



## Cost analysis of large scale membrane treatment systems for potable water treatment

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### ABSTRACT

Along with the increasing world population, the water sources are faced with considerably serious problems in terms of quantity, quality and all other sector-specific usages. Today, brackish water, surface water, seawater and even wastewater can be treated to supply drinking water. Reverse osmosis, nanofiltration, ultrafiltration and microfiltration are the most widely used membrane processes for the treatment of these water sources. It is necessary to calculate the total cost, including both capital expenses and operation and maintenance expenses such as energy labor, membrane replacement, chemicals and concentrate disposal to determine the most economical design. In this study, the costs of large scale membrane systems for the treatment of brackish, surface and seawater to obtain drinking water were investigated for Turkey. The effects of the Total Dissolved Solids (TDS) concentration, turbidity and salinity values on the treatment costs of brackish water, surface water and seawater were investigated, respectively taking into consideration also the variations in capacity and flux values.

*Keywords:* Cost analysis; Desalination; Membrane systems; Surface water; Brackish water; Seawater

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