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ENERGY SECURITY

The Start of the Uranium Bull Market and the Coming of the Second Atomic Age

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As populations have skyrocketed globally, the resources used to power modern life have become painfully stretched. Moreover, societies are increasingly concerned with the impact of pollution and climate change on the environment. As we sit here today, it is not hard to imagine that this century will be marked by energy wars and conflict until we find the right mix of clean energy solutions. Just ask the Europeans. Reliance on fossil fuels is not just a major climate issue, it's also a severe national security problem.

The war in Ukraine, combined with decarbonizing the energy sector in line with emission reduction goals, has given new importance to the term "energy security". Replacing oil with cheap coal and liquified natural gas (LNG) is not a long-term solution thanks to climate targets. Ramping up renewables like wind and solar will help but it's a strategy that comes with major challenges such as grid integrity.

Does the answer lie with nuclear power? Clean, reliable, and in the final stages of commercializing SMR technology, but it still has a public relations problem… or does it?

With strong signs of sentiment change, combined with new uranium ETFs in Europe, higher prices and tightening of the spot and term contract markets, a lot of smart money is starting to believe that a large chunk of the world's energy mix is trending nuclear. Here at The Oregon Group, we've dug into the stats, we've spoken with explorers, miners and traders, and in this report, we share what we've learned.

"Post-Fukushima, we had high levels inventory in the market which provided flexibility…that flexibility is now gone."
Laurent Odeh, CCO of Urenco (Sept, 2022)

"Users [of nuclear fuel] need to play a more prominent role in looking forward and understanding our new reality."
Agnieszka Kaźmierczak, Director General of Euratom Supply Agency (Sept, 2022)

"The issue is the cost of mining and whether utilities will be able to pay higher prices…there is, in absolute terms, enough uranium…however, there is less and less cheap uranium on the market…longer contracted uranium will become more expensive."
Askar Batyrbayev, CCO of Kazatomprom (Sept, 2022)

What's in this report

URANIUM AND NUCLEAR ENERGY BASICS

Uranium is a heavy metal with a variety of uses, such as aviation and nautical construction, as well as medicine. Due to its incredible energy density the bulk of uranium is used as fuel for nuclear reactors. To give some perspective, one uranium pellet creates the same amount of energy as one ton of coal, 149 gallons of oil or 17,000 cubic feet of natural gas[i].

Uranium deposits are found throughout the world but, in most cases, the grades are so low they are unviable for economic extraction. In terms of extraction techniques, they can be mined by underground, open pit or via in situ leaching (ISL) depending on the deposit geology. Once extracted, ore destined for nuclear fuel goes through several processing stages, including enrichment, before being turned into fuel pellets for the reactors.

Nuclear energy does not generate any greenhouse gas emissions and is therefore one of the cleanest forms of power generation in existence. Unlike other forms of clean energy such as wind and solar, nuclear reactors can run 24/7 and therefore provide baseload energy, which is vital for running power grids.

Table 1 Nuclear Power Reactors: World Top Ten Countries and Global

	Operable	In Construction	Planned	Proposed	Uranium Rqd
Canada	19	0	0	2	1492
China	54	22	42	152	9563
France	56	1	0	6	8233
India	22	8	12	28	977
Japan	33	2	1	8	1396
South Korea	25	3	0	6	4270
Russia	37	3	25	21	5925
Ukraine	15	2	0	7	1876
United Kingdom	9	2	2	10	1259
USA	92	2	3	18	17,587
GLOBAL TOTAL	437	59	100	334	62,496

Currently, nuclear provides about 10% of the world's electricity[ii] and, in doing so, prevents the emission of 2.1 billion tonnes of CO2 equivalent every year, which is generated by nearly 440 nuclear reactors. Another 60 reactors are under construction, 96 more are planned, and a further 332 are in the proposal stage[iii]. Belgium, Bulgaria, Czech Republic, Finland, France, Hungary, Slovakia, Slovenia, Sweden and Ukraine all get 30% or more of their electricity from nuclear reactors. The largest users of nuclear energy are the US, China and France.

In addition to the reactors owned by power utilities, another 220+[iv] research reactors are in operation around the world and are used to create radioisotopes for use in medicine, agriculture, food preservation, and industry. As well, 200+[v] small reactors are used to power a wide range of ships.

A Tale of Two Markets

Uranium is different to other commodities because it does not trade on an open market. Buyers and sellers negotiate contracts privately on either a spot or long-term contract basis. The main purchasers are utility companies that run nuclear power stations, and financial players that buy and sell on a speculative basis. Of these two, the utilities are by far the largest purchasers, and when we talk of the demand side, it's the utilities we are referring to.

> "Understanding the peculiarities of uranium pricing is the first hurdle for investors."

The Long-Term Market. Utility companies buy via long-term contracts that guarantee prices and product volume for years at a time. They do not typically publish details on their stockpiles and purchasing plans, which makes it harder (but by no means impossible) to accurately predict buying cycles.

The Spot Market. This is where funds and other major speculators play. As graph 1 illustrates, when the spot price moves, it can move fast and far in both directions. One of the oddities of the uranium sector is that, even though the vast majority of uranium trades via long-term contracts, equities tend to move in relation to the spot price. As table Y shows, while both markets have trended upwards over the last two years, the spot has been more volatile, which has been reflected in most uranium stocks. The spot market is notoriously thin and is just as opaque as the term market. This makes it vulnerable to financial players which in turn compounds its volatility.

