Nuclear energy rises again in the race for energy independence

Published 11 March 2025

Mobeen Tahir
Director, Macroeconomics and Thematic Research

Key Takeaways

- Big tech companies including Microsoft, Google, and Amazon are investing in nuclear.
- Small modular reactors are revolutionising nuclear energy promising scalability.
- Nations are reigniting their nuclear ambitions as well, given rising energy needs.

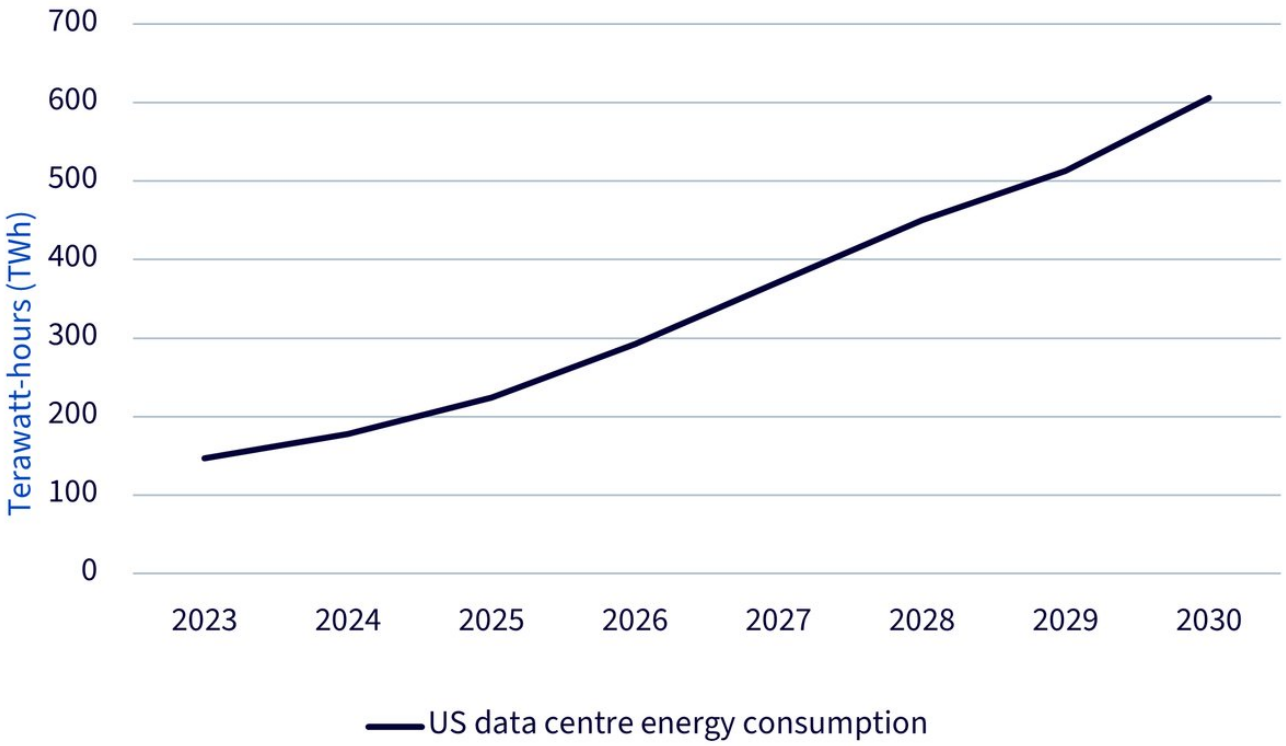
“The decision here is the most powerful symbol of the rebirth of nuclear power as a clean and reliable energy resource,” – Constellation Energy CEO Joe Dominguez, September 2024.

The decision in the quote above refers to the deal Microsoft has struck with Constellation Energy, the operator of the Three Mile Island nuclear plant, to restart operations and power the tech giant’s data centres. Constellation plans to bring back online its Unit 1 reactor, which ceased operations in 2019 when nuclear energy struggled to compete with natural gas and renewables. This so-called rebirth, expected to see the reactor operational by 2028, is significant not only because it reflects renewed confidence in nuclear energy’s economics but also a positive shift in sentiment and political will to restart a site associated with a past incident in a different reactor. The confidence in nuclear energy’s improved safety through technological progress, its economic viability, and its environmental credentials is growing as the world pursues energy independence to power energy-intensive technologies like artificial intelligence.

