Capital Markets
Canaccord Genuity

Global Equity Research
25 September 2023

Target Price Changes

Specialty Minerals and Metals

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Company	Rating	Price	Target
Specialty Minerals and Metals			
BMN-ASX	Spec Buy	A$2.47	A$3.59↑
previous			*A$3.33*
BOE-ASX	Spec Buy	A$4.50	A$4.73↑
previous			*A$4.28*
CCO-TSX	Buy	C$53.90	C$60.00↑
previous			*C$56.00*
DML-TSX	Spec Buy	C$2.19	C$3.25↑
previous			*C$3.00*
EFR-TSX	Spec Buy	C$8.42	C$12.50↑
previous			*C$12.00*
EU-TSXV	Spec Buy	C$4.33	C$6.00
FCU-TSX	Spec Buy	C$0.88	C$1.40↑
previous			*C$1.30*
LOT-ASX	Spec Buy	A$0.25	A$0.45↑
previous			*A$0.39*
NXE-TSX	Spec Buy	C$8.23	C$11.50↑
previous			*C$10.75*
PDN-ASX	Buy	A$0.99	A$1.23↑
previous			*A$1.15*
PEN-ASX	Spec Buy	A$0.11	A$0.22↑
previous			*A$0.20*
SLX-ASX	Spec Buy	A$3.24	A$5.42↑
previous			*A$5.00*
U.UN-TSX	Buy	C$23.24	C$28.00↑
previous			*C$22.00*
UEC-NYSE	Spec Buy	US$5.20	US$6.50
URC-TSX	Spec Buy	C$3.89	C$6.25↑
previous			*C$6.00*
YCA-AIM	Buy	548p	635p ↑
previous			*530p*

Priced as of close of business 22 September 2023

Uranium | H2 2023 update

Uranium equities are up ~16% in the last month on the back of positive price momentum with the spot price currently sitting at US$70/lb (per UxC), a 12-year high. In our view, the market remains in a structural deficit, and with secondary supplies on the decline and inventory levels near recent lows (or immobile), we remain fundamentally bullish on the sector. In this report, we update our supply, demand, and pricing forecasts, as well as summarize reasons for the recent move and key sector themes that we will be watching into the remainder of this year.

Increasing our demand forecasts: In our base case demand scenario, we now expect total nuclear capacity to grow at a CAGR of ~3.6% through 2030 and ~3.2% through 2035. This equates to a 30% increase in annual uranium demand through 2030 and 46% through 2035. This growth is principally driven by new reactor builds in China/India but also supported by life extensions in the West. Conservatively, our forecast does not, at this point, include the deployment of small modular reactors.

Primary mine supply is growing, but expectations remain beset with risks: Success in long-term contracting and higher prices have supported near-term growth in primary mine supply. However, we still foresee risks to bringing new supply online at targeted rates given ongoing supply chain issues and labour constraints. At the same time, current mine supply continues to be challenged; recent developments include a military coup in Niger (~4% of supply), restart delays, and lower production guidance at CCO's Athabasca projects. In our view, greenfield projects remain imperative for the market to reach balance, many of which still face permitting, technical, and funding risks. In our view, we are now firmly in a sellers market.

Term contracting volumes on track to surpass 2022 volumes: As predicted in our 2023 outlook, this year is shaping up to be another strong year for term contracting. UxC has reported that ~121mlbs have been put under long-term contract YTD, which compares to a total of 114mlbs in 2022 (the highest level in 10 years). History suggests that contracting begets more contracting, and if history repeats itself, we are on track to outpace 2022 volumes (and finally achieve above replacement rate). Based on our discussions with market participants, utilities are expected to remain active in the market in H2, with ~10 RFPs expected to hit before YE (mainly US and EU utilities).

Physical funds back in action: Physical funds have largely been on the sidelines in 2023, with major player SPUT stacking only 2.6mlbs YTD, a steep decline from the 17.9mlbs stacked in 2022. However, with renewed sector momentum, we believe physical funds are set to return to the market and compete with utilities for pounds in what is already an extremely tight market. Indeed, our discussions with industry players indicate that it would be nearly impossible to purchase 500,000lbs from one single entity today. Furthermore, if ~1Mlbs of demand were to emerge with a short delivery window, it would likely take weeks to fill and would lift the spot price considerably. In our view, any additional buying by physical funds could result in a rapid rise in prices.

