

How nuclear technologies will deliver low carbon energy to balance global emissions and removals by 2050



Nuclear power today

- Nuclear power and hydro provide an **essential foundation for clean energy transitions** [IEA Net Zero by 2050, 2021]
- **Climate objectives** will be met with nuclear power in about **30 countries** where nuclear power currently supplies **over 40% of low carbon electricity** needs
- Nuclear helps **stabilizing power grids**, thus favouring the integration of solar and wind
- Nuclear has a **strong record of resilience** in the face of **extreme weather events** (The equivalent of 2% of global electricity was lost in 30 years globally)

Current development trends

- About **\$35 billion** are invested each year in nuclear projects (11% of global clean power investments)
- Current constructions in **Bangladesh, Belarus, Turkey** and the **UAE**, in addition to the extension of 15 existing programmes, confirm the **nuclear attractiveness** across the **full spectrum of income**
- Proposed projects in **China, India** as well as **Poland, Czech Republic** or the **Slovak Republic** will **displace coal**
- **Ghana** is considering nuclear to provide **reliable power**, foster the productive use of energy and meet **industrialization objectives**

Nuclear power tomorrow

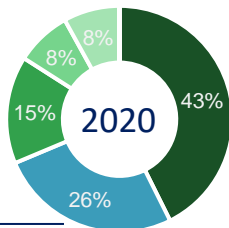
- By **2030**, **nuclear electricity rises by a quarter**, driven by lifetime extensions at existing plants (a cost-effective mitigation option) and new constructions
- By **2050**, **renewables and nuclear power displace most fossil fuel use**. The IEA foresees a **doubling of nuclear electricity** [IEA, 2021]
- **New nuclear designs** (incl. small modular reactors and other advanced designs) are moving towards **full-scale demonstration** to provide sources of **flexible and dispatchable power, heat, clean hydrogen...**

Nuclear technologies are compatible with sustainable development

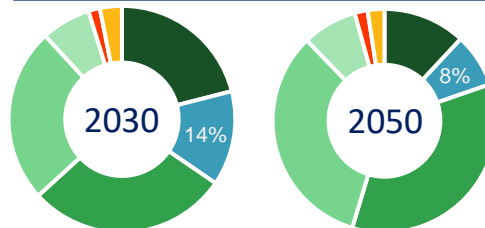
- *“Nuclear energy does not do more harm to human health or to the environment than other electricity production technologies”* [EU Joint Research Centre, 2021]
- **Nuclear techniques** complement conventional **climate adaptation** and **climate science** technologies to assess climate impacts e.g. in terms of land degradation, food safety and ocean acidification

Nuclear power is currently the **second largest source of low carbon electricity** produced globally

Breakdown of low carbon electricity



IEA (2021) Net Zero by 2050



- Hydro
- Nuclear
- Wind
- Solar PV
- Other ren.
- Fossil w/ CCS
- H2-based

Nuclear electricity production

