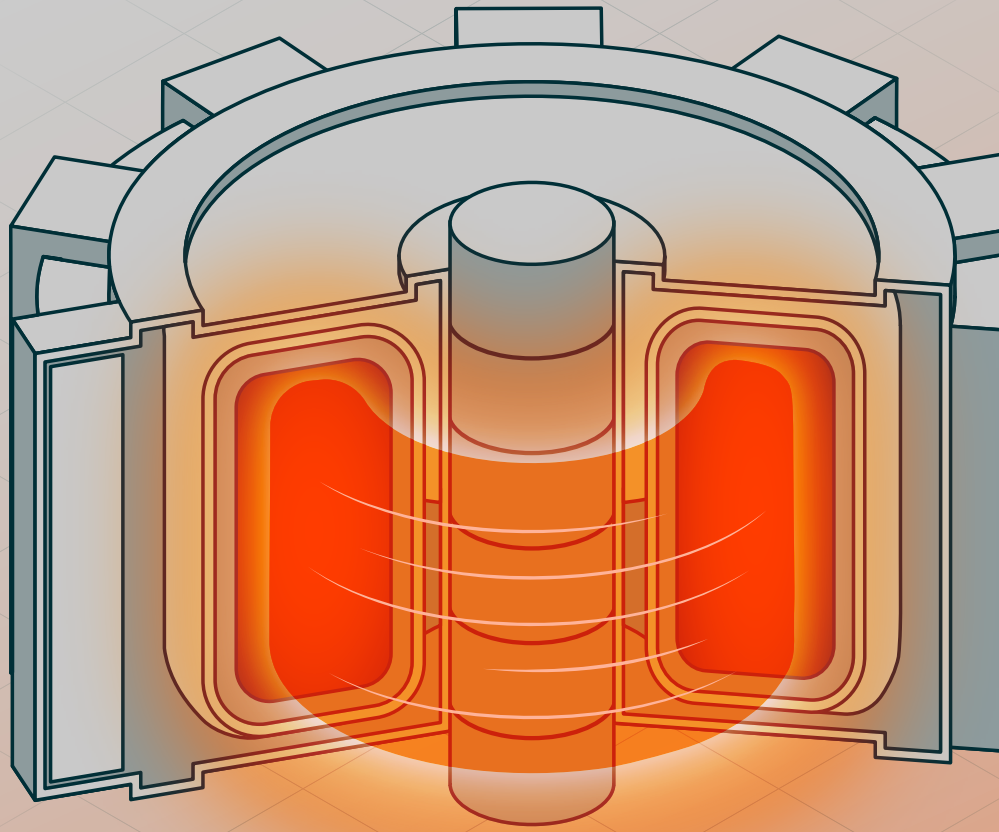
Uranium and Nuclear Power:

At the Intersection of Megatrends



GLOBAL X
by Mirae Asset

Nuclear's Structural Re-Rating:
AI, Electrification and Energy Security Shifting the Narrative

BOTTOM LINE

Electricity demand is entering a structurally higher growth phase, driven by AI data centres, and the electrification of industry, construction and transport.[1] Unlike past cycles, much of this incremental demand is continuous, high-utilisation, and intolerant of interruption, increasing the premium on reliable baseload power.[2]