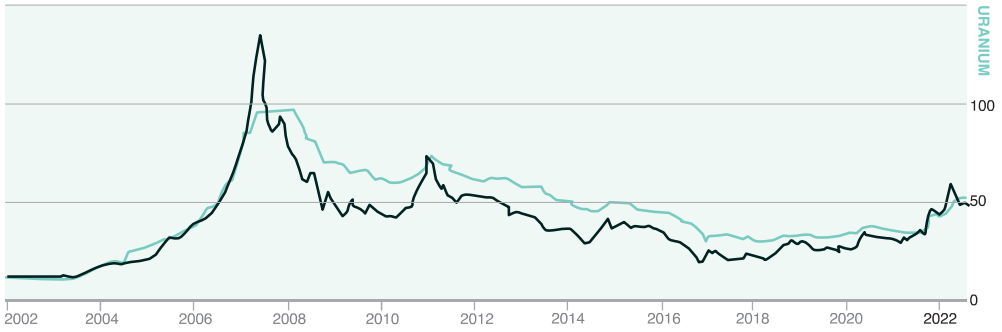
The SPUT effect. In 2021, the Sprott Physical Uranium Trust (SPUT) took over Uranium Trading Corp. and quickly set up an At-the-Market (ATM) funding mechanism, allowing them to sell stock into the market every day from the Treasury, receive the funds and immediately purchase uranium. During 2021 SPUT was responsible for around 25% of all spot purchases[vi]. They have been highly active, raising and spending over $1.1 billion to date. Such action, in the thin spot market, has meant the Trust has sucked up much of the loose supply and, as Sprott AM chief executive, John Ciampaglia, said: "We don't sell any of it. It is a stockpiling fund."

There are a couple of important things to note:

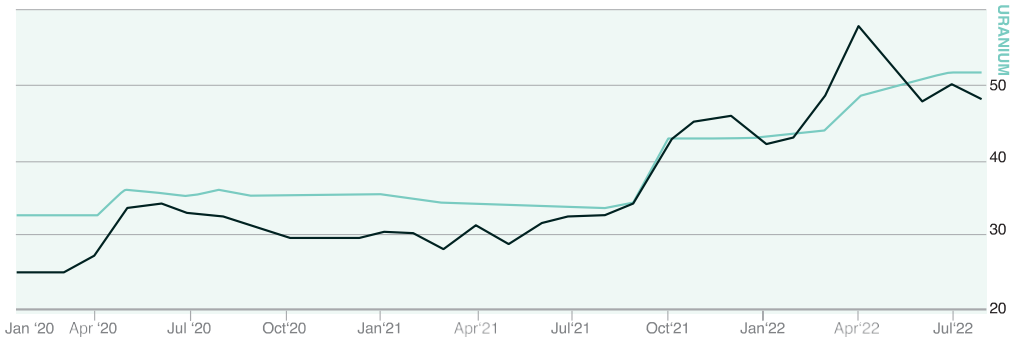
Firstly, SPUT can only use its ATM facility when its stock price is trading at its net asset value (NAV). When that price is below NAV it cannot purchase. This has left the spot market particularly sensitive to traders, including one financial player that unloaded their 1.3 million pound uranium inventory over a two-day period in May, 2022, pushing down prices aggressively.

Secondly, the spot market has tightened so much that it is affecting the long-term market pricing. At the WNA symposium in London this September, Kazatomprom's (KAP-L) CCO drew attention to the fact that the spot market was no longer available to utilities as a reliable alternative to signing long-term contracts. He cited tighter market conditions and highlighted contracting volumes have totaled +100Mlbs YTD and are on track to have their best year since 2012.

Graph 1
Uranium spot and long-term prices January 2002 – August 2022



Graph 2
Uranium spot and long-term prices January 2020 – August 2022



THE BIG TRENDS

Overview

After the Fukushima accident, a lot of doomsayers stated this was "the beginning of the end" for nuclear energy and, by default, uranium mining. Japan shuttered its large nuclear reactor fleet, China (temporarily) halted progress on its fleet expansion, and Germany announced it would phase out nuclear energy. Uranium prices cratered and investors couldn't get out of uranium stocks fast enough. While exiting the slump may have taken longer than some industry insiders had hoped, the facts governing supply and demand meant that recovery was always going to be a question of when and not if. So the sector finds itself in the early stages of a bull run and, we believe, it's a bull run that will be sustained over the long term, driven by powerful trends.

Climate change has given rise to wide scale decarbonization efforts by nations around the world, several of which, such as the UK, France, New Zealand and Sweden, have already enshrined their decarbonization targets in law. (Having reviewed their options for weaning off fossil fuels,) As we review in this report, the conclusion is clear: decarbonization is not possible in the required timeframe without expanding nuclear energy. Added to this is the reemergence of energy security as a dominant policy. The Russian invasion of Ukraine has created an international energy war and is now shining a very bright light on the advantages of nuclear energy.

