

# Possible Deep Geological Radioactive Waste Site in The Kingdom of Saudi Arabia Using Geographical Information System

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The accelerating growth of the population and the constant development of technology created a high energy demand. However, these involved factors increased energy consumption, therefore increasing the greenhouse effect and triggering the atmospheric pollutants. Thus creating demand for a more sustainable and cleaner source of energy, which emerged the role of nuclear energy. The nuclear industry itself faced challenges revolving waste management where it needed advanced technology, and detailed plans to safely dispose of the radioactive waste. This paper investigates the geology of the Kingdom of Saudi Arabia to site the first Deep Geological Repository (DGR) using the Geographical Information System (GIS). The geology of the kingdom looks promising for such big-scale projects, The geology of the southern side of the kingdom looks promising for such big-scale project which centers within the empty quarter and the northern side in An Nafud desert which meets the requirements of DGR such as depth ranging up 1000m, rare possibilities of earthquakes, and geological formations. This paper contributes to the Saudi nuclear program for the waste management plans, generated from the commercial and research reactors following the 2030 vision to use nuclear and renewable energy resources.

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