The world’s energy needs are rising rapidly

If a single ChatGPT query requires ten times as much energy as a Google search[1], and with the increasing number of devices making such artificial intelligence (AI) queries, global energy demand is poised to rise significantly. Data centres, which underpin technologies like AI, are power-hungry and are expected to see their energy needs increase swiftly. How the world meets these energy needs will be one of the most compelling themes for the rest of this decade and beyond.

Figure 1: Data centre power demand is expected to rise significantly in the US



Source: Global Energy Perspective 2023, McKinsey, October 18, 2023, McKinsey analysis. **Forecasts are not an indicator of future performance and any investments are subject to risks and uncertainties.**

Big tech is striking big deals

Microsoft is not alone. Other tech giants are also turning to nuclear. In October last year, Google announced a deal with Kairos Power to source multiple small modular reactors (SMRs), expected to be deployed between 2030 and 2035. According to Google, "this deal will enable up to 500 MW of new 24/7 carbon-free power to US electricity grids and help more communities benefit from clean and affordable nuclear power."[2]

SMRs, with their modular design, offer several advantages: they are smaller, safer, and faster to deploy than traditional reactors, making nuclear energy more accessible and scalable.

Amazon, also in October last year, announced three agreements to source new SMRs, highlighting their commitment to achieving net-zero carbon despite growing energy needs. Amazon struck deals with Energy Northwest to develop four advanced SMRs in Washington, led a $500 million funding round for X-energy to scale SMR technology, and partnered with Dominion Energy to explore SMR projects in Virginia, all aimed at advancing carbon-free energy solutions for its data centres.[3]

Given that power outages in data centres would mean major disruptions to global tech services, the importance of uninterrupted power is increasingly critical. With SMRs deployable close to demand sources, nuclear energy is positioning itself not only as a carbon-free solution but also as a key enabler of energy independence, much like wind and solar.

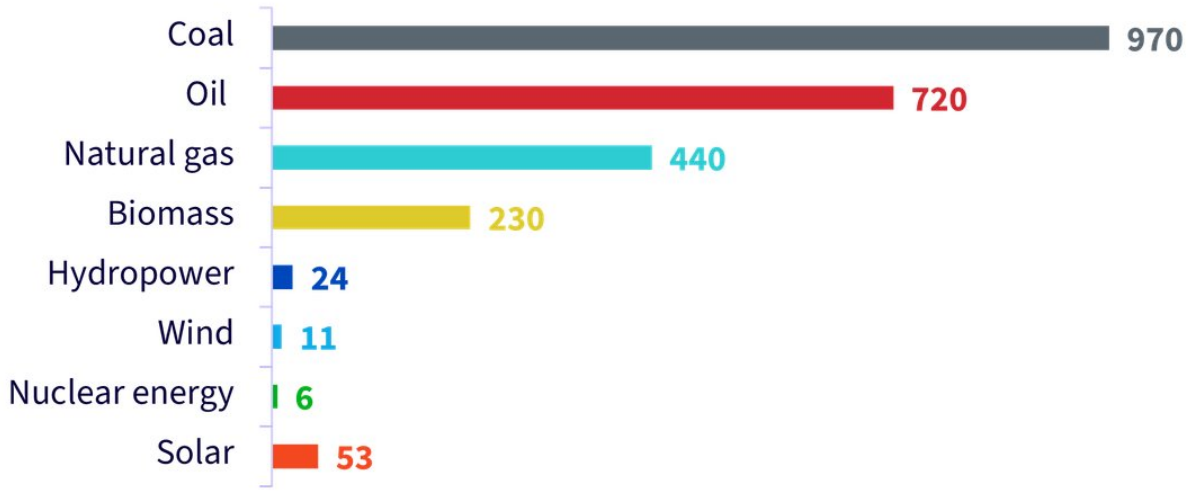
Countries are advancing their nuclear plans too

Europe learned valuable lessons from the 2022 gas price crunch when it scrambled to reduce its reliance on Russian gas. In February 2022, President Emmanuel Macron announced plans to construct six new nuclear reactors and consider building an additional eight over the next 30 years, aiming to bolster France's energy independence and reduce carbon emissions.[4]

In the United Kingdom, the proposed Sizewell C nuclear power station is set to generate low-carbon electricity for approximately six million homes, supporting the nation's transition to net-zero emissions. The project is also expected to support 70,000 jobs across the UK and engage over 2,000 UK-based suppliers.[5]

Nuclear energy's strong credentials in terms of low emissions and reliability are clearly encouraging both companies and countries to advance their plans.