Climate Change and the Net Zero Reality

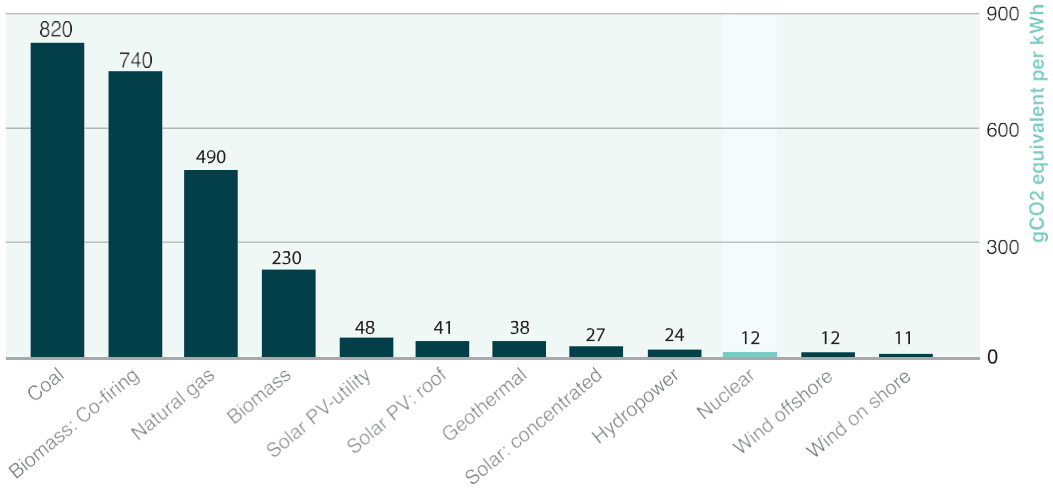
When it comes to carbon emissions, nuclear equals and, in some cases, outperforms renewable energy sources. Crucially, it is also available 24/7 and doesn't require high CAPEX energy storage solutions to improve its reliability.

As several US states have discovered in the past few years, adverse weather often prevents the proper operation of renewable energy plants. This is a problem as the vast majority of power grids are designed to use steady, baseload energy sources. Baseload supply is a benefit that the nuclear sector has been highlighting for many years and now, with climate change well underway, governments are finally realizing that renewables alone will not be enough.

FACT
As a source of clean, baseload energy, there is no direct replacement for nuclear energy.

So, as the world continues its transition to green energy, we are seeing dramatic, positive changes in public and political sentiment regarding nuclear energy.

Figure 1 Nuclear is Low Carbon (source IPPC)



Energy Security & Geopolitics

It's difficult to overstate the magnitude of the energy problem facing Europe. With a few notable exceptions (such as France), the EU allowed itself to become heavily reliant upon Russia's natural gas exports while it slowly transitioned to a low carbon energy mix. After the Ukraine war kicked off in February, 2022, the US and EU simultaneously hit Russia with sanctions and provided Ukraine with military equipment and supplies. In addition, Germany halted work on the Nordstream II gas pipeline from Russia. Inevitably, Russia responded by reducing and finally cutting the entire supply of gas to Europe.

Desperate for energy, many European nations are increasing coal usage to make up the shortfall. This of course is at odds with the bloc's commitment to net zero. Countries that had been planning to exit nuclear energy, like Belgium, have now u-turned and other countries, such as France and the UK, have announced plans to expand nuclear energy.

A big geopolitical win for the many Western nuclear utilities is that uranium can be easily obtained from safe, stable jurisdictions like Canada and the US.

That said, there is an issue with conversion and enrichment. Russia plays a dominant role in processing uranium for nuclear fuel with ~30% of conversion and ~40% enrichment (UxC, 2022). It is widely expected that there will now be a processing bottleneck as companies such as Urenco, which operates Western-based enrichment plants, are cut off Russian contracts.

Technological Evolution and SMRs

Nuclear power stations are not constructed overnight. These are $multi-billion, multi-year projects that have often suffered from cost overruns – hardly factors that support mass rollouts. That's where small modular reactors (SMR) come in.

As the name suggests, SMRs are small reactors comprised of modular components. They are designed to be constructed in a factory, shipped and then assembled on site. They include advanced, built-in safety features that can be mass produced. They are ideal for powering remote and small to midsized communities or large industrial installations, or chain ganged for major urban use.

SMR research has been underway for many years and has been hyped for just as long. Here's what has changed:

$Multi-billion R&D Race: Billions have been poured into SMR development over the last two years alone across countries including the US, China, UK, and Canada.

Internationally Certified SMR Technology: The SMR tech designed by US-based NuScale has now been certified in the US and internationally.

First SMR Factories: NuScale expects to begin manufacturing equipment in 2022 for full-scale production of SMRs. UK-based Rolls-Royce is in the final stages of choosing the location for the first of three SMR factories.

Commercial Deployment: "Commercial operation" is the signal that the sector has been patiently waiting for, and it has now begun. The first commercial SMR was connected to the grid by China in January, 2022, to lay the foundation for what will ultimately be the mass production of SMRs. Here are just a few of the other commercial projects in progress:

- In March, 2022, four Canadian provinces (Ontario, Saskatchewan, New Brunswick and Alberta) announced plans to have a micro reactor in service by 2026, followed by the first two grid-scale SMRs in 2028 and 2029 respectively. Ontario Power Generation has since stated it is on schedule to have its first two SMRs in operation by 2028

- Poland's VOYGR nuclear power plant projects that both Romania and Poland, in cooperation with NuScale, will develop six modules, each with an installed capacity of 77 Mwe

In total, UxC has forecast up to 17 new SMRs coming online by 2030, after which they believe the potential for more wide-scale deployment rises significantly.

THE TRENDS IN ACTION

Every week seems to bring more good news for the nuclear sector and it's impossible to cover every element here. Instead, we've touched on some of the top highlights.

JAPAN

In the aftermath of Fukushima, the Japanese public overwhelmingly rejected the idea of restarting their reactor fleet. In March, 2022, sentiment tipped the other way with a Nikkei poll showing a small majority (53%) of Japanese supporting nuclear energy. Just five months later, another poll showed that public support for restarting the reactors had increased to more than 60%. With public support in place, the Japanese government wasted no time. Announcements this year stated that the country would be restarting up to seven reactors within the next twelve months and that the government would now be investigating the potential for new reactors, including SMRs.

