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Small Modular Reactors - A Regulatory Perspective in Pakistan

In recent years, small modular reactors (SMRs) based novel technologies had emerged and become a center of attention in terms of a cost effective and flexible energy solution, owing to their enhanced passive safety features, modularity in design, factory fabrication and modern reactor concepts etc.

Currently, traditional PWR based nuclear power plants (NPPs) are being operated and regulated in Pakistan through a robust nuclear regulatory framework that covers all stages throughout a life cycle of NPP (i.e. siting, design evaluation, construction commissioning, operation and decommissioning). With the advent of Small Modular Reactors (SMRs) technologies in recent years, it is realized that there is a need to verify the appropriateness of existing framework for licensing of these technologies capable to supply power to smaller electrical grids or to remote, off-grid areas. These SMRs are typically smaller than traditional nuclear power plants and can also be located on sites that differ from those of traditional nuclear power plants and have ability to generate flexible power as per electricity demand and may be deployed on small grids or at off-grid locations.

Deployment of SMR can also be a future option considering energy mix of Pakistan. The novel approaches in the design and deployment of SMRs can pose challenges to the existing regulatory framework. Considering these novel design features with respect to conventional NPPs, there is need to identify gaps in current regulatory framework / licensing approaches. This paper will identify and discuss the areas that need to be considered for making necessary changes in current regulatory framework of Pakistan.

Country OR International Organization

Pakistan

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