Figure 2: Greenhouse gas emissions (in tonnes of CO2 equivalents per gigawatt-hour)



Source: Ourworldindata, Nuclear Energy, April 2024.

Conclusion

There is a clear upswing in sentiment towards nuclear power. The rapidly rising energy needs of power-hungry technologies like AI and data centres seem to be the catalyst. Both companies and countries

are turning to sustainable and independent energy sources, and nuclear has firmly joined the ranks. As technologies like small modular reactors advance, we can expect more big headlines from big tech and beyond. Nuclear energy has arrived—and it's here to stay.

[1] International Energy Agency, 2024.
[2] Google, October 2024.
[3] Amazon, October 2024.
[4] World Nuclear Association, Jan 2025.
[5] Sizewell C, Jan 2025.

Important Risks Related to this Article

IMPORTANT INFORMATION

Marketing communications issued in the European Economic Area ("EEA"): This document has been issued and approved by WisdomTree Ireland Limited, which is authorised and regulated by the Central Bank of Ireland.

Marketing communications issued in jurisdictions outside of the EEA: This document has been issued and approved by WisdomTree UK Limited, which is authorised and regulated by the United Kingdom Financial Conduct Authority.

WisdomTree Ireland Limited and WisdomTree UK Limited are each referred to as "WisdomTree" (as applicable). Our Conflicts of Interest Policy and Inventory are available on request.

This marketing communication has been prepared for professional investors, but the WisdomTree products set out in this document may be available in some jurisdictions to any investors, subject to applicable laws and regulations. As the product may not be authorised or its offering may be restricted in your jurisdiction, it is the responsibility of every person or entity to satisfy themselves as to the full observance of the laws and regulations of the relevant jurisdiction. Prior to any application investors are advised to take all necessary legal, regulatory, tax and investment advice on the suitability and consequences of an investment in the products. Past performance is not a reliable indicator of future performance. Any historical performance included in this document may be based on back testing. Back testing is the process of evaluating an investment strategy by applying it to historical data to simulate what the performance of such strategy would have been. Back tested performance is purely hypothetical and is provided in this document solely for informational purposes. Back tested data does not represent actual performance and should not be interpreted as an indication of actual or future performance. The value of any investment may be affected by exchange rate movements. Any decision to invest should be based on the information contained in the appropriate prospectus and affer seeking independent investment, tax and legal advice. These products may not be available in your market or suitable for you. The content of this document does not constitute investment advice nor an offer for sale nor a solicitation of an offer to buy any product or make any investment.

An investment in exchange-traded products ("ETPs") is dependent on the performance of the underlying index, less costs, but it is not expected to match that performance precisely. ETPs involve numerous risks including among others, general market risks relating to the relevant underlying index, credit risks on the provider of index swaps utilised in the ETP, exchange rate risks, interest rate risks, inflationary risks, liquidity risks and legal and regulatory risks.

The information contained in this document is not, and under no circumstances is to be construed as, an advertisement or any other step in furtherance of a public offering of shares in the United States or any province or territory thereof, where none of the issuers or their products are authorised or registered for

distribution and where no prospectus of any of the issuers has been filed with any securities commission or regulatory authority. No document or information in this document should be taken, transmitted or distributed (directly or indirectly) into the United States. None of the issuers, nor any securities issued by them, have been or will be registered under the United States Securities Act of 1933 or the Investment Company Act of 1940 or qualified under any applicable state securities statutes.

This document may contain independent market commentary prepared by WisdomTree based on publicly available information. Although WisdomTree endeavours to ensure the accuracy of the content in this document, WisdomTree does not warrant or guarantee its accuracy or correctness. Any third party data providers used to source the information in this document make no warranties or representation of any kind relating to such data. Where WisdomTree has expressed its own opinions related to product or market activity, these views may change. Neither WisdomTree, nor any affiliate, nor any of their respective officers, directors, partners, or employees accepts any liability whatsoever for any direct or consequential loss arising from any use of this document or its contents.

