

International Conference on Resilience of Nuclear Installations against External Events from a Safety Perspective – Focus on Climate Change



Monday 20 October 2025 - Friday 24 October 2025

IAEA Headquarters in Vienna

Scientific Programme

1. Identification and analysis of external hazards, consideration of uncertainties in hazard analyses, and events resulting from combined hazards

1.1 Site selection and site evaluation: risk-informed approaches, management of site investigations, and integration with non-safety criteria

1.2 Hazard analysis methods: scenario definition and time-dependent aspects

1.3 Climate change modelling: projection in time and identification of extreme and rare meteorological phenomena

1.4 Treatment of hazard combinations in safety assessments

1.5 Decision making with high uncertainties.

2. Impact of external hazards on nuclear installations and radioactive waste disposal facilities

2.1 Lessons learned from recent events: climate-related, seismic, and human induced, including data analysis and processing tools

2.2 Simulations of climate-related natural hazards (e.g., floods, hurricanes) and their impact on nuclear installations

2.3 Impacts on installation safety and operations from rising sea level, heat sink temperatures, water availability, abundance of biologic agents, extreme weather, etc

2.4 Lessons learned from considering climate change in the demonstration of safety of radioactive waste disposal facilities.

3.Safety features of innovative emergent reactor designs and their contribution to resilience

3.1 Adapting nuclear installations to changing environmental conditions

3.2 Safety assessment methods including risk indicators, robustness, resilience, safety targets, and defence-in-depth considerations

3.3 Resilience of the energy infrastructure, component and structure fragilities, human factors, deterministic and probabilistic approaches (including vital area identification methods)

3.4 Monitoring systems and techniques, including warning systems based on real-time data collection and short-term forecasts to aid operator actions

3.5 Use of artificial intelligence to assist operator decision making and contingency plans

3.6 Evaluation of safety of deeply embedded advanced reactors and associated construction and cost issues.

4. Post-event response

4.1 Potential modifications to emergency planning zones, facility and operator response, equipment additions to enhance resilience

4.2 Post-event recovery plans and public communication strategies

4.3 International collaboration in emergency preparedness and disaster response

4.4 Post-event recovery actions: walkdowns and informed-operation restart.

5. Risk-informed, performance-based approaches for safety assessments of nuclear installations against external events

5.1 Evaluation of resilience strategies: applying risk management tools to enhance nuclear safety

5.2 Evaluation of seismic base isolators from a safety perspective

5.3 Evaluation of new technologies, such as steel concrete plate construction, and their impact on nuclear installation safety assessments.

6. Regulatory matters related to enhancing nuclear installation resilience

6.1 Regulatory practices regarding external hazards affected by climate change

6.2 International obligations under the Convention on Nuclear Safety and resilience under the Vienna Declaration on Nuclear Safety to address topics related to climate change.