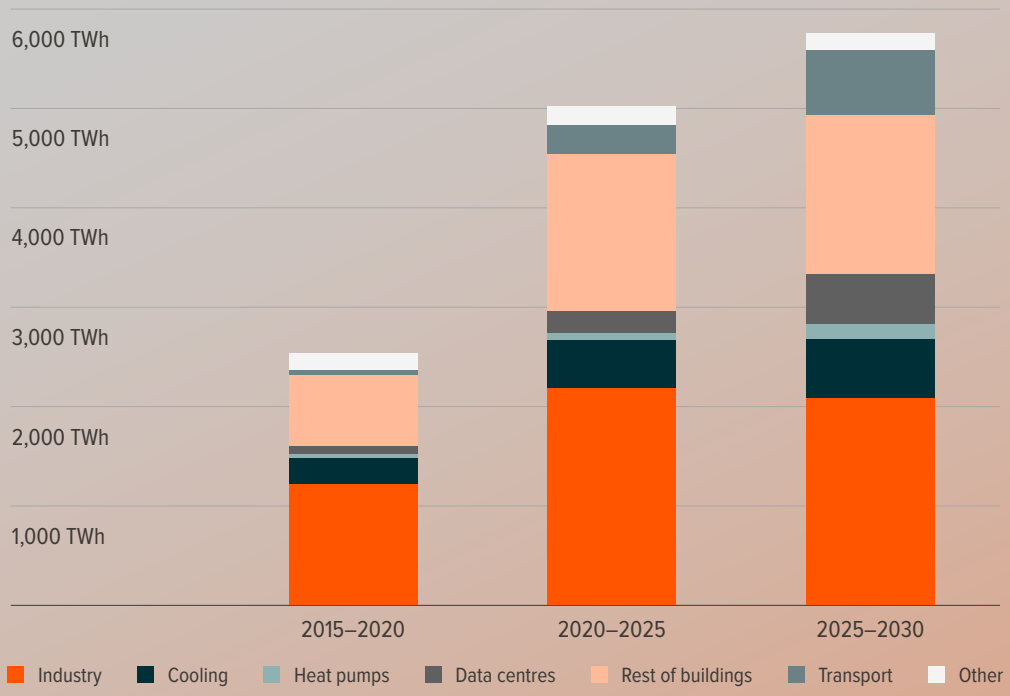
Renewables remain central to electrification, but their intermittency creates a growing need for firm, always-on generation as penetration rises.[3] Nuclear power is one of the few scalable sources of low-carbon, dispatchable electricity, positioning it as a critical stabiliser within increasingly complex power systems.[4]

Uranium's relatively small, contract-driven structure typically amplifies price responses as utilities secure supply earlier and for longer, forming favourable conditions for miners through improved pricing leverage.[5] The opportunity spans the nuclear value chain, however, from fuel-cycle services, reactor operators, to new technologies that stand to benefit from policy initiatives aimed at reversing decades of underinvestment in nuclear infrastructure.[6]

Diversified exposure across the nuclear value chain captures the structural role of nuclear power in a higher-load grid, rather than relying on a single technology or commodity price outcome.

WHAT THIS MEANS FOR NUCLEAR & FUEL-CYCLE COMPANIES →
WHAT THIS MEANS FOR URANIUM MINERS →

FIGURE 1: GLOBAL ELECTRICITY TOTAL DEMAND GROWTH BY SECTOR



Source: IEA (2026), Electricity 2026 - Executive summary. There is no guarantee that any trends observed in this material will continue. Any views and opinions are based on current market conditions and are subject to change.

01 Structurally Higher, Always-On Power Demand

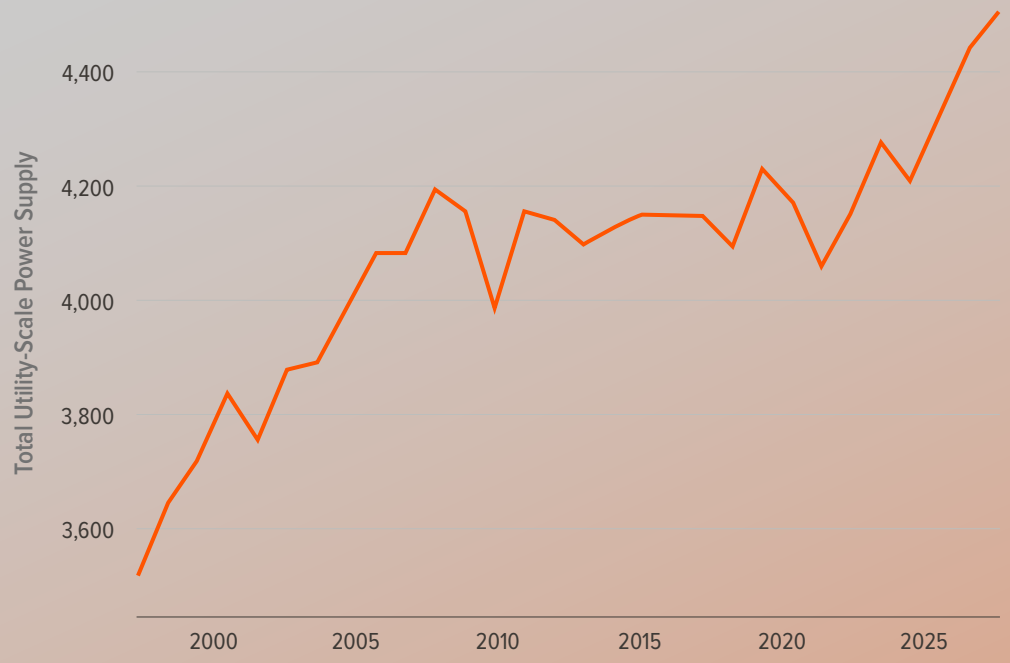
Why power demand is structurally higher and reliability-led