Price deck and target price changes: We have updated our estimates to reflect our latest price forecasts (Fig. 20/21). In the near term, we see potential for the spot price to continue its upward trajectory as demand moves upstream. We have increased our global long-term price to US$75/lb (from $65/lb) to reflect increasing marginal costs of production as the result of the current inflationary environment. We have also maintained a Western premium in our forecasts, leading to an effective price of $80/lb for most of our coverage. On average, our target prices have increased 9%.

Equity positioning and top picks: With market sentiment improving, term market activity rising, and the market tightening, we believe investors should be seeking increased leverage by adding positions in the miners/developers. Our preferred equity exposures are NexGen Energy and Denison Mines in North America; Paladin Energy and Lotus Resources in Australia; and Yellow Cake plc in the UK. For more US specific exposure we prefer Uranium Energy Corp. and enCore Energy.

For important information, please see the Important Disclosures beginning on page 18 of this document.

Uranium | H2 2023 update

2023 is shaping up to be another standout year in the uranium market. Pricing momentum has exceeded our expectations on the back of rising demand, tight supply, and growing security of supply concerns amongst utilities. In our view, the market remains in a structural deficit. In 2022, total primary production of 129mlbs U_3O_8 was well below reactor demand of ~178mlbs U_3O_8, with secondary supplies and inventory making up the shortfall.

However, as we describe in this report, secondary sources of supply are on the decline and inventory levels are near recent lows (in the US and EU) or immobile, suggesting an immediate need for new primary mine supply. At the same time, current mine production continues to be challenged; recent developments include a military coup in Niger (~4% of global supply), and lower production guidance from the world's second-largest producer Cameco, given ongoing issues at Cigar Lake and the Key Lake mill.

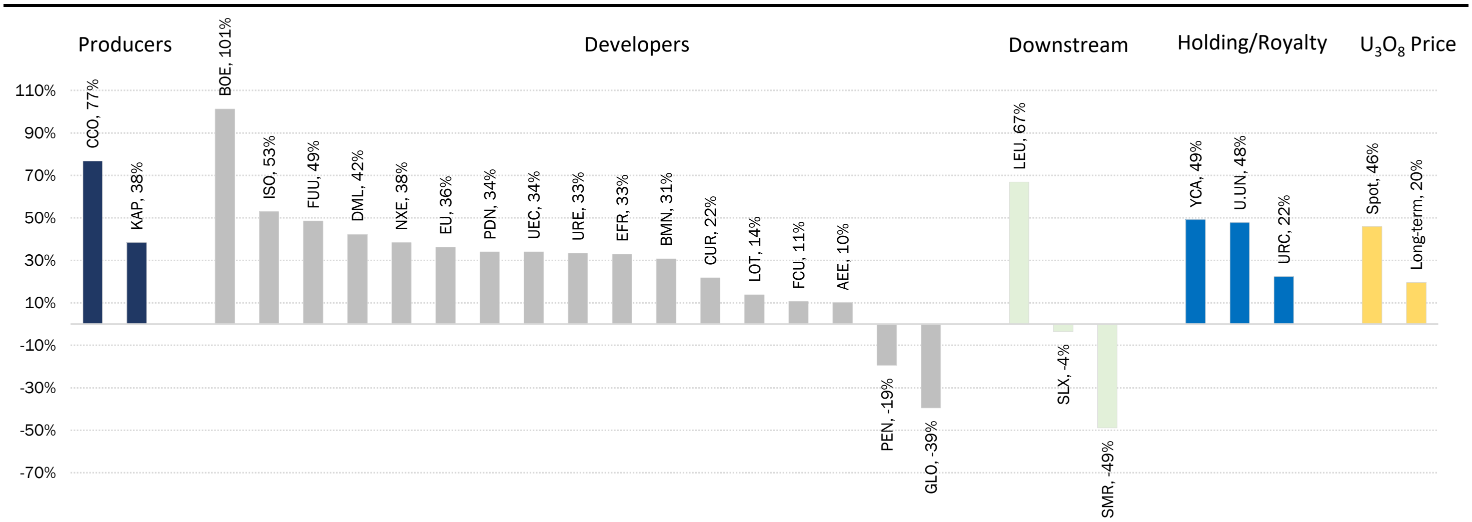
As a response to current market dynamics, the spot price has continued its upward trajectory, with the price currently sitting at US$70.00/lb, its highest level since early 2011 (pre-Fukushima, +46% YTD). The uranium equities have followed suit, returning an average of ~29% year-to-date.

Over the last 18 months, Russia's invasion of Ukraine has acted as a catalyst for the beginnings of structural shifts in energy markets, with a bifurcation of the uranium market becoming increasingly apparent. This geopolitical uncertainty and its impact on the nuclear fuel market has been better reflected in spot SWU and conversion prices, which have continued their trend higher (Figures 15 and 16), as utilities looked to reduce their reliance on Russia for their downstream services.

