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Evaluating Small Modular Reactors for Mitigating Climate Change

Content

Climate change is one of the biggest threats humankind has to urgently deal with in this century. The risks associated with climate change are a reality for millions in the Global South which need to be addressed urgently. Each year, all over the world, nuclear power helps prevent the emission of 2 billion tonnes of CO2. Globally, there is a need to use nuclear power as a significant part in the energy mix to combat the effects of climate change and global warming. It would be impossible to accomplish the goals of the Paris Agreement to reduce greenhouse gas emissions without relying on innovations in nuclear energy as primary source.

To energy deficient and economically strained countries like Pakistan, nuclear power is sustainable, clean, and green source of energy in overall energy mix. Regarding the role of evolutionary, innovative and cost-effective nuclear power systems, the Small Modular Reactors (SMRs) are a case in point. On 17 February 2023, during a seminar at the Center for International Strategic Studies (CISS), DG IAEA Rafael Grossi stated that the country [Pakistan] has technical and engineering capacity for new nuclear power plants including SMRs." The SMRs are sustainable and cost-effective nuclear energy systems of futuristic technology for a comprehensive nuclear environment and nuclear industry. The developed states need to assist the Global South for climate change mitigation and adaptation. In this context, it is the global interest to ensure that after cost and benefit analysis, the innovative nuclear power systems are financed, developed, resourced and supplied so that the climate change does not undermine weaker countries' growth and sustainability.

In this study, apart from technical and economic advantages, the author will analyze the potential of fast development of SMRS and their impact on climate change, especially for developing countries. The study will also focus on perception-building regarding mainstreaming and acceptance of SMRs into the energy mix for general publics.

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