Global electricity demand is re-accelerating following more than a decade of flat growth between 2008 and 2021.[7] The type of demand now driving growth is fundamentally different from past cycles, with data centres adding a large, always-on source of incremental load, growing at ~15% per year through 2030.[8]

- **AI data centres operate at high utilisation, require uninterrupted power, and can scale rapidly once commissioned.[9]**
- **Electrification of industry, heating, and transport adds persistent, round-the-clock demand rather than discretionary or peak-only load.[10]**
- **Grid resilience requirements are rising, as weather volatility and system complexity increase the need for dependable capacity.[11]**

Against this backdrop, nuclear's role is being re-framed from legacy generation to a strategic source of clean, firm capacity, supporting reliability as power systems absorb higher, always-on demand.[12]

FIGURE 2: UNITED STATES TOTAL UTILITY-SCALE POWER SUPPLY



Source: Global X ETFs illustration with information derived from the EIA (U.S. Energy Information Administration). There is no guarantee that any trends observed in this material will continue. Any views and opinions are based on current market conditions and are subject to change.

01 Structurally Higher, Always-On Power Demand

FIGURE 3.1: GLOBAL DATA CENTRE POWER DEMAND, BY COUNTRY

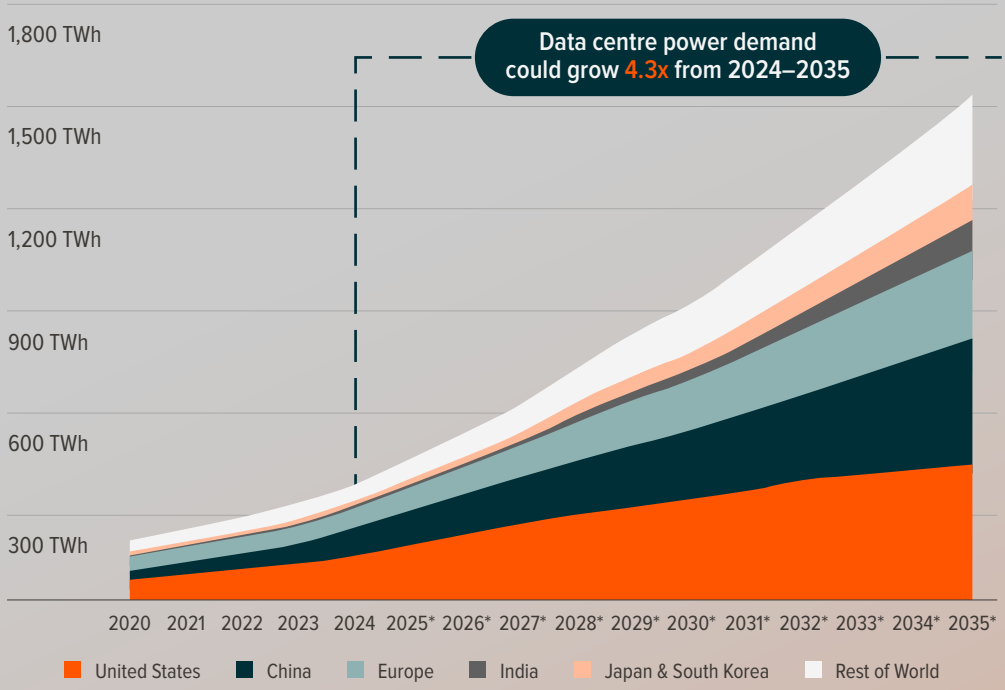
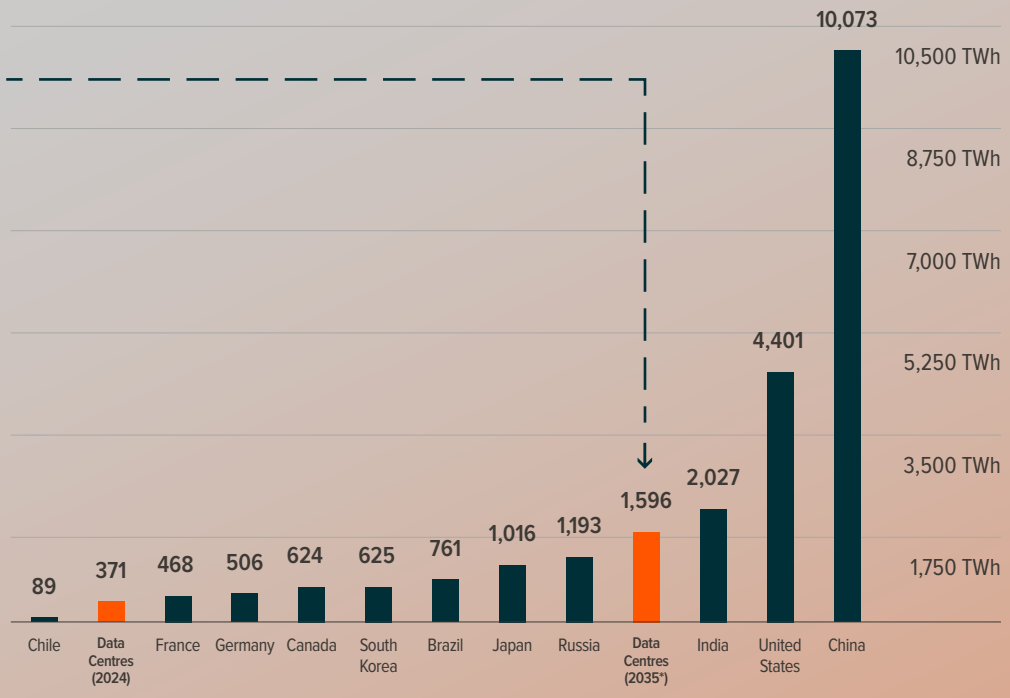