This document may contain forward looking statements including statements regarding our belief or current expectations with regards to the performance of certain assets classes and/or sectors. Forward looking statements are subject to certain risks, uncertainties and assumptions. There can be no assurance that such statements will be accurate and actual results could differ materially from those anticipated in such statements. WisdomTree strongly recommends that you do not place undue reliance on these forward-looking statements.

WisdomTree Issuer ICAV

The products discussed in this document are issued by WisdomTree Issuer ICAV (“WT Issuer”). WT Issuer is an umbrella investment company with variable capital having segregated liability between its funds organised under the laws of Ireland as an Irish Collective Asset-management Vehicle and authorised by the Central Bank of Ireland (“CBI”). WT Issuer is organised as an Undertaking for Collective Investment in Transferable Securities (“UCITS”) under the laws of Ireland and shall issue a separate class of shares ("Shares”) representing each fund.

The Fund is described in a Key Information Document (KID) or Key Investor Information Document (KIID) for UK investors, and the prospectus of WT Issuer (“WT Prospectus”). A copy of the WT Prospectus and the KID / KIID is available, for EEA/UK only, in English at www.wisdomtree.eu. Where required under national rules, the KID will also be available in the local language of the relevant EEA Member State. Investors should read the WT Prospectus before investing and should refer to the section of the WT Prospectus entitled 'Risk Factors' for further details of risks associated with an investment in the Shares.

The summary of investor rights associated with an investment in the fund is available in English on WisdomTree Europe's website. WisdomTree Management Limited may decide to terminate the arrangements made for the marketing of its collective investment undertakings. In such circumstances, shareholders in the affected EEA Member State will be notified of this decision and will be provided with the opportunity to

redeem their shareholding in the fund free of any charges or deductions for at least 30 working days from the date of such notification.

Notice to Investors in Switzerland – Qualified Investors

This document constitutes an advertisement of the financial product(s) mentioned herein.

The prospectus and the key investor information documents (KIID) are available from WisdomTree's website: **https:** //www.wisdomtree.eu/en-ch/resource-library/prospectus-and-regulatory-reports

Some of the sub-funds referred to in this document may not have been registered with the Swiss Financial Market Supervisory Authority ("FINMA"). In Switzerland, such sub-funds that have not been registered with FINMA shall be distributed exclusively to qualified investors, as defined in the Swiss Federal Act on Collective Investment Schemes or its implementing ordinance (each, as amended from time to time). The representative and paying agent of the sub-funds in Switzerland is Société Générale Paris, Zurich Branch, Talacker 50, PO Box 5070, 8021 Zurich, Switzerland. The prospectus, the key investor information documents (KIID), the articles of association and the annual and semi-annual reports of the sub-funds are available free of charge from the representative and paying agent. As regards distribution in Switzerland, the place of jurisdiction and performance is at the registered seat of the representative and paying agent.

For Investors in France:

The information in this document is intended exclusively for professional investors (as defined under the MiFID) investing for their own account and this material may not in any way be distributed to the public. The distribution of the Prospectus and the offering, sale and delivery of Shares in other jurisdictions may be restricted by law. WT Issuer is a UCITS governed by Irish legislation, and approved by the Financial Regulatory as UCITS compliant with European regulations although may not have to comply with the same rules as those applicable to a similar product approved in France. The Fund has been registered for marketing in France by the Financial Markets Authority (Autorité des Marchés Financiers) and may be distributed to investors in France. Copies of all documents (i.e. the Prospectus, the Key Investor Information Document, any supplements or addenda thereto, the latest annual reports and the memorandum of incorporation and articles of association) are available in France, free of charge at the French centralizing agent, Societe Generale at 29, Boulevard Haussmann, 75009, Paris, France. Any subscription for Shares of the Fund will be made on the basis of the terms of the prospectus and any supplements or addenda thereto.

For Investors in Malta: This document does not constitute or form part of any offer or invitation to the public to subscribe for or purchase shares in the Fund and shall not be construed as such and no person other than the person to whom this document has been addressed or delivered shall be eligible to subscribe for or purchase shares in the Fund. Shares in the

Fund will not in any event be marketed to the public in Malta without the prior authorisation of the Maltese Financial Services Authority.

For Investors in Monaco: This communication is only intended for duly registered banks and/or licensed portfolio management companies in Monaco. This communication must not be sent to the public in Monaco.