22nd INPRO Dialogue Forum
Breakout Session – Group 4

Technical, economic, safety and waste management challenges of floating nuclear power plants based on SMR technology
What are the unique technical challenges associated with designing and operating floating nuclear power plants, and how do these differ from land-based installations?

• Shipyards for FNPP manufacturing and construction
  • Reduces construction costs; facilitates QA
  • Use re-use of existing shipyards
  • Build, test, and commission
    • Ship builders need special nuclear-related approvals and licenses
• Modularization of FNPP at shipyard is different from SMR modularization
• Technical safety measures, systems are specific for FNPP
• EPZ is mobile
• Refueling, maintenance and repair
• Site-finding, licensing, and off-shore infrastructure
• Isolated grid, remote locations (remote control/monitoring)
• Licensing of the system (Ship/barge + NP Unit)
• International maritime laws and regulations
• Operating staff training
How can the economic viability of floating nuclear power plants be assessed, considering factors such as construction costs, operation, and maintenance in remote or offshore locations?

- Economy of scale
- Opportunity for leasing/renting
- Selling energy products (electricity, heat, desalination, industry)
- Comparison of energy tariffs / LCOE for other energy sources in remote locations
- Identifying of unique (for FNPP) indicators for comparison:
  - Construction time is shorter
  - Land use is smaller
  - Refueling cycle is longer
  - Staffing
  - Maintenance rules should be reviewed
  - EPZ size
  - ...