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Assessing Viability of Small Modular Reactors in Pakistan's Energy Landscape: Navigating Technological Diversity and Challenges in Possible Integration with Renewables

This paper explores the strategic future design, development, and deployment of Small Modular Reactors (SMRs) in Pakistan, considering the unique challenges and opportunities presented by the country's energy landscape. Using the rigorous International Atomic Energy Agency's (IAEA) Reactor Technology Assessment (RTA) methodology, a comprehensive analysis is conducted to propose a specific SMR design technology line (i.e., water-cooled reactors, gas-cooled reactors, molten salt reactors, and liquid metal-cooled reactors). The analysis is rooted on expert considerations of 10 key elements and corresponding key topics as a sub-category of each key element of RTA methodology. Furthermore, the assessment also includes an explicit investigation of the potential applications of SMRs in both electricity generation and diverse non-electric contexts within a nuclear-renewable hybrid energy system. The study is aimed to provide a preliminary sketch to the policy makers in pursuing a specific SMR design for the future deployment.

Country OR International Organization

Pakistan

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Confirm that the work is original and has not been published anywhere else

YES

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