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**This past 2018, the organization reached its 60th anniversary.**

**What are the main achievements of the organization in these 60 years of history?**

**What are the most important projects at the moment?**

Over the last 60 Years, the NEA has proven to be a highly successful mechanism for co-operation and co-ordination among the world's most advanced nuclear energy countries. The work of the NEA has fostered

improvements in nuclear safety, radiological protection, science, and technology. The NEA provides the framework for multinational research projects investigating important issues related to nuclear safety; is the home of the NEA Data Bank, which supports scientific researchers, industry, and regulators around the world; provides the framework for the Paris Convention on Nuclear Third Party Liability; serves as the technical secretariat for the Generation IV International Forum;

Mr. William D. Magwood is the Director-General of the Nuclear Energy Agency (NEA) of the Organisation for Economic Co-operation and Development (OECD) since 1 September 2014. He has extensive experience in both the regulatory and developmental aspects of nuclear energy, including at the international level. From 2010 to 2014, he served as one of the five Commissioners appointed by the US President and confirmed by the US Senate to the US Nuclear Regulatory Commission (NRC). While a commissioner, he advocated the importance of nuclear regulatory independence and the necessity of maintaining strong, credible and technically sound nuclear regulation in the United States and all countries that use nuclear power.

Prior to his appointment at the NRC, from 2005 to 2010 he provided independent strategic and policy advice to US and international clients on energy, environmental and technology policy issues. During this time, he also sat on various advisory groups and provided technical and policy advice to members of the US Congress on nuclear research, education and climate change policy.

From 1998 to 2005, Mr. Magwood was Director of Nuclear Energy at the US Department of Energy (DOE). During his tenure, he launched several important initiatives including the US Nuclear Power 2010 programme and the Generation IV International Forum (GIF). He was also actively involved in the work of the NEA, serving as a Steering Committee bureau member from 1999 to 2003, and as Chair in 2004 and early 2005.

Prior to his experience at the DOE, Mr. Magwood managed electric utility research and nuclear policy programmes at the Edison Electric Institute in Washington, DC, and was earlier a scientist at Westinghouse Electric Corporation in Pittsburgh, Pennsylvania.

Mr. Magwood, a US national, holds Bachelor's degrees in Physics and English from Carnegie Mellon University and a Master of Fine Arts from the University of Pittsburgh.



Mr. Magwood in September 2018 in Ávila (Spain) within the SNE Annual Meeting.

and many other initiatives. An example of NEA's past essential contributions includes the Halden Reactor Project, which has served as the global cornerstone for ensuring the safety of nuclear fuels and advanced materials used in commercial nuclear power plants since the 1950s.

With the closure of the Halden reactor last year, the NEA will support global fuels and materials experiments through its new effort, known as the NEA Framework for In-pile Fuel and Material Irradiation Experiments (FIDES). This new framework will be a vital mechanism to support the development of new fuels and materials around the world. The NEA is also launching the Global Council of Universities for Nuclear Technology, Policy and Education, to promote international co-operation in the area of nuclear science and technology education. The NEA has supported the Nuclear Innovation 2050 initiative as well, which aims to foster the use of new, disruptive technologies such as artificial intelligence in the nuclear sector.

These are only a few examples of the work underway at the NEA today.

**NEA's membership consists of 33 countries in Europe, the Americas and the Asia-Pacific region, near 82% of the world's installed nuclear power. How are the organization's initiatives coordinated, taking into account the differences between the different regions integrated into the NEA?**

As an organisation whose activities are based on science and technolo-

The International Mentoring Workshop series aimed at encouraging young girls to pursue their aspirations as future scientists and engineers.

gy, the NEA's members benefit from cooperation despite the many differences in policies and approaches around the world. Science does not change when borders are crossed.

However, the NEA's work programme does reflect that countries in different regions may have common interests that arise from proximity, historical ties and engagements, as well as cultural and economic similarities. The NEA framework allows countries within (and outside) its membership to work together on areas of common interest. In addition, the NEA recognises the unique issues of each of its member countries and can provide support to address them. A prime example is the Country-Specific Safety Culture Forum process, which helps nuclear regulators and operators identify and address national and regional cultural characteristics that can influence nuclear safety culture.

