

Chief Editor's Message**Importance of Nuclear Energy to Accomplish Net Zero Carbon****Prof R K Kotnala**

FNASC, FIGU, FMSI

Chief Editor, Current Natural Sciences & Engineering, Journal (CNS&E) **Prof R K Kotnala**DOI: <https://doi.org/10.63015/7nkotnala.2024.1.5>*\* Corresponding author email: rkkotnala@gmail.com*

The world is entangled with the urgent need for existing energy modes transition to clean energy for mitigating global warming and climate change. It ultimately demands to set stringent goals for achieving net zero carbon for each country. In this direction different approaches are being stipulated and one of the important options emerges as nuclear power, a compelling option for sustainable development. Unlike renewable energy sources such as solar, wind and nuclear energy which provides a continuous and reliable supply of electricity with minimal greenhouse gas emissions. On the other hand nuclear power plants operate with high capacity factor compared to variable renewable sources that depend on weather conditions and its reliability makes nuclear energy a strong candidate for baseload power. Moreover, nuclear energy's low carbon footprint and high energy density output makes it an attractive alternative to fossil fuels. Although, it is crucial to acknowledge the challenges associated with nuclear energy, including the safe management of nuclear waste, the risk of nuclear accidents, and the high upfront costs of building nuclear power plants. Hence, a balanced perspective on the future of nuclear energy and its potential to contribute to a sustainable future is to be adopted carefully. However, a periodic advancements in technology and stringent safety measures, modern Nuclear reactors are designed to minimize environmental impact and enhance safety.

However, nuclear radiations are being used carefully and responsibly as powerful tools in healthcare medical imaging (PET Scan), radiotherapy in cancer treatment, therapeutic usages and different industries as tracers. The other critical aspects of applications are in manufacturing, agriculture and in environmental monitoring which consists of radioactive tracers injected into water sources to track the movement of water underground or in rivers and tracers are used to study soil erosion rates and identify areas prone to erosion etc. In the interest of Researchers, Engineers and scientific community CNS&E Journal took an initiative to publish fifth issue with a special theme to address "Nuclear Energy for Sustainable Development and Environmental Management."

For this issue Dr D K Aswal, Director HSEG Bhabha Atomic Research Centre (BARC), Trombay has been invited to write a Guest Editorial on Nuclear Energy's Role in Sustainability and Environmental Protection in India and Dr S K Jha, Outstanding Scientist, BARC has been entrusted with Thematic Editorship.

Further, CNS&E journal is highly thankful to Dr D K Aswal, Dr S K Jha and the editors team of the journal for bringing out this issue. Nevertheless, Prof Nand Lal Singh NSUT, Delhi, Dr Amit Partap Singh, Indore and Dr Anurag Gaur, NSUT deserve a special thanks for their special efforts for the Journal.