

The Global Clean Water Desalination Alliance calls for increased global action to ensure security and sustainability of water access

Two months ago, to mark World Water Day, the World Bank Group issued a comprehensive report “The Role of Desalination in an Increasingly Water-Scarce World” and the US President’s National Science and Technology Council (NSTC) released its “Coordinated Strategic Plan to Advance Desalination for Enhanced Water Security”. UNESCO’s International Water Conference, which took place in Paris on 13 and 14 May 2019, reminds us, once again, of the urgent need for the international community to scale-up its efforts in addressing the booming demand for water and water security.

The roaring danger of water stress calls for urgent actions by the international community. However, trend changes are not going to be achieved by simply squeezing the water supply chain or by accelerating investments in the exploitation of depleting water reserves. There is a need for a serious and efficient out-of-the-box thinking. Two main solutions exist and need to be implemented in parallel: improved water management, through the recycling and reuse of water; and sustainable desalination.

Desalination of seawater, estuary, and brackish groundwater provides opportunities to enhancing water security by converting non-consumable saline water into drinkable water in regions, where freshwater resources are becoming limited, due to droughts and/or increases in demand. Desalination can also be used to provide sources of water for non-potable uses, such as mineral extraction, reuse in the oil and gas industry, and in manufacturing processes, thus offsetting demand on potable sources. Water desalination plays an important part in the water security portfolio of large economies such as the United States, as well as most of the world. In the Middle East, the GCC countries, Israel and Palestine principally rely on desalination as a source of clean water. For instance, 60 to 80 percent of the UAE municipal water, adjusted according to season and real-time demand, flows from large coastal desalination plants and desalinated seawater. It accounts for 31 percent of the total water supply in Abu Dhabi and has become the nearly exclusive source of drinking water. More globally, the UN predicts that by 2025, 14 percent of the world will rely on desalination to meet water needs.

This poses a climate and environmental risk if no proper actions are taken, as water desalination is typically an energy intensive process and largely powered by fossil fuel sources as of today. As a result, the CO₂ emissions currently associated with water desalination are considerable: Worldwide, operational desalination plants emit around 76 million tonnes of CO₂ per year. Emissions are expected to increase to around 500 million tonnes of CO₂ per year by 2040 if no actions are undertaken. While the industry has been able to reduce power consumption and significantly lower GHG emissions, numerous research projects now underway, promise to further reduce energy requirements and minimize environmental impact of concentrate and brine discharges. These include projects that creatively couple desalination plants with renewable and alternative energy sources such as wind, solar, geothermal, osmotic power, wave, or nuclear energy sources, to provide the required clean energy input.

Numerous studies and real projects of solar power, both Photovoltaic and Concentrated Solar Power, as well as Wind and Geothermal, have demonstrated that such technologies can be coupled to desalination, not only to reduce the industry’s carbon footprint, but also to offer more competitive economic solutions to water generation, both for municipal, industrial and agricultural systems. An increasing number of market initiatives and projects follow this logic.

Joint global action through the Global Clean Water Desalination Alliance (GCWDA)

Amongst the key institutional actors of the sustainable water scene, is the Global Clean Water Desalination Alliance (GCWDA). The GCWDA was launched at COP21, in December 2015 in Paris, under the auspices of the French Ministry of Environment (France), the Masdar Abu Dhabi Future Energy Company (UAE), and the International Desalination Association (USA).

The mission of the GCWDA is to bring together all the industry players, from both the public and private sectors in a world apex body, to work together on the reduction of CO² emissions by existing water desalination plants, and to enable improved environmental safeguards, while scaling-up the use of clean desalination technologies through coordinated actions. Another area of interest of the Alliance is to support participating governments with the assessment of their market potential and the adoption of appropriate policies to incentivize investments in renewable energy-based desalination plants. The Alliance also seeks to assist countries by providing training and capacity building through its wide corporate and public network.

To date, the Alliance has attracted nearly 200 members from over 50 countries, from the energy and desalination industries, water utilities, governments, financing institutions, academia and R&D institutes.

GCWDA initiatives to promote clean desalination

The Global Clean Water Desalination Alliance is calling on governments and private sector actors to remove barriers against a wide-spread deployment of renewable energy-based desalination plants. The Global Clean Water Desalination Alliance is currently developing a blueprint for desalination tenders that integrates renewable energy-based desalination plants. The Alliance invites all interested organisations to join and contribute to its efforts. The GCWDA plans to conduct an appraisal of the environmental impact of desalination and seek to develop concrete guidelines and actions that would make the technology more sustainable. Another area of intervention will be to support new desalination technologies to move quickly from lab to pilot and commercial scale-up. The Alliance will work with interested governments to develop country roadmaps and feasibility studies; advise on appropriate regulatory and incentive approaches for investments and seek partnerships to mobilize co-financing and examine carbon offsetting mechanisms and other climate finance schemes to enable private finance in sustainable desalination projects.

A transformation in the energy and water sector has begun. The momentum toward economical and low-carbon energy and desalination generation -- driven by our need for secure, affordable and sustainable energy and water supply -- will see the days of fossil fuel domination fade out for clean-energy desalination.

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