FIGURE 3.2: COUNTRY-LEVEL ELECTRICITY DEMAND, 2024 & ELECTRICITY DEMAND FROM GLOBAL DATA CENTRES, 2024 & 2035



*Forecast. Source: Global X ETFs illustration with data derived from BloombergNEF (2025). There is no guarantee that any trends observed in this material will continue. Any views and opinions are based on current market conditions and are subject to change.

02 Life Extensions & Uprates: The Quiet Demand Lock-In

Why existing reactors matter

While new nuclear construction attracts headlines, the existing reactor fleet is the dominant driver of near- and medium-term uranium demand.[13]

- **Life extensions allow reactors to operate well beyond original design lives.**
- **Uprates increase output from existing assets without new builds**
- **Both are faster, cheaper, and politically easier than constructing new plants.[14]**

These decisions can convert uncertain future demand into committed, multi-decade fuel requirements.

What's changed

- **Post-Fukushima retirements are largely complete. [15]**
- **Energy security concerns have shifted the policy debate from closure to preservation.[16]**
- **Governments and regulators increasingly view nuclear as strategic infrastructure rather than optional generation.[17]**

Persistence of demand

Once a reactor is life-extended, uranium demand becomes contractual rather than discretionary; insensitive to short-term power prices; anchored over decades, not cycles.[18] This creates a durable base of uranium consumption even if new-build timelines slip.[19]

03 Small Modular Reactors: Scalable, Customisable Nuclear Power

What SMRs potentially change

SMRs aim to shift nuclear from a small number of large, bespoke projects toward a more scalable model: smaller pre-fabricated units, more output flexibility, and faster replication over time.[20] The addressable market expands into:

- **Dedicated power for critical facilities and industrial clusters.**
- **Remote / constrained grids where reliability is a binding constraint.**
- **Scaled deployment enabled by modular designs and factory/warehouse production of components.[21]**

Data centres illustrate the problem SMRs are designed to solve: large, power-hungry facilities that require continuous, reliable power.[22] This has driven interest and agreements between the SMR developers and hyperscalers.[23]