UNITED STATES

The US owns the world's largest fleet of reactors. As part of the $750 billion Inflation Reduction Act passed this year, the US is providing a range of climate related, financial incentives, including $30 billion in assorted tax credits for nuclear energy. In an interview with Fortune magazine in August of this year, Jacopo Buongiorno, professor of nuclear science and engineering at MIT, called the incentives "a game changer for the nuclear energy industry," A bold statement but we agree that they will give US nuclear a major boost.

- Tax credits worth up to $15 per megawatt hour from 2024 to 2032 for utilities with existing nuclear plants
- Tax credits of at least $25 per megawatt-hour for utilities that expand their nuclear output
- Investment tax credit of 30% of CAPEX for utilities that construct new reactors
- $700 million for the development and production of advanced nuclear fuel aka: High-Assay Low-Enriched Uranium (HALEU)

This last incentive is particularly important. The US is now taking steps to counter Russia's leading position in nuclear fuel production. The incentive also reflects the fact that new, advanced and small modular reactor technology has advanced to the point at which nuclear fuel processing capabilities need to increase.

CHINA

Over the years, when people have referred to the reactor construction boom, they've really been talking about China, which currently has a whopping 21 reactors under construction – nearly half of the total amount worldwide, in addition to 31 reactors in the planning stage and nearly 170 in the proposal stage. In 2020, the country overtook France as the world's second largest generator of nuclear energy.

This year, record-breaking heatwaves and droughts caused major disruption to hydropower plants on the Yangtze River, leaving millions of citizens and businesses without power. The changing climate has served as a sharp reminder that renewables have their limitations. In response, Chinese energy officials have vowed to speed up the country's nuclear energy rollout. To throw some more numbers into the mix, according to the data, China aims to build 150 new reactors in the next 15 years, which is equivalent to the number constructed globally over the last 35 years.

EUROPEAN UNION

In January, 2023, the European Union's Taxonomy Delegated Act becomes law. The relevance for uranium is that the Act has designated nuclear power plants as clean energy. Specifically, nuclear is now included in the "transitional" category of activities - ones that *"cannot yet be replaced by technologically and economically feasible low-carbon alternatives, but do contribute to climate change mitigation and with the potential to play a major role in the transition to a climate-neutral economy, in line with EU climate goals and commitments, and subject to strict conditions, without crowding out investment in renewables."* What that means is that nuclear energy projects can now access the vast sums of EU money provided for clean energy.

FRANCE

After years of procrastination and an ill-advised 2015 policy decision to limit its nuclear energy generation, the French government announced this year that €multi-billions will be made available to rejuvenate the country's huge but aging reactor fleet, additionally stating that another €50 billion would be spend on the construction of at least six new reactors.

BELGIUM

Having previously planned to exit nuclear power entirely by 2025, the Belgian government has announced a complete U-turn and will keep its nuclear power stations in operation.

SOUTH KOREA

During his election campaign, South Korea's new president, Yoon Suk-yeol, rejected the previous administration's plan to phase out nuclear energy and pledged to boost nuclear investment. Since coming to power, the government reversed the phase out decision and, in July of this year, announced a new energy plan which includes increasing nuclear energy to 30% or more by 2030.

Demand: Growing and more susceptible to price rises

The World Nuclear Association's (WNA) 2021 Nuclear Fuel Report shows a 27% increase in uranium demand over 2021-30 (for a 16% increase in reactor capacity), and a further 38% increase in uranium demand for the decade 2031-2040. These are healthy figures. However, we think there will be significantly more demand because the WNA forecast does not account for the recently announced additional restarts in Japan. Nor does it specifically include potential demand from SMRs. Admittedly, we're unlikely to see mass rollout of SMRs before the end of the decade but we do know for sure that countries such as Canada and China expect to have several operating, commercial SMRs in place before 2030.

To be fair on the WNA, they are fully aware that demand could easily outstrip their forecast. The report references the potential growth in electricity demand of up to 50% by the year 2040[vii] and its states that there is "plenty of scope for growth in nuclear capacity in a world concerned with limiting carbon emissions". It's a rather vague statement and if, like us, you like to see what "scope for growth" looks like, take a look back at the reactor chart we included on page XX. The "proposed" column refers to reactors that have been submitted to the relevant government agency in each country but have yet to be approved or rejected. That column shows 332 reactors globally which, when added to the number being built and in the planned stage, would more than double the number of currently operable reactors if they were all approved. In a world concerned with limiting emissions, and also with improving energy security, it's not unreasonable to consider a scenario in which a large number of reactors will move from that proposed column, into the planned and in construction column.

Underfeeding and underfeeding. Another major factor that needs to be considered on the demand side is the expectation that underfeeding will flip to overfeeding and that secondary uranium supplies will be quickly soaked up. Underfeeding/overfeeding is a somewhat complex subject but, at its most simple, it goes as follows: underfeeding is a technique that allows fuel processing facilities to consume less uranium by using longer processing times in order to achieve the required concentration for nuclear fuel. Overfeeding is the opposite: consume more uranium which allows for shorter processing times to achieve the same quantity of fuel. The reason for the flip is that demand is growing so fast, processing facilities have to speed up delivery times. For uranium investors, this is a good thing
.

Inventory Changes Have Created a Tighter Market

In the years that followed 2011, uranium bulls have regularly pointed out that utilities would be forced to come back to the market and that prices would quickly increase. It took almost a decade for those claims to finally come true.

In September, 2022, after the largest single period of contracting since 2012, leading nuclear fuel analysts, UxC, stated “The Era of Inventory Overhang is Over”.

