International Energy Agency



# The Path to a New Era for Nuclear Energy

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### Nuclear energy is a secure and clean energy source



Nuclear power produces 10% of global electricity, the second-largest low-emissions source today behind only hydro. Nuclear power will play a crucial role in energy security as a clean energy source alongside renewables.

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#### Nuclear energy is set for growth



With plans to expand the role of nuclear in over 40 countries, global nuclear capacity is set to double to 2050. Large reactors remain the majority of the fleet, and lifetime extensions play an important role.

### Nuclear reactors are taking longer to build in advanced economies



Recent projects in the US and the EU have had on average 8 years of delay and cost 2.5 times the initial cost.

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### **Construction risk remains a major hurdle to financing**



Adopting standardised reactor designs and building in series helps establish and maintain a strong and skilled nuclear industrial base and supply chain, which is needed to better manage construction risks.

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### Nuclear market leadership is set to shift again



Reversing the recent trend, a new wave of construction in advanced economies for both large and small reactors opens the possibility for Europe, the United States and Japan to reclaim market share.

#### Nuclear energy investment needs to scale up



Nuclear investment has doubled from 2010 to 2023 and needs to double again to meet national energy plans. Over the next 25 years, large reactors are expected to capture the two-thirds of the total investment.

### Government plays a critical role to enable nuclear investments



Business models adopted for selected recent nuclear projects		
Project	Cash inflow	Cash outflow
L Barakah (UAE) V	Long-term PPA Fixed-price agreement with EWEC (Emirates Water and Electricity Company)	Costs are primarily borne by the construction consortium and <b>risk is mitigated</b> through Korean Export-Import Bank ( <b>KEXIM</b> ) and <b>government-backed loans</b>
lı fi Akkuyu (Türkiye) G s	Intergovernmental agreement guarantees fixed-price PPA for 15 years Government commitment to purchase a significant portion of the output	Equity provider bears the main construction risk, supported by Russian Export credit agencies ( <b>ECAs</b> ) and <b>intergovernmental collaboration</b>
Hinkley Point C (UK)	<b>Contract for difference</b> provides guaranteed strike price for electricity	Equity investors EDF and China General Nuclear Power Corp. (CGN) bear the risk
Find Sizewell C (UK)	<b>Regulated asset base (RAB) model</b> allows operators to start recovering investments during the construction phase	Shifts some risk to government, reducing the burden on developers

Government support through cash flow assurance or direct investment plays a crucial role in developing nuclear power

## Strong government commitments required for private involvement





Public-private funding is key to supporting future large-scale finance for Nuclear in Advanced economies. However, IEA surveys show that government commitment and action must come first to mobilise private capital. The path to a new era of nuclear energy calls for many actions.

- Industry must deliver projects on-time and on-budget
- Governments can clear the path in several ways:
  - Setting clear long-term policies for the role of nuclear energy
  - De-risking nuclear energy to unlock financing
  - Increasing the reliability and competitiveness of supply chains, and fostering innovation
  - Streamlining regulatory processes

