

The big challenge for nuclear

The loss of Russian supplies could up-end the uranium market – and the odds of that are rising



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The revival of nuclear power is increasingly evident. I've written before about this theme and how to invest in MoneyWeek (see issue 1088 last year), but after Russia's invasion of Ukraine, long-term security of supply for fuel is emerging as a complex part of the challenge.

One key issue is enrichment – the process by which uranium oxide concentrate (known as yellowcake) is made suitable for use in nuclear reactors. Natural uranium consists largely of two isotopes: U-235 and U-238. The nuclear-fission process involves splitting U-235 atoms. However, the concentration of U-235 in natural uranium is just 0.7%. Enrichment increases this to 3%-5% by converting it into a gas and feeding it into centrifuges that produce enriched uranium (with high U-235 content) and depleted uranium (low U-235).

Most reactors require enriched uranium. Nine out of the ten advanced reactor designs selected for funding under the US government's Advanced Reactor Demonstration Program (ARDP) require advanced fuels with higher enrichment levels. Yet US uranium enrichment capability has "dwindled to nothing in recent decades as it leaned on other countries to supply the fuel", as Reuters puts it. Russia's Tenex became the world leader,



Enriched uranium is baked into pellets for use in reactors

increasing annual production from three million separate work units (SWU) – a measure of enrichment capacity – in the mid-eighties to 26.6 million SWU now. Russia's Rosatom provides about one-fifth of the enriched uranium needed for the 92 reactors in the US. In Europe, utilities that generate power for 100 million people rely on the company.

Supply ban threat

Unsurprisingly, politicians are wading into this mess. Last month, two US senators introduced the Nuclear Fuel Security Act, which aims to build a domestic nuclear-fuel programme by cutting out Russian supplies. And the

European parliament passed a resolution that calls for a full embargo on EU imports of uranium from Russia and sanctions on Rosatom.

So the writing is on the wall, with a ban looking certain if the invasion of Ukraine continues, reckons Nick Lawson at Ocean Wall, a specialist investment adviser. "For the West to sanction Russia it will be akin to turkeys voting for Christmas, as Rosatom enriches 40% of the world's uranium." If Russian supplies stop, Kazakhstan will step in – but stocks will still need to get into Western markets without transiting via Russia. This isn't an easy task.

Investors are waking up, but exposure remains minimal.

The total value of uranium equities is \$37bn, says Lawson – less than 25% of BP's enterprise value. Still, two UK ETFs launched last year: Global X Uranium ETF (LSE: URNG) and HANetf Sprott Uranium Miners ETF (LSE: URNP). This added new options on top of the Geiger Counter (LSE: GCL) investment trust, which has been listed since 2006. In February, VanEck Uranium and Nuclear Technologies ETF (LSE: NUUG) joined the market. It puts greater weight on utilities and engineers, and also aims to cover innovations such as fusion technology and molten salt cooling as they begin to commercialise.

The financialisation of uranium markets is also proceeding apace. There are funds that stockpile uranium oxide, such as Yellow Cake (Aim: YCA) and the influential Sprott Physical Uranium Trust (Toronto: U-U). The latter has now sequestered more than 61 million pounds of uranium, including roughly two million in the first six weeks of this year. Yellow Cake has bought 1.35 million pounds so far this year.

Given this, it's not surprising that spot prices have moved up to more than \$50 a pound and that liquidity is drying up on the spot markets. On 12 January, one \$5m buy ticket moved the price 4% in a few hours, says Ocean Wall. Imagine what might happen if politicians were to follow through and ban Russian uranium imports.