What UxC meant is, not that the total level of global commercial inventories has shrunk, but rather the bulk of those stockpiles are now committed “off the market”. In other words, the number and size of so-called mobile inventories has shrunk, which in turn means a tighter market now and well into the future — also a good thing for uranium investors.

> As a result of heightened geopolitical risk, many utilities are shifting their contracting focus to the term market to meet unfilled needs in the second half of this decade, and utilities with existing Russian enriched uranium contracts are actively seeking replacement supplies in the market.
> UxC, August, 2022

Unexpected Short-Term Demand Spike (aka Japan)

With many utilities having come back to the market, analyst consensus was that global reactor requirements would remain steady through 2024, but that demand growth would kick in heavily from 2025 to 2040. As we’ve already mentioned, Japan’s government has announced the country will look to restart up to seven more reactors this winter, bringing the total restarts to 17. Furthermore, the country is looking at advanced reactor technology that could be used for constructing new reactors – a dramatic policy u-turn from recent years. On its own, these restarts would result in a welcome but perfectly manageable demand spike. However, any new demand from Japan will be occurring after the market has spent the last two years tightening to levels unseen in a decade. It’s yet another good thing for investors.

SUPPLY: THE COMING CRUNCH

Uranium has primary and several secondary sources of supply. The primary comes from production (mining). Mines in 2021 supplied around 56,961 tonnes of uranium oxide concentrate (U3O8) containing 48,303 tU, which met approximately 77% of annual requirements for utilities[viii]. The remainder came from secondary sources such as stockpiles and, as we've already covered, inventory overhang is now a thing of the past. That places mining very much in the driving seat.

The issue is that a decade of low uranium prices had the obvious effects on mining activities. These included Kazatomprom, the world's largest uranium supplier, cutting production by 20%; Cameco, the 2nd largest supplier shutting down its flagship McArthur River, the world's largest uranium mine; and Rio Tinto, one of the world's largest mining companies, all but exiting the uranium business by selling and winding down its uranium operations. Most important of all, investment for most new projects and expansions dried up.

In recent months, as the price recovery has become more apparent, Kazatomprom has decided to increase 2024 production to 90% of nominal capacity from the current 80% level. Furthermore, Cameco will be restarting production at its McArthur River mine and Key Lake processing plant. Restarting such a major operation is more technically complex and costly than many people realize, so it's a sign of the company's confidence in the market direction. Cameco and Orano Mining have also come together to buy out Idemitsu's stake in the Cigar Lake mine for the sum of C$187 million.

> "Given past cuts to primary production and inventory optimization by utilities and producers, the uranium market is rapidly becoming production-driven."
>
> UxC, Uranium Market Outlook, 2022

The ramifications of underinvestment are not yet widely appreciated.

Restarts and production increases aside, for most existing operations, little has been done in the way of expansion or replacement planning. Even Cigar Lake, the world's largest, high-grade uranium mine, only has 152.4 million pounds U3O8 of proven and probable reserves. At the current rate of production, that's a ten-year mine life for the "one of the best and most prolific uranium producing assets on the planet."(Cameco president and CEO Tim Gitzel). What is Cameco's plan for one of the world's most important sources of uranium? The company is going to reduce production from 2024 to "extend the mine life and evaluate the feasibility of extending the mine life beyond its current reserve base." So, Cigar Lake is going to pull back on annual output, and it may or may not still be operating by mid-2030's when uranium demand is going to be greater than ever.

Explorers and developers fared even worse than producers during the downturn. As a result, there are very few deposits advanced enough to enter production this cycle, and if you want those deposits to be in safe, highly stable jurisdictions, the list shrinks even further.

Uranium is among the most heavily regulated resource sectors in the world. From discovery to production can take well over a decade. On top of that, economic uranium deposits are incredibly hard to find. In fact, the bulk of supply and known reserves is concentrated in just a few regions: Kazakhstan, Australia, US, and Canada. Of these, Kazakhstan is the clear market leader.

So, although there are some advanced, well-funded projects with impressive economics in top jurisdictions — such as NexGen Energy, Denison Mines, and Fission Uranium in Saskatchewan, Canada — they have not yet commenced construction and will not be delivering material in the near future. Additionally, although Cameco's McArthur River is coming back online, UxC has clearly stated that established mines around the world are facing "dwindling reserves and falling grades", so much so that the cost of production for most existing uranium miners will rise within the next three years.

How much is that OPEX rise likely to be? Well, on an earnings call during 2022, Cameco's Tim Gitzel floated the number of $95/lb as the incentive price required for new production, so the implication is that operating costs are headed for sizeable increases. With today's uranium prices sitting around the low to mid $50's, that's also a major jump for equities that trade in relation to the price of uranium.

INVESTING IN URANIUM

The case for the future of nuclear energy and uranium is clear and with that backdrop, it's also clear the demand for new sources of uranium production both in the near term and over the long term is desperately required. This will ultimately drive the commodity price higher as well as the price for shares of companies exploring for, developing, and producing the yellow metal. We've outlined the main categories below and included some specific companies that we find interesting.

Uranium ETFs

Looking for uranium investment without a lot of heavy lifting when it comes to conducting research and making decisions regarding producers, developers, explorers and refiners? ETFs can provide that comprehensive exposure you may be looking for. It should be pointed out, however, that some of these ETFs are somewhat diluted when viewed solely from a uranium exposure perspective. Examples include:

Sprott | ETFs

Sprott Uranium Miners ETF

TICKER: URNM, PRIMARY EXCHANGE: NYSE

A US-listed Uranium ETF with total net assets of $866M, and which is primarily focused on the North Shore Global Uranium Mining Index (URNMX). The Index tracks the performance of companies that devote at least 50% of their assets to mining, exploration, development, and production of uranium, or holding physical uranium, owning uranium royalties, or engaging in other, non-mining activities that support the uranium mining industry. The URNMX Index is rebalanced semi-annually.

