

**Azadi ka Amrit Mahotsav (AKAM) Seminar Series
January 24, 2023 at NB-A, Auditorium**

“Way forward” by Chairperson, AERB

Chairperson, AERB delivered a lecture on “Way Forward” during the seminar series held on January 24, 2023, on the occasion of *Azadi ka Amrit Mahotsav*. The talk was delivered to in the context of discussions on topics “Nuclear Energy in the decarbonizing world: Emerging technologies and Challenges ahead” and “Importance of Nuclear Energy is Energy Mix”.

Way forward

- Of all low carbon energy sources, nuclear power is one of the few that can generate electricity, heat and hydrogen.
- Many innovative nuclear technologies are providing plenty of options, rather lucrative options – great affordability and flexibility: factory made for quick deployment (e.g. SMRs).
- For new innovative technologies to be internationally viable, greater international collaboration is needed to
 - a. (i) Standardize
 - (ii) Demonstrate effectiveness of safety features and elimination of severe accidents in transparent manner.
 - (iii) Assure sustainability: With respect to fuel and waste management and technical support.
- b. And the most important part: public acceptance.

India must participate in all available international forums for this.

- Coming to Indian scenario – the development and deployment strategy for new technologies must be worked out comprehensively keeping in mind our three stage programme which emphasises self-reliance and closed fuel cycle. We must expedite our 700 MWe reactors – Standardize & modularize to reduce construction time. With respect to SMRs, the deployment of single module unit may be relatively easier, therefore these should be preferred initially: as captive power plants for various industries. Electricity generation for remote areas could be next. We can look for multi-module system for connecting to grid at later stage, when experience would be available from already installed units.
- Regulation: AERB had made a Working Group in 2016-17 to track development in SMRs. With the recent developments internationally; more focussed attention is being put in studies of evolving SMR designs. For domestic design and deployment of new technologies, we don't see much challenges as we have great experience of concurrent development of technology and regulation.

- While for importing innovative reactors such as SMRs, there are a few challenges. The over-arching requirements are: there should be a reference plant and the design is licensable in the country of origin. The issues come during the detailed safety review invariably due to lack of information. These should be taken care by the appropriate technical assignment while importing the unit.
- One of the major regulatory requirement change would be with respect to requirement of fixed Exclusion Zone of 1km and associated public concerns. Other areas of major regulatory challenges could be found out by mapping the existing requirements.
 - Identifying technology neutral requirements and earmarking those which require contextual interpretations.
 - Requirements which are not applicable. Ex: Access to containment.
 - Additional requirements which originate because of multi-module concept concerning : Selection of Postulated Initiating Events, internal / external hazards (coupled facilities, potential for interaction between modules or the simultaneous impact on all modules), shared systems, defence in depth, human factor engineering, interconnection among modules control and protective systems, Emergency Preparedness and Response aspects.
- Major issues would be with respect to security aspects concerned with digital instrumentation and control systems and oversight of works at factory, where assembly is done. Once design details are available, these issues could be well addressed.

So, I don't see likelihood of any hindrance on the part of safety regulation.

This is what I had to share with you as a Way Forward.

Thank you!