



The placement of a reactor dome at Zhejiang San'ao nuclear power plant was a cause for workers to celebrate
VCG/VCG VIA GETTY IMAGES

West fights back against Putin’s grip on uranium

A revival in nuclear power is coming as nations seek energy security. But the supply of a key element is not keeping up with demand and Russia has a tight grasp on production

Jon Yeomans
Sunday November 20 2022, 12.01am, The Sunday Times

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Mark Carney has a new sideline: he is helping to build nuclear power stations. Last month, as vice-chairman of Brookfield Asset Management, the former Bank of England governor was on hand to hail its \$8 billion joint acquisition of Westinghouse, a nuclear power plant designer.

After years in the doldrums, the deal was a sign that the nuclear sector was finally sparking to life, as countries recognise its value in providing clean energy. “Every credible net-zero pathway relies on significant growth in nuclear power,” Carney said.

Demand for new nuclear power is soaring. Last week, in the autumn statement, chancellor Jeremy Hunt reaffirmed plans to [build the Sizewell C reactor](#) on the Suffolk coast. Across the Channel, France wants six new plants. The US is looking at ways to extend the life of its existing plants and China wants to build an astonishing 220-plus reactors in the coming decades, with President Xi Jinping eyeing self-sufficiency in nuclear.

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But a crunch is coming. Supply of uranium is not expected to keep up with demand and Russia has a tight grip on its production — particularly in the conversion and enrichment of uranium, the two-stage process that gives the material its potency as a nuclear fuel. Vladimir Putin has already shown how to wield power by throttling Europe's supply of gas. Could a similar fate befall uranium?

In its natural form, uranium is fairly plentiful, found in rock and even sea water. There are large deposits in Australia, Kazakhstan, Canada, Russia and Namibia. After being mined, the ore is leached into a yellowy powder known as “yellow cake”. This material is converted and enriched into nuclear fuel through industrial processes using centrifuges, before being turned into pellets that are loaded into fuel rods for power stations.

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The uranium market has been depressed since the Fukushima disaster in Japan in 2011. Prices collapsed, miners stopped mining and utilities sold off stockpiles. But, as Carney noted, nuclear power is having a renaissance. Supporters are quick to point out it can deliver emissions-free power — just as the world needs more electricity to decarbonise. Putin's war on Ukraine has jolted every nation into rethinking its energy supply.

Russia's share of enriched uranium is about 40 per cent globally. "There's a shortage of enrichment supply. It's a huge issue," Tim Gitzel, chief executive of Canadian producer Cameco, told investors last month. He said Russia was also responsible for 27 per cent of uranium conversion and 14 per cent of mined supply. "If they're pulling back, that's leaving a huge gap," he said.



President Xi Jinping may choose to copy his ally Vladimir Putin's tactic of controlling supply of a needed resource

ALEXEI DRUZHININ, SPUTNIK, KREMLIN/AP

Europe's dependence on Russian gas has caused political and social heartache. How, then, did uranium also fall under Putin's influence? The trend was noted by investor Marin Katusa in his 2014 book *The Colder War*, which devoted a chapter to the "Putinization of Uranium".

Katusa wrote that Putin had deliberately cultivated nuclear deals with places such as Japan, Egypt and Mongolia, and

described Russia's grip on the sector as a "stranglehold".

