Flexible and Sustainable Back End solutions

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Strategy and Considerations for the Back-end of the Fuel Cycle

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Back end strategy and considerations

The French case: promote circular economy towards the closure of the fuel cycle

A dynamic in 3 stages based on incremental development
- Industrial mastery of reprocessing and recycling technologies through Orano recycling platform:
  - a strategic asset with 40 years of experience, shared worldwide
  - the enabler to move to advanced fuel cycle
- Plutonium multi-recycling in LWR prepares the perspective of a potential industrial deployment of a fleet of Fast Reactors in the second half of the 21st century

Nuclear requires continuous innovations in fuel cycle and waste management services to maintain/enhance public support

Importance to continue R&D efforts:
- enhance safety, reduce environmental impacts
- minimise waste burden
- improving resource-use efficiency

Enhance international collaboration by facilitating shared infrastructure:
- Not only focusing on potential future disposal, benefiting from standardised waste forms, but also for reprocessing/recycling starting from existing assets
- R&D centres necessary to develop advanced nuclear technologies

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Nuclear Energy System Options
- Nuclear Energy Policy
- Installed and future NPP Fleet
- Advanced NPP development

Fuel Cycle Options
- SNF management scenarios analysis
- Reprocessing & recycling value
- Existing Infrastructures and knowledge management
- Front-end fuel cycle impact
- Value of advanced fuel cycle (developments)

Pre-disposal Management
- Waste classification and standardisation
- Waste treatment technology and conditioning options
- Cost/Risk reduction management optimising Geological Disposal Facility

Geological Disposal Facility: Design and Impact Analysis

Spent fuel management system, very long term (beyond 100 years), involve multiple decisions
Innovative assessment methodologies integrating Cost, Risks, Time and Options is key to develop optimal back-end management implementation program

- To match the uncertain socio-political-economic environment for different stakeholders
- To minimize deployment costs and risks through phased development, valuing flexibility to accommodate future development
- To value longer-term objectives in shorter-term decisions
- To consider sharing infrastructures that would especially benefit countries with smaller nuclear programs

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Asset/Liability Management
- NPP-Fleet Competitiveness
- Cost/Risk Optimised Fuel Cycle Management
- Waste Fund contribution
Giving nuclear energy its full value