Desalination and Water Treatment
www.deswater.com
doi: 10.5004/dwt.2022.28538

261 (2022) 83–93
June

Role of desalination technologies and water reuse in Water-Energy-Food nexus: an opportunity for Algeria

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Received 20 December 2021; Accepted 26 April 2022

ABSTRACT

Water resources in Algeria are scarce, often low quality, fragile, and unequally dispersed over time and space. The pressure on water resources can be associated with industrial development, a steady population growth, and demanding land irrigation measures. These conditions create a tense competition for managing water resources and sharing them between agricultural development, drinking water supply, industrial activities etc. Water treatment and reuse for agriculture is common in some countries. For example, in Spain, 71% of wastewater is used for the agricultural industry. In addition, the effect of climate change has brought national policies focused on the water-energy-food nexus (WEF) to the forefront. Within this context, desalination membrane technologies could play an increasing role for supporting segments of the Algerian economy that are heavily water dependent. In addition, by using renewable energies, such as solar energy in desalination, we would be taking advantage of Algeria's great potential, estimated at 13.9 TWh/y. By implementing water reuse and desalination strategies together in the agricultural sector, there is an opportunity to expand the access to healthy food and clean water, thereby keeping the WEF nexus effects under control. As well, effective use of energy potential for food use will be a step forward for economic growth in Algeria.

Keywords: Desalination; Climate change; Sustainable development goals (SDG's); Water scarcity mitigation

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