GLOBAL X

Global X Uranium ETF

TICKER: URA, PRIMARY EXCHANGE: NYSE

The Global X Uranium ETF (URA) provides investors with exposure to a broad range of companies involved in uranium mining and the production of nuclear components, including those in extraction, refining, exploration, or manufacturing of equipment for the uranium and nuclear industries.

VanEck

VanEck Uranium + Nuclear Energy ETF

TICKER: NLR, PRIMARY EXCHANGE: NYSE

VanEck seeks to replicate as closely as possible, before fees and expenses, the price and yield performance of the Uranium & Nuclear Energy Index (MVNLRTR), which is intended to track the overall performance of companies involved in uranium mining projects, construction, engineering and maintenance of nuclear power facilities, the production of electricity from nuclear sources, and providing equipment, technology and/ or services to the nuclear power industry.

Physical Uranium Trusts

While you can't just roll up and purchase physical uranium, you can invest in companies that specialize in exactly that. If you want direct exposure to the price of uranium, then physical uranium trusts are there for you.

Sprott Physical Uranium Trust

TICKER: U.UN, PRIMARY EXCHANGE: TSX

Typically referred to as SPUT, the trust is currently the world's largest physical uranium fund with ~56 million pounds of uranium (at time of writing). It is widely credited with having helped to drive up the uranium spot price and CEO, John Ciampaglia, has made clear that their approach to physical uranium is currently one of "buy and hold", because they see plenty more upside in prices. It's a liquid (and legal) way to own physical uranium and SPUT's At-the-Market (ATM) program is able to provide cost effective capital raises and potentially less disruption to the uranium market.

Yellow Cake plc

TICKER: YCA, PRIMARY EXCHANGE: LSE

It may be smaller than SPUT but Yellow Cake shares the same buy and hold strategy for its physical uranium holdings. One key advantage is the long-term contract with Kazatomprom, which enables them to acquire uranium at a pre-agreed price. In essence, this means Yellow Cake can acquire substantial volumes of uranium at undisturbed prices with direct shareholder benefit from any uplift in the uranium price.

Uranium Stocks

Juniors vs majors, explorers vs developers vs producers vs fuel processors.... Uranium stocks offer the chance for major value growth, however, the challenge for investors is how to position one's portfolio. This task can be daunting given that the number of companies in the sector has recently ballooned and with it, the difficulty distilling the real prospects for each of these companies. Below are a couple of notable companies occupying different roles in the supply chain and, following that, a short list of companies The Oregon Group considers interesting - each with its own unique value proposition - as part of a part of a basket approach to investing in the sector.

Producers

Kazatomprom JSC

TICKER: KAP, PRIMARY EXCHANGE: LSE

Kazatomprom is the world's largest uranium producer. The company runs the uranium production ins Kazakhstan, which overtook Canada and Australia in uranium production back in 2009 thanks to its low-cost, ISR mines. Risk-averse investors should bear in mind that the country sits adjacent to Russia and Ukraine.

Cameco

TICKER: CCJ, PRIMARY EXCHANGE: NYSE

One of the world's largest publicly traded uranium companies. It has assets on three continents, and its operations and investments span the entire nuclear fuel cycle from exploration to fuel manufacturing. Most recently, the company announced an agreement with Brookfield Renewable to acquire Westinghouse - which services about half the nuclear power generation sector and is the original equipment manufacturer to more than half the global nuclear reactor fleet.

Developers

All three of these developers are in the Athabasca Basin in Saskatchewan, Canada, and each has an advanced stage project.

NexGen Energy

TICKER: NXE, PRIMARY EXCHANGE: TSX

Flagship project (Arrow) is advancing at pace. It hosts a massive, high-grade deposit and has the potential to become one of the lowest cost (and largest) uranium producers in the world. It has an ambitious management and operations team, and it's a favorite with investors who want to get positioned with advanced developers.

Fission Uranium

TICKER: FCU, PRIMARY EXCHANGE: TSX

Fission's sole project (PLS) sits adjacent to NexGen's Arrow. It's big, high-grade and, like NexGen, has the potential for extraordinarily low-cost production. It doesn't have the size of NexGen's monster ore body but, uniquely amongst existing Athabasca deposits, it's near surface. Although the project is advancing at a steady pace, and has a highly skilled management team, the company is seen as a likely takeover target by its neighbor or one of the majors looking for a foothold in the Basin.

Denison Mines

TICKER: DML, PRIMARY EXCHANGE: TSX

Denison holds interests in a variety of Athabasca Basin projects, including the McLean Lake uranium mill. Its flagship is the Wheeler River project. Like the other advanced developer plays in the Basin, the project (which hosts two deposits) is large and high-grade. However, its advantages are that it's an ISR production play and it's on the east side of the Basin and therefore much closer to existing infrastructure.

Explorers

During the long uranium bear market, it was pure play explorers who suffered the most. Unsurprisingly, now that uranium is back in favor, newly listed explorers have and are continuing to flood the market.

