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Integration of Small Modular Reactors (SMRs) in Ghana's Energy Mix: A Pathway to Sustainable Development

ABSTRACT:

The integration of Small Modular Reactors (SMRs) into Ghana's energy mix presents a promising pathway towards achieving sustainable development goals through the reduction of greenhouse gas emissions while addressing the challenges of meeting energy demand. This paper explores the key considerations and strategies for establishing an enabling environment to facilitate the successful deployment of SMRs in Ghana.

Energy planning plays a pivotal role in aligning SMR deployment with national energy demand and climate goals. Through comprehensive energy planning, Ghana can optimize the integration of SMRs alongside renewables, ensuring a balanced and resilient energy system. Furthermore, the development of robust nuclear infrastructure, including capacity building and stakeholder engagement, is essential to build public trust and support for SMR projects.

Again, financing and economic appraisals are critical aspects of SMR deployment, requiring innovative approaches to address investment challenges and to demonstrate the business case for viable deployment. The paper will explore various cost considerations, financing structures, and conditions that will support SMR projects in Ghana.

Additionally, Reactor Technology Assessment (RTA) will be highlighted as a crucial component of SMR deployment, encompassing safety, reliability, and efficiency evaluations. This assessment will inform decision-making processes and ensure the selection of suitable SMR technologies for Ghana's specific energy needs and infrastructure.

In conclusion, the paper advocates for a holistic approach to integrate SMRs into Ghana's energy mix, encompassing energy planning, nuclear infrastructure development, technology assessment, financing strategies, stakeholder engagement, and international cooperation. By addressing these critical issues, an enabling environment will be created for future deployment of SMRs in Ghana. Ghana can realize the full potential of nuclear energy to meet future energy needs and support sustainable development objectives.

KEYWORDS:

Small Modular Reactors (SMRs), Reactor Technology Assessment, Nuclear Infrastructure, Stakeholder Engagement, Financing structures.

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