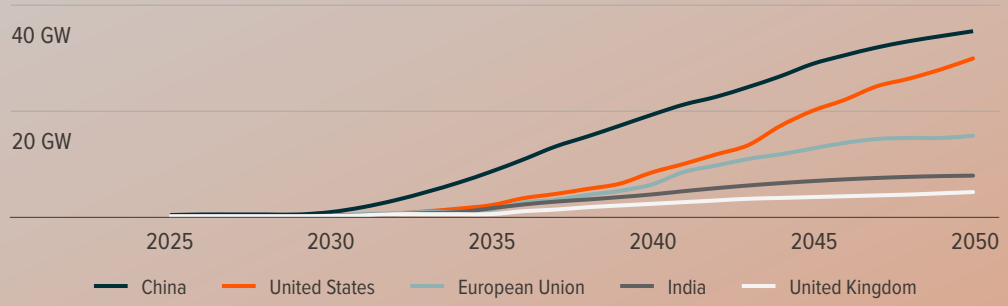
Why this matters for investors

SMRs introduce long-term optionality that extends the nuclear growth runway beyond existing technologies.[24] They also deepen the investment case for the fuel cycle, as many advanced designs increase requirements for higher-assay fuels (e.g., HALEU), creating new bottlenecks across enrichment, fabrication, and transport that Western public policy is aggressively seeking to solve through investment.[25]

FIGURE 4: SMR INSTALLED CAPACITY BY COUNTRY (GW) PROJECTIONS

INSTALLED CAPACITY

Note: SMR = small modular reactor



Sources: IEA analysis based on IEA (2024), World Energy Outlook 2024. There is no guarantee that any trends observed in this material will continue. Any views and opinions are based on current market conditions and are subject to change.

04 The Uranium Market: Small, Contracted, and Asymmetric

Structural features of the uranium market

- Uranium is predominantly purchased through *long-term contracts*, not spot markets.[26]
- Spot prices influence sentiment, but contracts determine physical supply and demand.[27]
- Supply is concentrated, inflexible, and slow to respond to demand growth.[28]

Crucially, uranium buyers are highly price inelastic

Fuel costs represent a small share of total nuclear operating costs, while fuel availability is existential to reactor operation.[29] As a result, utilities prioritise security of supply over price optimisation, particularly once reactors are operating or extended.[30]

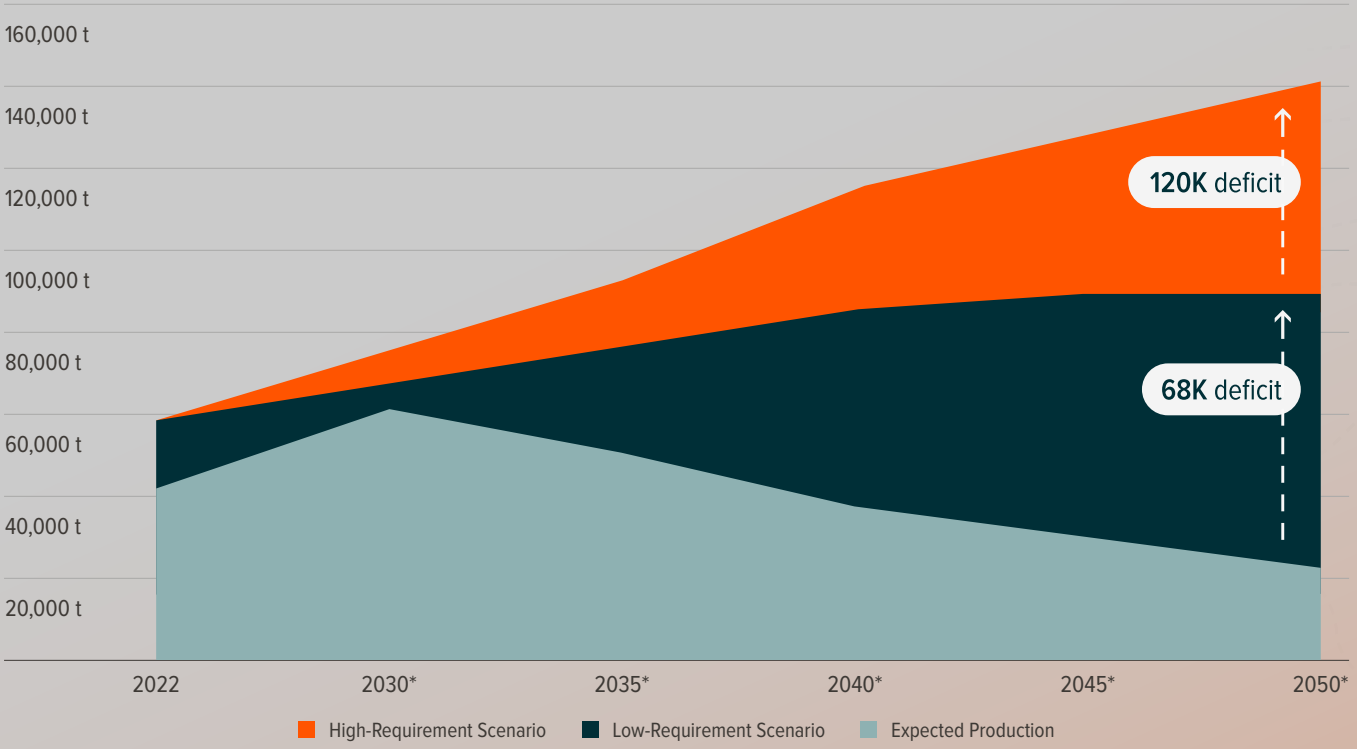
Why this matters for prices and equities