In our view, as utilities get more comfortable with their contract book for conversion and enrichment, we are seeing focus shift back towards securing physical uranium (U_3O_8) via long-term contracts. This has resulted in a material increase in long-term contracting and a rise in the term price to US$61/lb, its highest level in more than 10 years. This is also a trend that we expect to continue through H2 2023.

In this report, we update our SxD modelling and price deck, address key sector themes, which are driving near-term investor sentiment and equity performance, revise our estimates and target prices, and reiterate our top sector picks.

Figure 1: Performance of select uranium equities and pricing over 2023

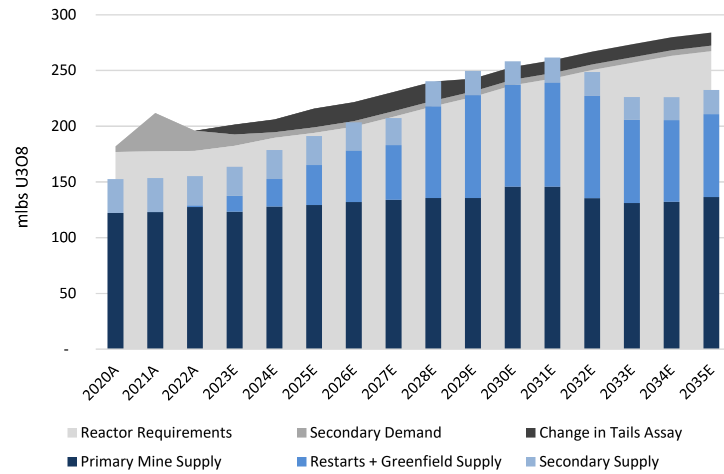


Source: Factset, UxC LLC, Canaccord Genuity estimates

Figure 2: U_3O_8 spot price history (2005 – current)

Source: UxC LLC

Figure 3: CG supply demand forecast



Source: UxC LLC, World Nuclear Assoc, Company Reports, Canaccord Genuity estimates

Demand - Nuclear power back in focus

Conventional demand for uranium remains extremely robust. As a low-carbon, reliable source of baseload energy, nuclear power is increasingly being viewed as critical to global decarbonization and energy security. Global nuclear capacity currently stands at ~392GWe (from 436 operable reactors) and there are currently 60 new reactors under construction in 17 counties (~67GWe). These reactors supply ~10% of the world's electricity needs and account for ~25% of the world's low-carbon electricity production.

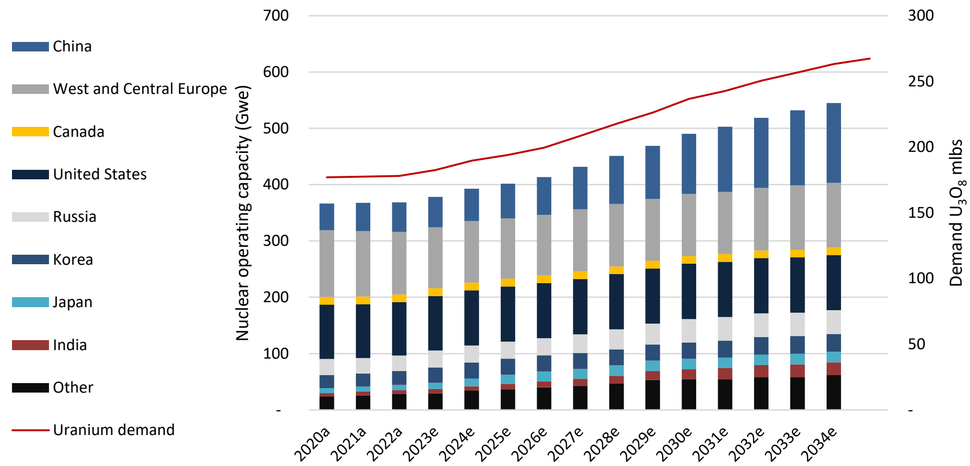
In our base case demand scenario, we expect total nuclear capacity to grow at a compound annual growth rate (CAGR) of ~3.6% through 2030 and ~3.2% through 2035. This is relatively in line with the World Nuclear Association's Nuclear Fuel Report (published in early September), which projects 3.6% annual growth in its Reference Scenario through 2040, a notable increase above the 2021 Fuel Report projection of 2.6%. Key drivers of the durable demand outlook include:

