

25th INPRO Dialogue Forum on Nuclear Energy Development in Embarking Countries

Breakout Session – Group 1

National and Regional Opportunities and Challenges on Nuclear Energy in Embarking Countries

Group Chair: Temitope Taiwo

17–21 November 2025, Nairobi, Kenya



Topic 1: What are the main national opportunities and challenges for newcomer countries in developing nuclear energy?

Opportunities

- Energy Security
- Clean Energy Source
- Economic Development
- Research and Development and Innovation
- Stable Energy Costs
- Nuclear power plants provide power to industry processes
- Energy Export Potential
- Synergy with renewables

Challenges

- High Capital Costs
- Safety Considerations
- Regulatory Framework
- Security Risks
- Water Resource Constraints
- Waste Management
- Public Acceptance
- Technology Transfer
- Small grid and aging grid
- Human resource constraints
- Political risks – internal and external
- Long-term nature of nuclear
- Low maturity of advanced reactor designs

Topic 2: How can regional cooperation support nuclear energy development, and what barriers exist to collaboration?

Advantages of regional collaboration

- **Regional Power Pool:** enables trade in surplus electricity
- **Harmonized nuclear regulation:** through regional bloc
- **Shared infrastructure & expertise:** training centres, waste management -- can minimize nuclear infrastructure in the regional blocs
- **Economic of Scale** – including financial, human capacity
- **Potential for regional reactor deployment:** flexible, modular design fits smaller grids
- **Shared experiences** – accomplishments and failure

Barriers to collaboration

- **Lack of harmonized nuclear legislation** across regional block -- differences in rules and law
- **Limited regional financing mechanisms** for large nuclear projects
- **Security and waste transport logistics** for landlocked states
- **Unequal technical capacity** between member states
- **Political inclinations and tensions**

Topic 3: What policy or institutional actions can help a newcomer country overcome challenges and make the most of its opportunities? *(e.g. governance, coordination, capacity building, public communication)*

- **Develop a national policy or amend existing one to include nuclear energy**
- **Develop human resources and a robust, competent and independent regulatory body**
- **Continuously develop regulatory frameworks to address issues of safety, security and safeguards in accordance with international best practices**
- **International collaborations -- partner with IAEA and experienced technology vendors; establish strategic bilateral partnerships with more advanced nuclear power countries and international Institutions**
- **Engage international peer reviews and advisory bodies**
- **Evaluate potential sites and financing models (e.g., public-private partnerships)**
- **Establishment of Nuclear Energy Training Centres and Nuclear Technology Centre; Atomic Energy Commission, Energy Commission**
- **Stakeholder engagements and effective communication**
- **Encourage Public-Private Partnership (PPP)**

Recommendations for the IAEA

- **Produce a comprehensive framework to guide members in regional blocs -- regulatory framework, infrastructure development, safety, security and safeguards, stakeholder engagement, financing models, etc.**
- **Review the milestone approach to be flexible and streamlined to enable efficient deployment and transition.**
- **Organize pertinent reactor vendor forum for member states for a balanced view of options**