Because the market is small, supply-constrained, and dominated by price-insensitive buyers:

- **Incremental demand shifts can produce outsized price responses.**
- **Supply discipline has a disproportionate impact on margins.**
- **Equity returns tend to amplify underlying commodity moves.**[31]

04 The Uranium Market: Small, Contracted, and Asymmetric

FIGURE 5: PROJECTED ANNUAL REACTOR-RELATED URANIUM REQUIREMENTS



Source: Nuclear Energy Agency & International Atomic Energy Agency (2025). There is no guarantee that any trends observed in this material will continue. Any views and opinions are based on current market conditions and are subject to change.

05 What This Means for Nuclear & Fuel-Cycle Companies

Where value is accruing

- **Fuel-cycle services** (conversion, enrichment) where bottlenecks are emerging, and where the US is now explicitly directing investment to rebuild domestic and allied supply chains.[32]
- **Reactor operators** benefiting from life extensions and uprates.[33]
- **Developers and suppliers** embedded in long-duration, policy-supported projects, as Western policy-makers accelerate efforts to restart, extend and add nuclear capacity.[34]

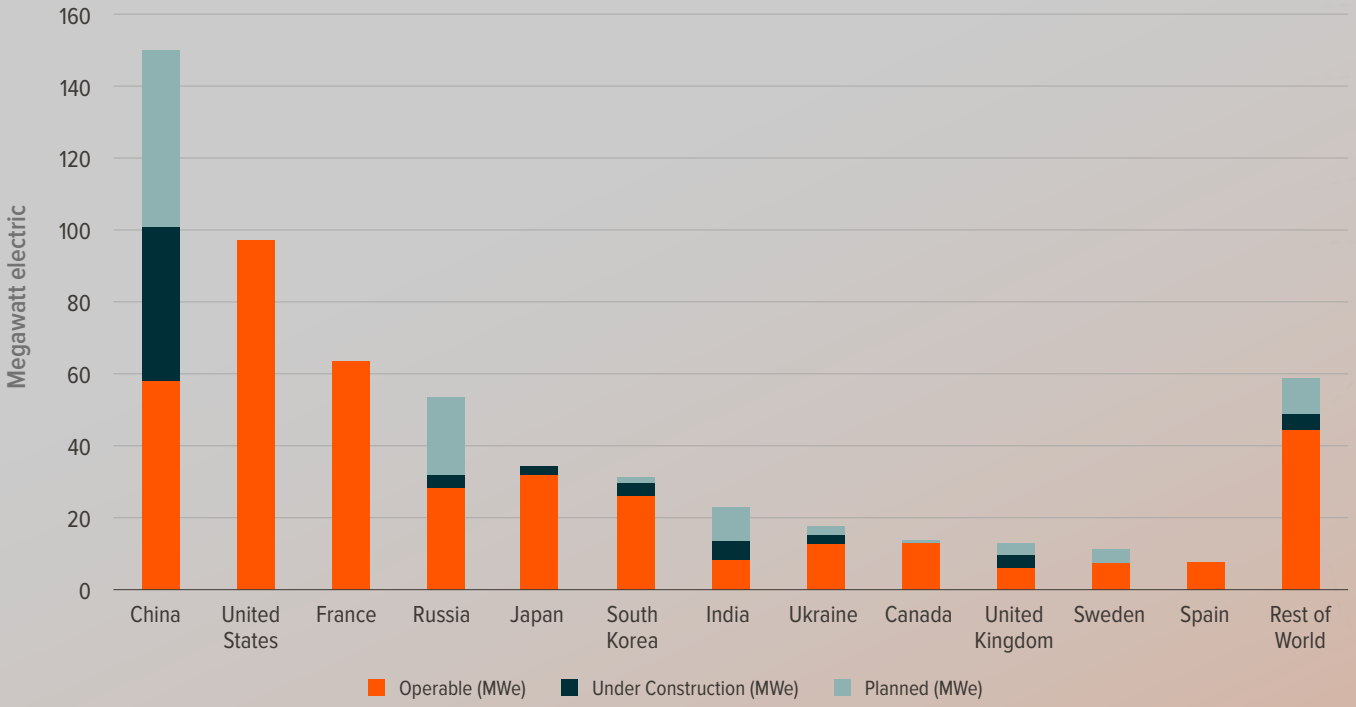
Why this cycle may be different

- **Government funding and guarantees are actively de-risking capital investment, addressing the decades of underinvestment in nuclear capacity and the fuel cycle.**[35]