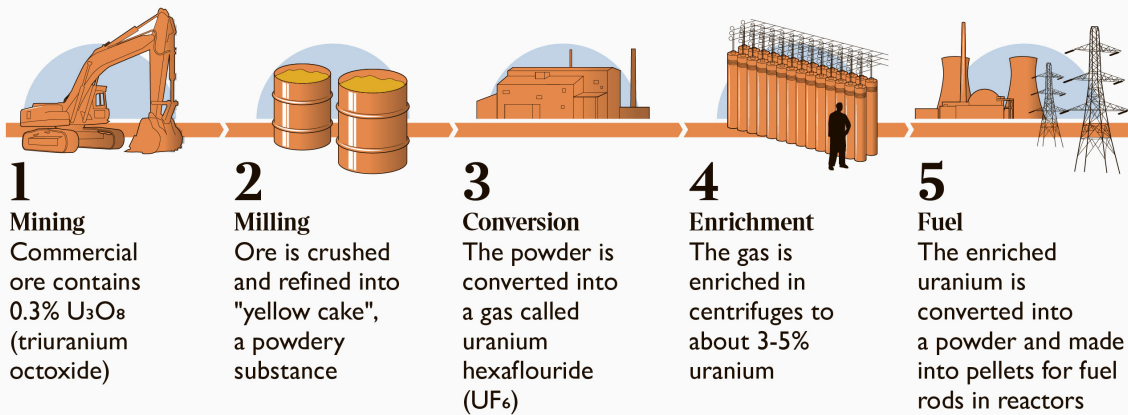
"Putin's goal is to corner the conversion and enrichment markets," he wrote. "Building new conversion or enrichment facilities is too costly for most countries, and it is difficult in the West due to the influence of the Nimby [not in my backyard] crowd."

Putin's war in Ukraine has created headaches for neighbouring Kazakhstan, which was responsible for 47 per cent of mined uranium supply in 2021, much of it shipped via St Petersburg. Since the war began, the country's national uranium producer Kazatomprom has been trialling an alternative route via Azerbaijan, Georgia and the Black Sea. But shipments on this route have faced problems: Cameco, which has a joint venture with Kazatomprom, admitted that no deliveries from this business would arrive this year as they were held up by red tape in Azerbaijan.

Russian uranium has not been sanctioned as a result of the war, but utilities firms are jittery, with many reportedly rushing to sign new supply contracts. "The West is trying to wean itself off Russian material and services," said John Ciampaglia, chief executive of Sprott Asset Management, which last year launched a uranium fund that allows investors to bet on the rising price of the commodity. He added: "There are absolutely no sanctions on any Russian nuclear fuel and the reason for that is very simple: there is no plan B."

From pit to reactor

How uranium fuel is made



Graphic: The Times and The Sunday Times •
Source: World Nuclear Association/US Office of Nuclear Energy

The only alternative is to “onshore” enrichment capability and cut Russia out of the supply chain.

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“It’s somewhat analogous to semiconductors — we’ve outsourced everything for so long that we don’t do it ourselves any more,” said Ross McElroy, chief executive of Fission Uranium, which is developing a new mine in Canada.

Some experts predict it could take three to five years for that capacity to be rebuilt. The US closed its only conversion facility in 2017, but plans to reopen it next year. In the UK, some

enrichment capability remains at the Springfields site in Lancashire.

The British government has woken up to the challenge and this year set up the £75 million Nuclear Fuel Fund to boost domestic supply. The business and energy committee is also scrutinising the matter. “The data suggests that there is quite a lot of political risk [with nuclear fuel supply],” said Darren Jones, the Labour MP who is the committee’s chairman. “The price is going to go up. And the UK is very reliant on international supply chains, including connections to Russia.”

Miners are licking their lips at the prospect of higher prices.

“Since the Russian invasion, energy security has become a key topic,” said Andre Liebenberg, chief executive of London-listed Yellow Cake, whose business model works by buying up uranium and sitting on it to cash in on future price rises. “There’s been a fundamental change in demand for nuclear. This is going to be a very exciting time [for uranium].”

Nick Lawson, chief executive of Ocean Wall, a niche alternatives investment house, said uranium was facing a string of “black swan” events that meant its price could finally rally. The price of yellow cake has risen 14 per cent this year to \$50 a pound, but the price for converted uranium has rocketed 150 per cent, he said. “We see the next five years in uranium investing as a generational wealth-creating opportunity,” Lawson said.

Mined supply is already running at a deficit of about 60 million pounds a year. The gap is bridged by stockpiles of the material, which are running low.

