

Remarks of William D. Magwood, IV
Director-General of the OECD Nuclear Energy Agency
At the 14th European Nuclear Energy Forum
30 April 2019

Good morning. Thank you, Gerassimos for your introduction and for your work in assembling this morning's panel.

Let me begin my remarks today by also thanking those who worked so hard to organise this year's Forum, particularly our hosts from the Czech Republic and Slovakia and the Secretariat of the ENEF. It is a great honor to join this panel with Prime Minister Babis and Prime Minister Pellegrini and to have the opportunity to thank them for demonstrating with their presences here this morning the importance they place on the issues addressed at this Forum.

I am equally pleased to share the panel with Minister of Energy Anton, whose leadership has been a tremendous asset to us since Romania joined the NEA two years ago.

Excellencies, ministers, ladies and gentlemen, next week, we will recognise the 74th anniversary of the conclusion of the Second World War in Europe. We will pay honor to those who gave their lives in the defense of their homelands, to those innocents who died and suffered, and to those precious few still with us today who fought and bled in what we all hope will be the last such war we shall ever see.

We should, at the same time, also recognise the reconstruction of Europe. We often note the cataclysms that lead to destruction, but we sometimes forget to remark about the truly hard work of building, creating, innovating, and seeing dreams made manifest. In the case of rebuilt Europe, we should take a moment next week to also thank those who rose cities from rubble, industries from dust, and lives from loss and uncertainty and created the great economic power that is today's Europe.

Aiding this work was the very reason the Nuclear Energy Agency was created. Our mission, when the NEA was established 61 years ago, was to support the efforts of European governments as they pursued not just reconstruction, but economic, industrial, and technological advancement—through the development and deployment of nuclear power.

Nuclear power is a European success story. Soon after the last shot was fired, many Europe countries established powerful hubs for nuclear education and research. Industry across the continent leapt briskly into the field, developing and manufacturing the systems that would power the future. Inexpensive, reliable, nonpolluting nuclear energy was a significant factor in the rise of Europe as an economic power in the post-war era.

Today, with 128 nuclear power reactors producing more than one-quarter of the electricity generated in European Union, Europe remains a key center of nuclear energy expertise, research, regulation, and industry. Moreover, nuclear energy remains a vital component to Europe's economic security.

With five reactors under construction in the EU with more planned, it is clear that nuclear energy will be part of the future as well. But how large a role nuclear will play in Europe's future is an open question. Equally uncertain is how large a role will Europe play in nuclear energy's future around the world.

Despite the existence of excellent institutions of learning with very good nuclear education programmes such as the Prague Technical University, which I had the pleasure to visit late last year, it is no secret that European students are finding fewer and fewer options to gain nuclear science and engineering expertise. While I have not investigated the numbers in detail, I suspect that there are single institutions in China, Russia, and the United States that educate more nuclear engineers than the entire EU.

As experts retire and few young people rise to replace them, Europe's expertise in a field that is growing in interest in many countries around the world is on a declining path.

We at the NEA are doing what we can to help. Our Nuclear Energy Skills and Technology framework, known as "NEST", is now moving forward with 10 countries and an initial four projects and we hope to see it expand rapidly. This initiative will enable students around the world to work together to solve real-world challenges in areas such as decommissioning and small modular reactors.

But even if European students were to have more opportunities to become nuclear experts, they would be confronted with the fact that many nuclear plants in Europe face premature closure—some because of decisions made by political leadership in various countries; others because of economic pressures created by market conditions that are in some cases unsustainable.

These closures come at a challenging time. In the face of global efforts to address climate change, Europe's emissions are rising. According to Eurostat, annual CO₂ emissions in the EU increased 1.8 percent in 2017 despite a 25 percent increase in wind power and 6 percent growth in solar.

We all recognise the important and growing role of variable renewable energy in the world's long-term energy mix, and expect that wind, solar, geothermal, and other technologies will be essential in the transformation of the electricity sector between now and 2050. But the results thus far highlight the need for strategies that more accurately reflect the costs and attributes of renewables.

