

Safety, Security and Safeguard Consideration of Nuclear Power Plants in the Kingdom of Saudi Arabia

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Nuclear power became one of the major contributors to the worldwide energy mix, with a total share of 10% from thirty-three countries operating nuclear power reactors. Owing to the development of safe and advanced nuclear technologies, many countries are planning to embark on nuclear power. Moreover, it provides reliable and low-carbon power, which is well suited to address certain environmental challenges, such as those stated by the International Treaty on Climate Change signed in Paris in 2015. The agreement resembles international cooperation toward carbon neutrality. The Kingdom of Saudi Arabia (KSA) is one of the signatories of the Paris Treaty and is committed to reaching carbon neutrality by 2060. Furthermore, the kingdom has launched its peaceful nuclear power program to diversify the country's energy mix, reduce greenhouse gas emissions, and meet the increasing demand for electricity. However, considering the region's environmental conditions and other security concerns, several challenges are imposed on the kingdom's first-ever Nuclear Power Plant (NPP). Therefore, this article attempts to address potential challenges that might face NPPs in the kingdom and provide lessons learned from past experience in NPP operation.

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