

Potential of desalination for lithium production in the Kingdom of Saudi Arabia

Christopher Michael Fellows^{a,b,*}, Seungwon Ihm^a, Sheng Li^a

^aSaline Water Conversion Corporation, Desalination Innovation Technologies Research Institute, Jubail, Saudi Arabia, emails: cmichael@swcc.gov.sa (C.M. Fellows), sihm@swcc.gov.sa (S. Ihm), sli@swcc.gov.sa (S. Li)

^bUniversity of New England, School of Science and Technology, Armidale New South Wales 2351, Australia, email: cfellows@une.edu.au (C.M. Fellows)

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ABSTRACT

The fact that the ocean contains an essentially inexhaustible store of lithium has exerted a hypnotic effect on scientists and funding agencies. However, there is a negligible chance that exploitation of the ocean for lithium will ever be broadly economically competitive with non-oceanic sources. While research into improving lithium extraction from brines is of interest from the point of view of fundamental science, the low concentration of lithium in seawater and desalination brines make them inherently uncompetitive compared to more concentrated terrestrial brines and terrestrial ore bodies. There are likely to be hard-rock deposits and/or natural brines associated with geothermal formations which will be more attractive sources of lithium in the Kingdom of Saudi Arabia for the foreseeable future.

Keywords: Seawater concentrate; Valorization; Lithium; Techno-economic analysis

* Corresponding author.