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“Uranium deposits are not so rare, but good ones are extremely rare,” said McElroy. He reckons prices would need to hit at least \$90 a pound before miners are incentivised to bring back production. “We’re part-way towards recovery, but prices still have an awful long way to go.”

Though prices may be rising, the very long lead times to build nuclear power stations may work in Britain’s favour when it comes to securing uranium. It will give firms time to source supply, according to Professor Gregg Butler of the Dalton Nuclear Institute at Manchester University. “Most of the utilities will have two to four years of uranium stock, so they’re not going to suddenly get desperate because the price goes up,” he said. Moreover, uranium is only a relatively small part of a nuclear power station’s running costs, he added.

The bigger challenge for the UK, Butler suggested, is to pick a consistent nuclear policy and stick with it. Very few of Britain’s nuclear power stations since the 1950s have followed the same design, he noted. “The technology choices we have made as a nation have not been that wonderful,” Butler said.

As a new nuclear age dawns, there is a chance to do things differently.

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 **Mr H Price**
20 NOVEMBER, 2022

...

Uranium enrichment in the UK is done at Capenhurst in Cheshire and not at Springfield in Lancashire.

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S**Stephen Poole**

20 NOVEMBER, 2022

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Since the start of the Ukraine war I have been wondering when people would wake up to the issues in this article. As usual our politicians are way behind the curve.

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M**MrRM**

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Finland - greenest of the green societies - has long relied on nuclear power exactly because of its difficult history with its eastern neighbour.

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N**NotDeLuxe**

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Some countries woke up before the war. There were already EU-led moves to source alternative fuel suppliers for the Russian / Soviet reactors in Eastern Europe, however it takes time to licence new fuel so this is still several years off. Ukraine was already moving to Westinghouse-sourced fuel before the invasion and if the war ends in Ukraine's favour they will go to 100%.

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N**NotDeLuxe**

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Please get the basic facts right. The UK has the Urenco Enrichment facility at Capenhurst, Chester. There has never been enrichment at Springfields.

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A**AnotherDevilsAdvocate**

20 NOVEMBER, 2022

...

It's odd to see an article that features Uranium, Russia (or Putin), and America without a mention of Clinton or Clinton Foundation.

Russia were permitted to buy 20% of America's uranium extraction capacity, which included approval of the Secretary of State - Hillary Clinton, dealings of the Clinton Foundation, Obama Admin., and Robert Mueller / FBI Director, and the questionable dealings around the Uranium One sale.

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N**NotDeLuxe**

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Irrelevant, no matter how much you wish it was. This is not about uranium extraction, (there are more enough uranium reserves outside Russian control) but rather what happens after mining and milling the ore, to convert the yellowcake to fuel.

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A**AJP1960**

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I understand that Iran and North Korea are pretty good at enrichment, perhaps we should approach them.

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S**stella hollis**

20 NOVEMBER, 2022

Nuclear became a victim of pressure politics and the irony is that whilst the left demonstrated in the west and ended much production and the need for sourcing Russia acted differently. France has maintained its reliance on nuclear and is building a vast complex in the south. Presumably it has secured supplies of uranium long term.

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N**NotDeLuxe**

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There are no new facilities currently under construction in France, at least not for nuclear fission.

And nuclear in the UK was nearly killed off by Thatcher, not "the left", when 3 nuclear power stations were cancelled as part of the CEGB privatisation in 1990.

(Edited)

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David Butler

20 NOVEMBER, 2022



Back fifty years ago I recall that the energy input to nuclear stations - high grade steel, graphite, etc - was such that they took years (I cannot recall how many) to begin to produce useful power. Does anyone working in the current imdustry know the figure?

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CD

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This was all so predictable the implications for outsourcing your energy supply. About time the UK had an energy policy rather than making stuff up on the hoof

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KGS

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Or we could get fracking for gas big style and get new gas power stations up an running.

(Edited)

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