

IRENA TECHNOLOGY POLICY BRIEF

DRINKING WATER FROM THE SEA – USING RENEWABLE ENERGY



- **Global demand for water is rising, but freshwater sources are becoming scarcer** - particularly in semi-arid and coastal/island areas. Countries are increasingly turning to desalination of seawater and brackish water sources in order to provide people with clean, fresh drinking water. Desalinated water currently accounts for 0.6% of global water supply. The Middle East and North Africa region accounts for about 38% of the global desalination capacity, led by Saudi Arabia.
- **Desalination is very energy intensive.** Countries mostly use fossil fuels to power the process, but this is not sustainable. Fossil fuels are vulnerable to price volatility and supply problems in remote areas – such as island communities.
- Renewable energy offers a **sustainable and secure** way to desalinate. Currently, only 1% of desalinated water comes from renewable energy, but the technology is improving and prices are coming down. Renewable energy poses a viable cost-effective option in many parts of the world.
- **There is increasing demand for desalinated water in energy-importing countries,** such as India, China and small islands. This means there is significant market potential for renewable energy-powered desalination systems.
- Desalination powered by renewable energy has also become **increasingly attractive in areas rich in fossil fuels**, such as the Gulf. More than half of growth in the desalination market is in the MENA region, which has an abundance of renewable energy resources.
- **Global demand for desalinated water is projected to grow by 9% per year between 2010 and 2016.** In the Middle East and North Africa, water demand is expected to increase from 9 billion m³ in 2010 to 13.3 billion m³ in 2030.
- **How does renewable energy power desalination?**
 - **Thermal desalination** uses heat to vaporise fresh water. This can be powered with solar energy, in particular heat from concentrated solar power (CSP).
 - **Membrane desalination** (reverse osmosis) uses high pressure from electrically-powered pumps to separate fresh water from seawater or brackish water using a membrane. This can be powered by electricity from solar photovoltaic and CSP. This is appropriate in arid regions with extensive solar energy potential, such as the Gulf.

For more information, see the IEA-ETSAP and IRENA technology policy brief “Water Desalination Using Renewable Energy” on www.irena.org/publications