A review of environmental governance and its effects on concentrate discharge from desalination plants in the Kingdom of Saudi Arabia

Riaan van der Merwe*, Sabine Lattemann, Gary Amy

Water Desalination and Reuse Center, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia
Tel. +966 28084978; email: riaan.vandermerwe@kaust.edu.sa

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**ABSTRACT**

The most likely environmental impact of concentrate discharges (in most instances twice the concentration of the ambient environment) leaking from desalination plants on local marine ecosystems has been controversially discussed for many years. Increasing water demand and lack of renewable natural water resources in Saudi Arabia also result in greater dependence on desalination and consequently amplify the impact on marine environment and multifactorial ecosystems in near-field areas of desalination discharges. Accurate scientific baseline data should furnish information on various factors such as intake- and outfall locality, brine (concentrate) discharge and chemical characteristics (i.e. effluent concentration, mass flow rates (flux)), local effects, and even cumulative effects of desalination activities, at least on a regional and even on a national scale. Even if such data were available, in many cases they are non-transparent and are not even accessible, or tend to be overlooked as a result of ambiguous desalination-related policies. This paper focuses on national environmental regulations in the Kingdom of Saudi Arabia (KSA) and how such regulations help control the flow of concentrate discharge into the receiving waters.

**Keywords:** Environmental impact assessment; Seawater desalination; Environmental regulations; Concentrate discharge; Marine ecosystems

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*Corresponding author.

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