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Facing a challenging path toward a holistic framework for EPR&R.

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The Fukushima accident in 2011, together with complex natural or manmade hazardous activities which emerged, has in recent years activated a new priority attention towards nuclear safety, security and emergency response.

The great challenge is to start implementing, in the medium term and with new technological means, a real common approach to strengthening preparedness by implementing risk analysis, risk reduction, and early warning methods.

A first step in taking this challenge could be to also look at risk situations which have occurred in areas unrelated to nuclear or radiological emergencies¹, and understand which elements worked better in risk reduction, what factors allowed this effect, and what shortcomings became evident. Considering the cross-sectional aspects in the nature of an accidental event, a wide-open dialogue should be part of the preparation, paying attention to a wide range of deriving vulnerabilities, not only structural, physical or environmental, but also social, economic and political, and a combination of these factors. Cross-national border concerns also need to be considered, since they have shared issues in nuclear emergencies.

A challenge that promises more and more attention is the synergy between Safety, Security and Safeguards, with respect to industrial installations. This perspective, also referred² to as '3S', leads to the consideration of better communication among parties, with an exchange of experience and expertise when considering future installations, in order to: provide complete and solid answers to various types of related challenges; reduce duplication; reduce potential conflicts. The synergies are not improved through ex-post integration: an effective and efficient system needs to be constructed to manage them, which should be implemented at the very beginning of a work program, for example a nuclear installation program. In addition, in the presence of several legal frameworks, players and responsibilities involved, an increase in this type of synergy is seen as key to improving sustainability also in emergency preparedness. Involving political, scientific, technical and operational players in planning for implementation at a national level, would ensure a better understanding of the related needs and potential challenges; this cohesive mode would also ensure a more effective and certainly more efficient implementation of the '3S' approach.

Key factors in promoting a holistic approach include the cultural aspects present in education, research, development, and policy making, allowing appropriate communication, cooperation and coordination in the conceptual, design and implementation phases, at regulatory, procedural and technical levels.

Another significant challenge towards a holistic framework for preparedness is precisely to 'be prepared for emergency', making those who are responsible and involved in the decision making phases, as well as the operators, aware of the fact that the characteristics of emergencies will also be significantly different from the ones seen and studied in previous emergencies.

¹ Disaster Preparedness for Effective Response. Guidance and Indicator Package for Implementing Priority Five of the Hyogo Framework. United Nations UN/ISDR and UN/OCHA, Geneva, 2008.

² EU efforts to strengthen nuclear security. Joint Staff Working Document (SWD (2016) 98 final).