Safe Energy Management for Sustainable Nuclear Energy

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1. Background

Climate change is one of the most important issues facing the world today.

Nuclear power can make an important contribution to reducing greenhouse gas emissions while delivering energy in the increasingly large quantities needed for global economic development. Nuclear power plants produce virtually no greenhouse gas emissions or air pollutants during their operation and only very low emissions over their full life cycle. The advantages of nuclear power in terms of climate change are an important reason why many countries intend to introduce nuclear power or to expand existing programmes in the coming decades.

As nuclear power supplies 11% of electricity generated in the world today without emitting greenhouse gases, it is reasonable for the global nuclear community to have a vision that nuclear energy will contribute in many parts of the world

1.2. Need for a nuclear energy policy and strategy

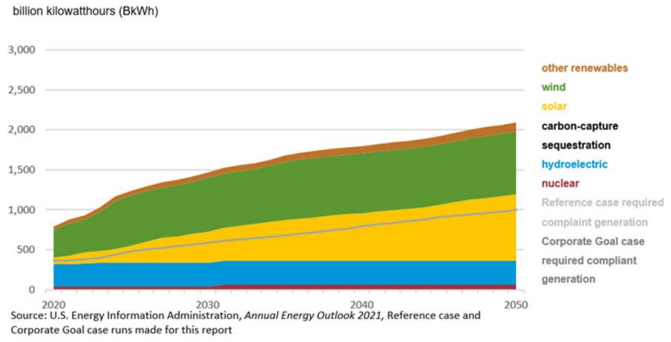
In the aftermath of the Fukushima Daiichi accident of March 2011, the NEA was at the forefront of international efforts to strengthen nuclear safety, regulation, research and radiological protection following the accident.

The potential for using nuclear power to address the challenges of energy demand, energy security and climate change issues is considerable. However, the degree to which nuclear will contribute to this solution remains unclear.

2. Discussion

2.1. What is the issue?

Global demand for energy is increasing rapidly. The United States Energy Information Administration (EIA) in its International Energy Outlook 2021 (IEO, 2021) projects that world energy consumption will grow nearly 50% by 2050.



Total qualifying carbon-free required for state renewable portfolio standards and projected total generation 2020-2050

Rising global energy demand and the need to drastically cut carbon dioxide (CO2) emissions require a transformation in the way we produce, deliver and consume energy. Mitigating greenhouse gas emissions through low-carbon electricity sources could be one answer to the issue.

Building and operating nuclear facilities, their decommissioning and nuclear research and development, all require a skilled and knowledgeable workforce. Regardless of each country's national policies and nuclear development status, the distinctive characteristics of nuclear energy give rise to special requirements for education and training.

2.2. Climate change- an accelerating global problem

The United Nations has identified climate change as "the defining issue of our time", with the central aim of the 2015 Paris Agreement is to keep the rise in global temperatures to well below 2 °C compared to pre-industrial levels, and with the aim to limit the rise to 1.5 °C. This is driven by the scientific consensus that limiting the rise to 1.5 °C would significantly reduce the risks posed by climate change.

2.3. Breaking through a better future for all

In 2015, the UN General Assembly adopted the 2030 Agenda for Sustainable Development, which include a dedicated and stand-alone goal on energy, SDG 7, calling to "ensure access to affordable, reliable, sustainable and modern energy for all". Energy lies at the heart of both the 2030 Agenda for Sustainable Development and the Paris Agreement on Climate Change.

Achieving SDG7 will open a new world of opportunities for millions of people through new economic opportunities and jobs, empowered women, children and youth, better education and health, more sustainable, equitable and inclusive communities, and greater protections from, and resilience to, climate change. The Global Roadmap for Accelerated SDG 7 Action Global Roadmap for Accelerated SDG 7 Action resulting from the High-level Dialogue on Energy 2021 provides a guide for collective action on energy across sectors.

Sustainable Development Goals-UN

7. Goal: Affordable and clean energy: The world continues to advance towards sustainable energy targets – but not fast enough. At the current pace, about 660 million people will still lack access to electricity and close to 2 billion people will still rely on polluting fuels and technologies for cooking by 2030.

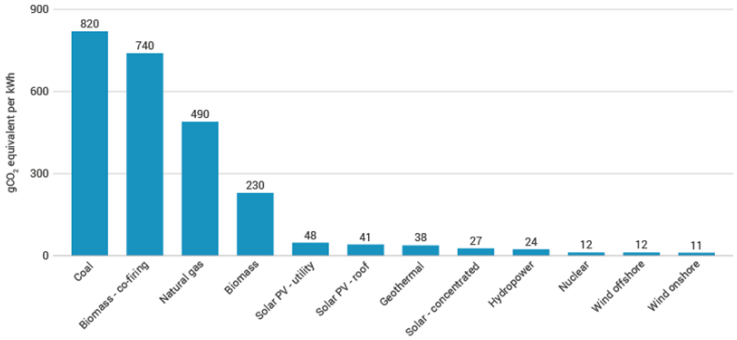
• Renewable sources power nearly 30 per cent of energy consumption in the electricity sector, but challenges remain in heating and transport sectors. Developing countries experience 9.6 per cent annual growth in renewable energy installation, but despite enormous needs, international financial flows for clean energy continue to decline.

• To ensure access to energy for all by 2030, we must accelerate electrification, increase investments in renewable energy, improve energy efficiency and develop enabling policies and regulatory frameworks.

The 2030 Agenda stated that this generation could be the first to succeed in ending poverty – and the last to have a chance of saving the planet. This higher purpose remains within grasp, but it requires an unprecedented effort by individual Governments, a renewed sense of common purpose across the international community and a global alliance for Sustainable Development Goals-related action across business, civil society, science, young people, local authorities and more. It requires that we come together in September to deliver a rescue plan for people and planet. Building on the evidence captured in the Global Sustainable Development Report and on the lessons since 2015, the present report identifies a series of urgent actions for your consideration in five key areas.

2.4. Nuclear is low carbon

Nuclear power plants produce no greenhouse gas emissions during operation, and over the course of its life-cycle, nuclear produces about the same amount of carbon dioxide-equivalent emissions per unit of electricity as wind, and one-third of the emissions per unit of electricity when compared with solar.



3. Conclusions

- It is concluded that in order to achieve the deep decarbonisation required to keep the average rise in global temperatures to below 1.5°C, combating climate change would be much harder, without an increased role for nuclear. Because nuclear power is reliable and can be deployed on a large scale, it can directly replace fossil fuel plant, avoiding the combustion of fossil fuels for electricity generation. The use of nuclear energy today avoids emissions roughly equivalent to removing one-third of all cars from the world's roads.
- Nuclear energy has shown that it has the potential to be the catalyst for delivering sustainable energy transitions, long before climate change was on the agenda.