- **Cash flows are insulated from short-term power prices, with revenues increasingly anchored to regulation, long-term contracting, and security-of-supply mechanisms.**[36]
- **Long-lived assets create duration and inflation-linked cash flows, differentiating nuclear from more cyclical energy investments.**[37]

This creates a more infrastructure-like return profile than previous nuclear cycles.

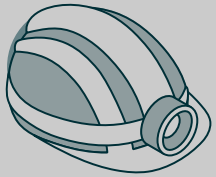
05 What This Means for **Nuclear & Fuel-Cycle Companies**

FIGURE 6: COMBINED NUCLEAR CAPACITY (OPERABLE + UNDER CONSTRUCTION + PLANNED) (MWE) BY COUNTRY



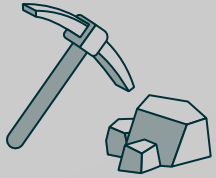
Source: World Nuclear Association (2025). There is no guarantee that any trends observed in this material will continue. Any views and opinions are based on current market conditions and are subject to change.

06 What This Means for **Uranium Miners**



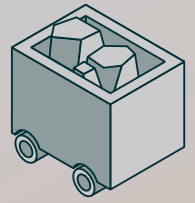
Pricing leverage as discipline returns

- High fixed costs and long lead times create strong operating leverage.[38]
- Restart economics improve sharply once prices clear incentive levels.[39]
- Contracting cycles tend to favour established, low-cost producers.[40]



Strategic capital is returning

- Government support, loan guarantees, and long-term offtake agreements are de-risking western supply.[41]
- Uranium is increasingly treated as a strategic input rather than a purely cyclical commodity.[42]