**NEA has a special interest in incorporating women into scientific and**

**technologic field. Mentoring workshops, held in Japan in 2018, have continued in Spain in September 2018 (Ávila) and September 2019 (Vigo), within the Spanish Nuclear Society Annual Meeting. In addition, last June was held in Madrid the 27th WiN Global Conference, with more than 250 participants from 60 countries all over the world. Ms Yeonhee-Hah presented the "NEA Approach: Improving Gender Balance in Nuclear Energy".**

**What other initiatives does NEA promote in order to increase the interest of women for STEM areas?**

This is an area of increasing interest to many of our member countries. The first step we have taken to address the issue of the significant gender imbalance most

countries experience in their nuclear sectors was the International Mentoring Workshop series aimed at encouraging young girls to pursue their aspirations as future scientists and engineers. We have been very pleased with the impact these activities have had thus far and hope to see more countries use this service. We also performed an adaptation of these workshops in Russia, which was aimed at women who are university students and young professionals, and designed to encourage them to stay in the field and pursue leadership roles.

Nevertheless, we recognise that these activities, however valuable they may be to the young women who participate in them, only scratch the surface. For that reason, the NEA is hosting a working meeting of its members next month to identify specific, impactful steps that countries can take individually and collectively (through the NEA) to make substantive progress to see more women working in the nuclear sector including at the leadership level.

**NEA has analysed the costs of decarbonisation, and system costs with high shares of nuclear and renewable. This study will be presented in the coming months in Spain. In advance of this presentation, we are interested to know your opinion on some aspects dealing with this report.**

**What measures should be taken to achieve a fully decarbonised energy system while maintaining security of supply?**

**What role should nuclear power play in this future scenario, jointly with renewables?**



Members of NEA.

**How does this energy transition influence markets and cost? What are the main conclusions of the study? What policy recommendations do these translate into?**

Many countries around the world are struggling with the challenge of turning away from fossil fuels and moving toward non-emitting sources of energy. These efforts have, on the whole, been unsuccessful. Despite the political commitments many governments have made to reduce carbon emissions, the facts are that global reliance on fossil fuel is the same as it was 20 years ago (about 68% of all electricity generation).

The strategy taken by many governments to reduce emissions have been based on targets for increased use of renewables rather than focussing on emissions. As a result, reliability is lower as some grid operators must intervene thousands of times a week to maintain supply; in some markets, the cost of electricity has grown substantially; and global emissions last year reached a new historic high, with carbon emission growing in both Europe and North America.

In its recent report, *The Costs of Decarbonisation: System Costs with High Shares of Nuclear and Renewables*, the NEA highlights that assessing the costs of different energy options and thus the true costs of developing a

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decarbonised energy system, must be evaluated at the level of electricity systems rather than simplistically comparing the costs of one source of supply to another. This analysis shows that the cost of a very high reliance of variable renewables can be twice of that of a system with a high reliance on non-emitting baseload supply.

Several overall conclusions should be taken from this analysis. First, we should invest in the development of all low-carbon technologies. To meet global energy and environmental requirements, all low-carbon technologies must be optimally applied with all costs accurately allocated. It is important to emphasise that the deployment of variable renewables will occur around the world and can provide significant benefits. However, the contribution of renewables in each

country will depend on the cost of available resources and the systems in which they operate.

Each country should perform a careful system-level analysis to understand its options. The NEA is working with its members to provide such analyses on a country-specific basis. The proportion of renewables and base-load supply (such as nuclear energy) should be determined on a market-by-market basis.

We also believe that the electricity markets in many countries must be modernised. Existing market structures make investment in any unsubsidised low-carbon technology impractical. Implementation of carbon pricing would be the most efficient approach for decarbonising electricity. Prices should also reflect the need to invest in the development of adequate and flexible transmission and distribution capabilities.

With all this said, we see a very substantial role for nuclear energy if it is cost-competitive. Suppliers must show the market that plants can be built to predictable costs and schedules. This is difficult in countries where nuclear plants have not been built consistently in many years. Because of this, interest in new nuclear technologies – particularly small modular reactors – is very high around the world. ■