technology, now part of Khalifa University
- The Gulf region accounts for around 40% of the world's desalinated water production
- Abu Dhabi sources 40% of its water and virtually all of its drinking water through desalination
- There are 25 operational desalination plants in the UAE

Key benefits for the UAE include:

- Diversification and strengthening of energy and water security
- Enhanced energy efficiency of water desalination
- Reduced cost of water desalination
- A reduction of the environmental impact of desalination