

## Water-Energy Nexus in Saudi Arabia

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**Abstract :** Saudi Arabia is an arid country characterized by a scarcity of freshwater resources, with water demand escalating due to population growth, urbanization, and rapid economic development. To meet its water needs, the Kingdom relies heavily on desalination, which has been facilitated by the unique combination of water scarcity and abundant energy resources. This dynamic has driven the adoption of modern desalination technologies. However, the reliance on desalination to meet growing water demand requires significant energy, not only for the desalination process itself but also for transporting water across the supply chain from sources to end users. These two critical resources—water and energy—are closely interlinked and essential for the country's sustainable development. As such, the water-energy nexus is a vital issue that warrants special attention in Saudi Arabia. This relationship is expected to become even more prominent in the coming years due to initiatives such as the Saudi Green Initiative—which includes plans to plant 10 billion trees by 2030—and efforts to position the Kingdom as a major global tourist destination.

**Keywords :** water, energy, desalination, Saudi Arabia

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