

초청강연 | (Invited Lecture I)

| 일시 2023.5.18(Thu) 16:30 | 장소 한라홀(Halla Hall, 3F)



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NEA Director-General
since 2014.

Previously served as
Commissioner to the
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Director of the
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Nuclear Energy : the Future is Now

Overview

Increased use of nuclear energy being explored by many countries around the world as they address both their commitments to reduce carbon emissions and their essential need to assure energy security for their economic and societal well-being. Analysis by the Nuclear Energy Agency (NEA) has highlighted that tripling global nuclear energy capacity provides a practical path toward enabling countries around the world to meet their Net Zero goals by 2050. Reaching 1160 gigawatts of global installed nuclear capacity by 2050 will require a combination of long-term operation, large-scale Generation III, small modular reactors (SMRs), and non-electric applications such as nuclear-produced heat and hydrogen. A new wave of nuclear technology innovation is needed to help provide clean energy baseload power and decarbonize hard-to-abate industrial sectors. The NEA is working with its member country governments and the private sector to help lower barriers to first-in-kind technology deployment as the center of gravity for innovative nuclear technologies shifts towards the private sector. For nuclear energy, the future is now.

Innovation: A Wave of New Nuclear Technologies

Innovation in the nuclear industry has lagged well behind the experience of other technologies and sectors for decades. A time traveler from the early 1990s would find few differences in the maintenance and operations of nuclear power plants (NPP) today even as the internet of things (IOT) and digitization continue to revolutionize the global economy. This is about to change.

Twenty years of international pre-normative research and development (R&D) cooperation, by conducting intensive academic activities across the industry, academia, and various research organizations and international fora such as the Generation IV International Forum (GIF) is nearing commercial deployment. Beyond on-grid baseload power to replace coal fired generation, market demand for zero-emission SMRs and Generation IV reactors in hard to abate sectors continues to grow: off-grid heat and power to replace diesel generators in remote regions for mining operations; high temperature heat to replace fossil fuel cogeneration in heavy industries; marine propulsion to replace heavy-fuel oil for merchant shipping.

Commitment of the NEA

NEA continues to assist its member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally sound and economical use of nuclear energy for peaceful purposes. Director-General Magwood will conclude his presentation with a survey of NEA efforts to address four key challenges considering the overall fuel cycle in the development of new nuclear technologies on a long-term perspective: (1) Industrial challenges; (2) Regulatory challenges; (3) Policy, societal, environmental and market challenges; and (4) Infrastructure challenges. This includes work on everything from assessments of new supply chain needs and promoting an inclusive new generation of the nuclear workforce to encouraging adequate regulation that accounts for a safe use of innovative reactor designs, advanced materials and new accident tolerant fuels.