As we mentioned at the start, uranium is not that rare but economic uranium deposits, even at today's higher prices, are another matter entirely. As for development time, if an economic deposit is found and delineated… well even with the expectation of a long bull run ahead, our feeling is that investors need to be extremely choosy when considering an early-stage exploration play because uranium mines are amongst the most heavily regulated in the world. Now, if that sounds overly biased against explorers, here's the reason to pick up one or two early-stage plays:

As we've already stated, research indicates that over the long term, assuming even moderate reactor growth, current and near-term production will struggle to meet demand due to falling reserves and grades. As the market for uranium and by extension uranium equities picks up, and funds become more readily available for exploration, new discoveries will be made and they stand to generate lottery ticket like returns for shareholders who have positioned early in those stocks.

We've included just one pure play explorer in our spotlight section that checks each of our boxes (jurisdiction, team, prospectivity, funding) but a few other stocks to look at would be as follows:

Baseload Energy

TICKER: FIND, PRIMARY EXCHANGE: CVE

A Canadian-based explorer with projects in the Athabasca Basin and a discovery made last year at its Ackio property. Ackio is 30 km east of highway and powerline servicing Cameco/Orano's Key Lake mill and McArthur River mine, and just 70 km northeast from Key Lake mill. The discovery holes have some wide intercepts of mostly low-mid grade mineralization, though there are some high-grade assays too. They have a lot of work ahead of them to find out if the deposit shows real promise but with a discovery in hand they've certainly proven that they have a skilled technical team and some of the risk is now off the table.

CanAlaska Uranium

TICKER: CVV, PRIMARY EXCHANGE: TSX-V

A self-styled project generator and active explorer. The company has early stage discoveries on three projects in the Basin – two of which are joint venture projects with Cameco and Denison respectively. It has a large portfolio and clearly has a competent team at the technical and management level. While it's still very speculative, it has also seen some de-risking due to the exploration success.

The following companies have been chosen for their individual strengths and potential upside, and also for the fact that, when viewed as an investment basket, they cover a full spectrum of investment options and risk preferences.

Mega Uranium

THE OREGON GROUP SPOTLIGHT COMPANIES

TICKER: MGA, PRIMARY EXCHANGE: TSX

Discounted Exposure to Hand Picked Uranium Portfolio

Mega Uranium represents a one-stop shop to get exposure to a diverse, hand-picked portfolio of uranium equites, all at a discount. Since its formation in 2005, Mega has undergone a complete change of business from a global project consolidator and developer to an investment company primarily holding equity positions in a select group of uranium companies. The emphasis on "select" is important because the company has hand picked its holdings in some of the top names in the sector and accumulated over the years by way of selling assets and making direct investments.

Mega has been able to pull this off because its management team have been behind some of the most successful companies in the sector; NexGen Energy (NXE:TSX), IsoEnergy (ISO:TSXv), Uranium Royalty Corp. (URC:TSX) and Consolidated Uranium (CUR:TSXv) among others. Exposure to Mega means exposure to these names, and others, plus exposure to new deals the company will inevitably uncover going forward.

The math on Mega valuation is simple. Its current market cap is approximately $80m. However, just its main equity holding of 19.5m shares NexGen Energy is currently (at time of writing) worth over $100m. Without even looking at the rest of the portfolio, investing in Mega at this point would be like buying NexGen at a 20% discount to the current market price. When you include the rest of the portfolio the discount balloons to nearly 40%!

To be clear, Mega will always trade at a discount because that's the nature of holding companies. If you compare it to the two large ETFs in the uranium space, URNM and URA, they typically trade at less than a 1% discount to NAV, which means at this point in time, in the opinion of The Oregon Group, Mega represents a bargain and a potentially very attractive way to get into, or increase exposure to, the anticipated upside in the uranium market.

Here are a few figures to start with

Company	Ticker	Exchange	Shares		Price		Value
NexGen Energy Ltd.	NXE	TSX	19,476,265	$	5.27	$	102,639,917
Toro Energy Limited	TOE	ASX	460,312,778	$	0.015	$	6,864,313
Uranium Royality Corp.	URC	TSXV	1,528,000	$	3.17	$	4,843,760
Consolidated Uranium Inc	CUR	TSXV	4,721,826	$	1.83	$	8,640,942
Labrador Uranium Inc.	LUR	CSE	4,310,522	$	0.44	$	1,896,630
Green Shift Commodities	GCO	TSXV	6,129,576	$	0.125	$	766,197
				Total		$	125,651,758
				Market Cap		$	78,966,000
				Discount			37.2%

Consolidated Uranium

TICKER: CUR, PRIMARY EXCHANGE: TSX V

THE OREGON GROUP SPOTLIGHT COMPANIES

Global Uranium Developer with Focus on Near Term Production in the US

In the bull market of 2006/2007 when the uranium price skyrocketed to over $130lb in just a few months, it was companies with projects ready to deliver uranium in a short period of time, that saw some of the greatest growth in value. Investors were particularly support because these companies were able to enter attractively priced offtake agreements with utilities and therefore traded at premium valuations. CUR's management team, with a background in uranium spanning decades, has built this knowledge into their core strategy.

The company has acquired select projects in the US that produced during the last bull run and those same projects are currently on care and maintenance. Crucially, CUR already has key state and federal operating permits in place, meaning the projects can be put back into production in a relatively short period of time, and for what the company estimates will be a very low capital cost relative to its peer group. Of equal importance, thanks to a smartly negotiated toll milling agreement with Energy Fuels, CUR is the only junior with a clear, ready made pathway to production in place.

