

# Nuclear Energy: A Driver of Sustainability

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## *Nuclear energy provides a safe, reliable and efficient source of clean, baseload electricity*

### The move to electrification and decarbonisation

- Across the globe, an energy transition is underway as we move to electrify and decarbonise our economies and societies.
- The need for electrification has been championed by climate and energy experts for many years. According to the World Economic Forum (WEF), electrification is critical for decarbonization.
- Electrification means replacing technologies that run on combustion with alternatives that are powered by electricity. This includes everything from home heating and cooling, to cars, trucks, planes and industrial equipment.
- Today, electricity constitutes only 19% of final energy consumption; however, considering its growth from 15% in 2000, this figure is forecast to significantly increase. In the US alone, the Electric Power Research Institute predicts that electrification will reach 47 per cent by 2050.
- With everything electrified, there is a clear path to reducing global carbon emissions – which is to make the energy powering the grid as clean as possible. This is where nuclear energy's role is crucial.
- Nuclear energy is one of the cleanest sources of baseload electricity – delivering an abundant supply of emissions-free electricity, 24 hours a day, 365 days per year.

- To achieve a global emissions reduction, decarbonisation efforts need to accelerate in all sectors, from electricity generation to transport, building and industry.
- The energy sector, through technologies such as peaceful nuclear energy, has already significantly reduced its greenhouse gas emissions, becoming a leading actor in the fight against climate change.

### Sustainability is critical

- Sustainability is about achieving an enduring balance between using our finite resources and our meeting our human needs.
- The United Nations identified the 17 Sustainable Development Goals (SDGs) for 2030. These include no poverty, zero hunger, good health and well-being, quality education, gender equality, clean water and sanitation, affordable and clean energy.
- They also include decent work and economic growth, industry, innovation and infrastructure, reduced inequality, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land, peace and justice strong institutions and partnerships.
- Energy planning ensures having clean, affordable, safe and reliable energy, which is important for sustainable economic growth and human well-being. It reduces greenhouse gas emissions to avoid dangerous levels of climate change.
- Nuclear energy, science and technology can contribute to many of the Sustainable Development Goals, when used in areas like energy, human health, food production, water management and environmental protection.



## Climate change

- The planet is warming, from the North Pole to the South Pole. Since 1906, the global average surface temperature has increased by more than 1.6 degrees Fahrenheit (0.9 degrees Celsius)—even more in sensitive Polar Regions.
- The impact of rising temperatures is appearing right now. The heat is melting glaciers and sea ice, shifting precipitation patterns, and setting animals on the move.
- Climate Action is one of the 17 Sustainable Development Goals and is one of the biggest environmental challenges worldwide.
- Climate change is leading to water scarcity, food shortage, biodiversity loss and natural disasters in different parts of the world.
- One of the ways climate change can be mitigated is through the use of nuclear science and technology, which can be used to develop methods to grow food that reduces emissions, optimizes food production in harsh climate conditions, and preserve natural resources.
- Nuclear techniques can also be used to mitigate climate change by monitoring the causes of climate change and its effect on the environment.

## Nuclear energy's role in combatting global climate change

- The Paris Agreement, signed in 2016 by 175 countries within the United Nations Framework Convention on Climate Change, calls to limit the increase in global average temperature to well below two degrees Celsius above pre-industrial levels.
- The Agreement points to a continued increase of nuclear power in the longer term. Its advantages in terms of climate change mitigation, as well as energy security and non-climatic environmental and socio-economic benefits, are important reasons why many countries intend to introduce nuclear power in the coming decades, or to expand existing programs.
- Nuclear energy is a safe, clean, proven and peaceful energy source. Aside from hydropower (which is limited to countries with large, constant flowing rivers), nuclear energy is the only proven technology capable of producing baseload electricity with almost zero carbon emissions.
- Nuclear energy provides a solution to the 3Es trilemma, delivering energy and supporting economic growth without negatively impacting the environment. It is the world's second largest source of low-carbon electricity, accounting for 30% in 2016.
- Nuclear energy avoids the release of 2 gigatonnes of carbon yearly. That is the equivalent of taking 400 million cars off the road every year.
- The International Atomic Energy Agency (IAEA) assists Member States that wish to introduce nuclear power and provides information to a broader audience engaged in energy, environmental and economic policy-making to support global climate change goals.

## The UAE Peaceful Nuclear Energy Program and climate change

- In 2007, the UAE Government conducted an extensive study into the nation's growing energy demands and electricity generation capacity.
- With energy demand in the UAE growing rapidly, nuclear energy emerged as the right choice for the UAE because it is a safe, clean and proven technology, it is commercially viable, and it delivers significant volumes of base-load electricity with nearly zero carbon emissions.
- Nuclear energy plays a critical role in the UAE Energy Strategy 2050.
- The UAE aims to produce 50% of its energy from low-carbon sources, including renewables and nuclear energy by 2050 to ensure a diversified, sustainable and secure energy portfolio.
- The Barakah Nuclear Energy Plant, which has been developed by The Emirates Nuclear Energy Corporation (ENEC), is set to commence operations this year pending final regulatory approvals. When fully operational, the UAE's nuclear energy facility will produce around 25% of the nation's electricity needs while saving 21 million tons of carbon emissions annually, equivalent to removing 3.2 million cars off the roads each year.

## Sustainability at ENEC

- ENEC's sustainability program focuses on three core areas, which are at the heart of its daily operations: clean energy provision, economic growth and capacity building.
- ENEC has outlined its commitment to operating in an environmentally conscious manner in its Barakah Environment and Sustainability Charter, an agreement co-signed by ENEC and its Joint Venture partner and Prime Contractor, the Korea Electric Power Corporation (KEPCO).
- ENEC is committed to the evolution and development of its sustainability program and ensures meeting the needs of the community, the environment, and the nation.

