

Opening Remarks

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Challenges and Enhancements to the Safety Culture of the Regulatory Body
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It's now been more than four years since the tragic events of March 2011. Nevertheless, the chain of events that culminated in the nuclear accidents at the Fukushima Daiichi plant still overshadows any gathering of nuclear safety experts. Virtually every day since the 3/11, we here today and our colleagues around the world have worked hard to absorb the lessons of the accident and modify our plants, procedures, and safety oversight to do all that we can to prevent another such accident from ever occurring again. Countless thousands of hours of hard work, innumerable public debates and discussions, and many billions have been spent toward this end.

Despite these efforts, the accident prompted a small number of countries to announce plans to reduce or eliminate their use of nuclear power. While this has clearly impacted the outlook for the use of nuclear in some countries, much of the world has taken the opposite path. Within NEA member countries, the United Kingdom, Finland, Russia, Turkey, and the United States have all authorized new nuclear power plant construction projects and outside the NEA membership, ambitious programs in China and India continue to advance. In all, more than 60 reactors are now under construction worldwide. Moreover, the list of "newcomer" countries continues to expand. There are today a greater number of actual and planned nuclear power projects than at any time in world history. Thus, despite the experience of Fukushima, the world is set to become more reliant on nuclear power, with a far wider range of countries deciding to use nuclear to meet their future energy requirements.

At the same time, the sources of nuclear technology have also expanded dramatically. Suppliers from Korea, China, and Russia now compete globally with the companies that supplied most of the reactors in operation today. A range of untraditional companies are developing and promoting new nuclear energy technologies including small modular reactors, fast reactors, and molten salt reactors. And in parallel to all this, the energy markets are shifting rapidly – just as the world prepares to meet in Paris later this year to confront climate change. As a result of all these developments, the global nuclear energy framework has changed dramatically and this will have significant implications for policies related to trade, economic development, environment, nonproliferation, and especially nuclear safety.

We cannot ignore this challenge; we must examine our current approaches and assure that they fit the world of 2015 and beyond. We must assure that we understand how to promote high levels of nuclear safety in a nuclear technology world of growing complexity and diversity.

For our part, we at the NEA have worked closely with our members to foster cooperation and joint work to assure that the lessons of Fukushima have been fully absorbed. Our work together has helped regulators develop and implement new safety requirements, review the conceptual basis for many regulatory approaches, and to consider approaches to addressing extreme, beyond design-basis events.

As many of you are likely aware, the NEA was founded more than a half century ago and is today the principle forum for civilian nuclear energy cooperation among the world's most advanced countries. Our 31 member countries accounting for approximately 85% of the world's installed nuclear capacity and we have growing relationships with vital strategic partners such as China and India. The NEA's task is to bring together the finest expertise from these countries to solve problems, chart new courses for the future and investigate challenging technical questions through nearly 80 working groups and more than 20 international joint projects. Many of you

here today have invested considerable time in these activities. For that I thank you.

Because you have been involved in these discussions, you know what many appear to have missed. You know that the many hardware changes made over the last few years in response to Fukushima do not respond fully to the lessons of 3/11.

Whatever else is said about the Fukushima disaster, it is clear that it was not a failure of technology. In fact, all evidence thus far demonstrates that the reactors responded as they were designed and performed well in delaying the release of large amounts of radiation such that the public was largely protected from significant exposures. The failures were failures of human decision-making, training, and safety culture. Most prominently, they included failures in the effectiveness of a regulator that allowed the plant to operate without modification despite evidence and concern expressed by several experts that the site might be exposed to extreme tsunami events.

“Soft issues”: organizational decision-making; safety culture of the plant staff and the regulator; training to assure that operators are prepared for a wide range of possible challenges—these are all key factors that led to or contributed to the accident, and these factors exist around the world. If we are to truly learn the lessons of Fukushima, we must turn our eyes toward the human aspects of safety—aspects can be both difficult to discuss and to solve. Aspects which often involve sociological and psychological sciences more than nuclear science and engineering. Aspects which require countries to recognize that there may not be a universal safety culture, but that safety cultures must exist within a broader cultural framework.

In comparison to these issues, pouring concrete and installing emergency pumps and power systems is a simple matter. But learning only half of the lessons of Fukushima is to have learned nothing at all.

We have taken initial steps to address these issues. Through the work of the CNRA, an NEA Green Book—“The Characteristics of an Effective Nuclear Regulator”—was an early effort to address the issues we face in dealing with the human aspects of safety, recognizing that the first and most fundamental component of assuring nuclear safety is the presence of a safety regulatory that is strong, capable, and independent. The CSNI Working Group on Human and Organizational Factors is very actively engaged with safety culture-related issues and the CRPPH has been a pioneer in studying stakeholder involvement in radiological protection decision making in regulation and operation, bringing this important topic to the front lines of evolving the radiological protection system. Today’s workshop will advance the global discussion about regulatory effectiveness and should lead to the production of a new Green Book on safety culture of the regulatory body. I very much look forward to seeing the results.

But even after today’s workshop, there is still much to be done in this area. The NEA recognizes that these less technical areas require greater focus and often the engagement of expertise unlike that typically applied to nuclear power plant operations. It is for this reason that the NEA has changed its structure for the first time in many years, adding a new division that will focus exclusively on the Human Aspects of Nuclear Safety. This new division will support the work of all NEA committees and work closely with them in the same manner NEA has always supported the work of member countries—fostering discussion, collaboration, and joint activities among the world’s most experienced nuclear regulators.

I welcome you again and I hope that today you learn from each other, you discuss the challenges to safety and safety culture openly and critically, and that you are better positioned at the end of today to continue enhancing the effectiveness and efficiency of the regulatory authority.