It's also worth noting that CUR's team believes that, as a uranium developer, Diversification is Critical (in other words "don't put all you eggs in one basket". Historically speaking, single asset uranium companies fall into a higher risk category as numerous jurisdictions have imposed moratoriums/bans on uranium exploration and mining and have even gone as far as expropriating uranium projects from their owners. In most cases, the companies and investors were completely blindsided by these events and equity prices crumbled overnight. Reducing this risk was paramount when CUR began its consolidation strategy and to date it has amassed an impressive portfolio of 17 projects in 4 countries (the US, Canada, Australia and Argentina), all of which are top mining jurisdictions. Each of these countries has either a strong mining code, existing uranium mines and has operating nuclear reactors and, in some cases, all three which makes them some of the most desirable jurisdictions for developing new or restarting uranium mines.

Back the Jockey: In line with our strong preference for top management and technical talent, CUR is of additional interest to us because it was originally founded by leadership behind NexGen Energy and Mega Uranium and its management team has worked on, invested in and personally visited over 100 uranium projects around the world. Moreover, CURs board brings deep finance and M&A experience as well as technical expertise.

Despite CUR rapidly positioning to be a leading, diversified producer it trades at a discount to its peer group – a circumstance that we feel is poised for change as more investors become aware of its projects, people, and potential.

Labrador Uranium

TICKER: LUR, PRIMARY EXCHANGE: CSE

THE OREGON GROUP SPOTLIGHT COMPANIES

De-risked Exploration – aka Hunting for Elephants in Elephant Country

For investors looking for that higher risk, higher reward investment, then exploration plays are where it's at. We are very choosy when it comes to explorers that we are interested in. We want to see a skilled team – both at the technical and management level. We want to see them active in the right jurisdiction. We want one or more projects with strong potential, and we also want to see that they have the funding to roll out aggressive exploration programs. With that in mind, we consider Labrador Uranium to be a case study of a purpose-built, uranium exploration company with many of the advantages needed for success.

LUR was spun out of Consolidated Uranium and has assembled an impressive group of experienced exploration geologists - both in uranium as well of other metals. In particular, the team has considerable local knowledge, which not only benefits the technical activity but also helps with any community relations and permitting. The board adds decades of uranium industry expertise as well as strength in the financial and public markets.

The CMB project, in central Labrador, Canada, and comprises one of the largest land packages in any junior explorer (152,000+ hectares). Importantly, it hosts a substantial historic uranium/vanadium resource, drilled off by a previous operator and therefore offers de-risked exploration exposure. On the same, lower risk theme, the property sits immediately adjacent to the Michelin project - one of the largest undeveloped uranium deposits in the world and owned by Paladin Energy of Australia - a producer with the financial and operations might to advance to production.

Labrador is a jurisdiction with existing mines producing a wide variety of metals. Local and provincial government support actively encourages investment in resource development. It may not be Saskatchewan's Athabasca Basin but the fact that so many exploration companies are flocking to Labrador speaks volumes about the prospectivity and the attractiveness of this pro-mining region.

LUR is well funded having raised nearly $20 million in equity. It has just finished its maiden drill program focused on testing near resource targets as well as testing new geological models following a detailed review of decades of exploration data in the camp. We expect to see the company move forward briskly with its next work program.

Green Shift Commodities (formerly U3O8 Corp.)

TICKER: GCOM, PRIMARY EXCHANGE: TSX-V

THE OREGON GROUP SPOTLIGHT COMPANIES

Uranium and a Lot More

Greenshift is a uranium explorer/developer with its flagship Berlin project in Colombia, rich with uranium mineralization. It hosts a deposit backed by an historic preliminary economic assessment (PEA), which highlights thick mineralization with “remarkable continuity” and a minimal mine footprint. Since the deposit is already at an advanced stage, there is clear potential to reduce the Capex and Opex outlined in the PEA, and also to realize revenue streams for other rare earths contained in the deposit.

It's this last point that particularly peaks our interest. One of the reasons that additional nuclear energy is required over the coming decades is that, as car owners gradually switch from gas powered cars to electric vehicles (EVs), we are going to need a lot more clean energy to cope with the power demands when everyone plugs in their cars every night.

The fact that Green Shift’s deposit also contains phosphate, nickel and vanadium - each an important component of battery chemistry – means the company also provides exposure to the burgeoning batter industry.

We don’t want to get sidetracked by a discussion about EV battery chemistry, but we will point to a recent Barron’s article that empathically claims, that as auto makers are looking for different batteries to control costs “The battery that is taking over is lithium iron **phosphate**, or LFP”. Looking outside of the EV market renewable power increasing requires large grid storage batteries to take in power when its generated (when the wind blows or the sun shines) and then discharge it when consumers require it (at night or when the wind is not blowing). One of the most promising technologies for these types of batteries is the VRB (**vanadium** redox battery) or VFB (**vanadium** flow battery).

THE OREGON GROUP PROJECTIONS

Based on the data available, sustained growth of nuclear energy over the long term looks to be assured. Change of global sentiment – government and public – in favor of nuclear energy, numerous new build announcements, life extensions for existing fleets, and the commercialization of SMR technology, all combining as power growth drivers. On the supply side, we see a sector struggling to emerge from a decade of underinvestment, M&A activity, and warnings from leading producers that prices must rise significantly to incentivize a new production.

The last two years have seen uranium equities rise substantially in value. Based on uranium price rise predictions, we believe that those prices – particularly the term contract pricing through which most uranium is bought and sold - still have a long way to go before they peak. As they rise, so too will equities. While a swarm of new listed companies (explorers in particular) does make it harder for first-time uranium investors to identify de-risked, high reward stocks, we feel there are still a number of opportunities at various risk levels, with attractive entry points.

The Bottom Line

We are in the early stages of what should be an extended uranium bull run. If you are not already positioned, now is the time to consider getting involved.

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