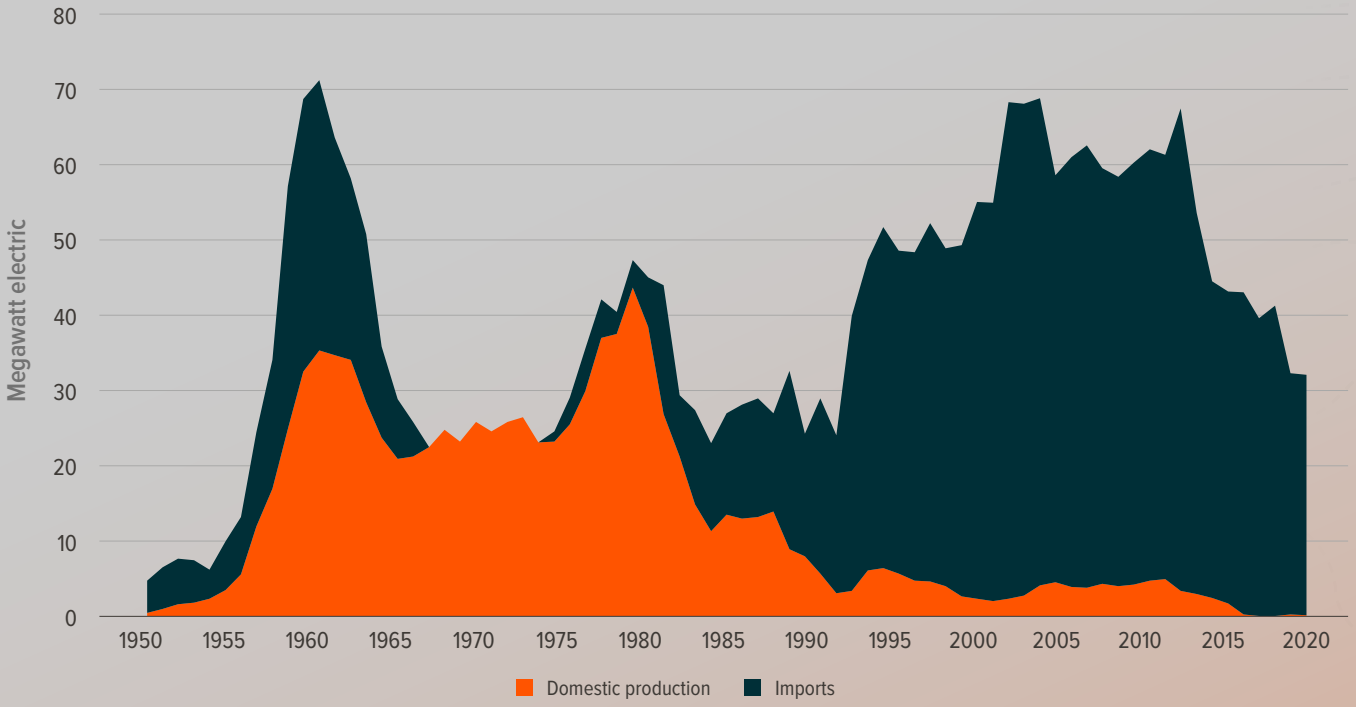


Key distinction vs other energy materials

Uranium demand is **binary and contractual** – once fuel is committed, demand becomes highly inelastic, limiting downside elasticity relative to other commodities.[43]

06 What This Means for **Uranium Miners**

FIGURE 7: US URANIUM SUPPLY TO COMMERCIAL NUCLEAR REACTORS (1950–2023)



Sources: U.S. Energy Information Administration, *Monthly Energy Review*, *Domestic Uranium Production Report*, and *Uranium Marketing Annual*. There is no guarantee that any trends observed in this material will continue. Any views and opinions are based on current market conditions and are subject to change.

Footnotes

1 International Energy Agency (IEA) (2025) ***Global Energy Review 2025***

2 Bank of America Institute (2026) ***Nuclear energy: Who, what, where, when, why?***

3 BloombergNEF (2024) ***Clean Electricity Breaks New Records; Renewables on Track for Another Strong Year: BloombergNEF***

4 U.S. Department of Energy (2025) ***What is Generation Capacity?***

5 Nuclear Energy Agency (2024) ***Uranium: Resources, Production and Demand***

6 Ibid

7 Ember (2025) ***Demand and supply changes in 2024***

8 IEA (2025) ***Energy demand from AI***

9 North American Electric Reliability Corporation (NERC) (2025) ***2024 Long-Term Reliability Assessment***

10 Ibid

11 Ibid

12 Ibid

13 World Nuclear Association (2026) ***Nuclear Power in the World Today***

14 Ibid

15 IEA (2023) ***Nuclear Power and Secure Energy Transitions***

16 U.S. Department of Energy (2024) ***Civil Nuclear Credit Program***

17 Ibid

18 Ibid

19 World Nuclear Association (2026) ***Nuclear Power Reactors***

20 Ibid

21 Ibid

22 Ibid

23 World Nuclear News (2026) ***Meta announces 'landmark' agreements for new nuclear***

24 Ibid

25 U.S. Department of Energy (2025) ***HALEU Availability Program***

26 Ibid

27 Ibid

28 Ibid

29 World Nuclear Association (2023) ***Economics of Nuclear Power***

30 T. Rowe Price (2025) ***Restoring America's nuclear energy capacity—Digging in to potential impacts and implications***

31 U.S. Energy Information Administration (2025) ***U.S. nuclear generators import nearly all the uranium concentrate they use***

32 Centrus (2025) ***Centrus Energy Secures Contract Extension from Department of Energy to Continue HALEU Production***

33 Ibid

34 Reuters (2026) ***Westinghouse megadeal set to revitalize nuclear supply chain***

35 Reuters (2026) ***US awards $2.7 billion worth of orders to boost uranium enrichment***

36 Ibid

37 Ibid

38 Ibid

39 Ibid

41 Ibid

41 Ibid

42 Ibid

43 Ibid

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