A report released by the NEA in January in Budapest entitled "The Costs of Decarbonisation: System Costs with High Shares of Nuclear and Renewables" demonstrates the vital role that variable renewables can play in the future energy supply—but as part of a well-balanced portfolio. In the case of very high shares of variable renewables, our work shows that the cost of providing electricity skyrockets—easily double what it could be because of the variable and unpredictable nature of renewable supply.

The contribution of renewables in each country should reflect the realities of the electricity system in which they are to be deployed and the cost of the renewable resources available to that country. Each country should assess the full costs of all its potential sources of supply and develop the balance of renewable and baseload supplies that best fits its particular circumstances. The balance is likely to be different from country to country. The NEA will be happy to work with any nation interested in analysing these matters.

As it becomes clear that the amount of baseload supply needed in the future is not zero, each country will need to decide how it will meet its future electricity supply needs.

Our modern technological society is heavily reliant on access to cost-effective, reliable, and high-quality supplies of electricity. Maintaining this supply is elemental to the well-being of the citizens of OECD countries. Acquiring reliable supplies of electricity is a primary goal of many countries in the emerging economies of Asia, Africa, the Middle East and Latin America.

We cannot choose between these imperatives and the need to preserve our natural environment. We must have both.

Unfortunately, as our analyses highlight, today's electricity markets are not structured to enable the decisions needed to meet future goals for the environment and energy security. If we are to realise the energy transformation to which all here aspire, the markets must be reformed to reflect true costs and to incentivise the choices and investments needed for the future.

Even if these problems are addressed, it is not certain that nuclear energy will benefit. The nuclear industry in OECD countries has a damaged reputation as a reliable supplier of plant and equipment. Eye-watering cost overruns, schedules for completion missed by a decade, stratospheric cost estimates, and failed projects do not build confidence. Many countries that would like to build new nuclear plants struggle to find ways to deal with the high costs and uncertainties.

The success of suppliers from Russia, China, and Korea to build to cost and schedule demonstrates that the difficulties in OECD countries have less to do with the nature of nuclear projects and much more to do with the lack of proficient, experienced project leadership and healthy supply chains in countries that haven't hosted continuous nuclear build programs since the 1980s.

Some hope to leap-frog these difficulties by shifting to new technologies—Generation IV technologies and small modular reactors that can be largely built in factories. This is a bright hope, but it is a hope that remains to be proven. Industry and government must work together if we are to explore this path fully. If successful, the potential exists for the introduction of technologies that have economic, flexibility, and safety characteristics that could entirely change the global discussion about energy.

Still, not all countries will or should view nuclear as a major contributor to their energy futures. Each government should make the decisions that are best for its people. But for some, nuclear provides a key solution to the conundrum of how to achieve energy reliability and security while reducing harmful emissions.

Among the many nations with which we work, there is no higher concentration of countries in the world that are vested in the long-term future of nuclear energy than those to the east and south of Prague. This area of the EU includes countries with 19 operating commercial reactors with two more under construction. Six of these countries have active plans to start new nuclear projects in the very near future.

Because these countries have expressed concern over very similar issues—including how to finance new projects, how best to engage stakeholders, and how to build and maintain human capital—the NEA is working with countries in the region to consider how we might support them in working more closely together to address common areas of interest.

If such a cooperative activity proceeds, we hope to work closely with the European Commission and the ENEF Secretariat to leverage and reinforce their ongoing activities and to make the best use of the time and resources of the participants.

The future of energy in Europe and around the world is yet to be written. But whatever the very uncertain future holds for us all, I am certain that we can meet any challenge if we come together in common purpose. This Forum, ENEF, is a very good framework to help chart our path. The NEA looks forward to working with all you here today to follow in the steps of those who came before by building, creating, innovating, and seeing dreams made manifest.

Thank you.