- New builds, especially in China and India which make up more than 50% of our projected new builds through 2035. In China, it is worth noting that we continue to be more conservative on demand, modelling ~107GWe of capacity by 2030 vs. the country's 14th Five Year Plan target of 120Gwe (and 150Gwe vs. target 200Gwe by 2035).
- Extensions of planned operating lifetimes: Over the last two years, several countries, including Canada, Russia, and the United States, have announced that they are allowing their existing plants to operate for up to 60 or 80 years, from 40 years previously. In our view, these extensions make economic sense (high initial capex/low fuel costs), especially in light of the positive operating performance of existing plants.
- Restarts, with Japan announcing that it will accelerate the restart of its idled nuclear reactors, with 15 currently at various stages of restart approval. This is in addition to the 10 that have already restarted.
- Small modular reactors (not yet in our forecasts): Governments continue to express strong support for small modular reactors and microreactors (~300Mwe and less), with funds being allocated towards their commercialization. In our view, SMRs could result in significant upside demand beyond 2030. However, at this time, it is very difficult to accurately project demand, so we have conservatively left this impact out of our model. See our 2023 outlook report for a more detailed view on SMRs.

Uranium demand revisions

Our latest demand forecasts by region are summarized in Figure 4 below. Based on reactor consumption levels, we project a 30% increase in annual uranium demand through 2030, and a 46% through 2035 (vs. ~192mlbs in 2022).

Figure 4: CG forecast nuclear capacity by region



Source: World Nuclear Association, Canaccord Genuity estimates

Secondary demand – Physical funds back in action?

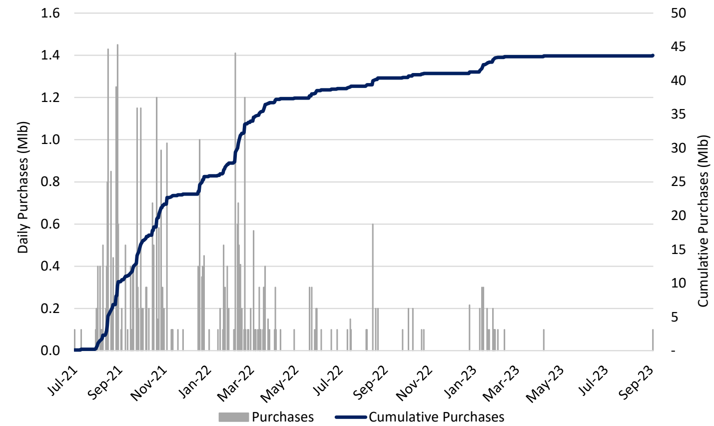
After months of trading at a steep discount, the Sprott Physical Uranium Trust (SPUT) has substantially recovered over the last several weeks and is now finally trading at a slight premium to its Net Asset Value. As seen in Figure 6, SPUT has successfully traded at a premium for 5 out of its last 10 trading days, which has translated into raising ~C$58 million. However, very little of this capital has been deployed to purchase pounds - SPUT purchased only 100,000 pounds last week, its first activity in the market in almost 5 months. Based on our discussions with Sprott and WMC Energy, the spot market is exceptionally thin and as a result, it would be nearly impossible to purchase 500,000 pounds from one single entity today. Furthermore, if ~1Mlbs of demand were to emerge with a short delivery window it would likely take weeks to fill and would lift the spot price considerably. In our view, this suggests that any additional buying by SPUT (or other physical funds) in 2023 could result in a rapid rise in prices, especially if the Trust maintains a consistent premium to NAV.

On September 5, SPUT issued a new base shelf prospectus, which included the announcement of proposed changes to its current structure. These proposed changes include the potential introduction of a limited redemption feature. In our view, this represents a pivot in strategy from when the Trust first launched, a time when there was more uranium floating around the market and SPUT wanted to lock-up pounds specifically without a redemption feature to tighten supply.

However, we do not believe that the redemption feature should be viewed as a negative (i.e., a way to easily bring pounds back into the market). Rather, the redemptions are expected to be capped (e.g., 5% of AUM) and only occur 1 to 2 times per year. Furthermore, unit holders would need to take title of the redeemed pounds and would therefore require an account to be able to store physical in one of few secured locations (e.g., ConverDyn, Cameco, etc). Accordingly, we believe it will be difficult for financial players to make use of the redemption feature tactically (given the time lag and small quantities available). Rather, we see the redemption feature as a possible option for utilities to buy units of the Trust to be able to access small amounts of material in the event that they are short pounds in the future.

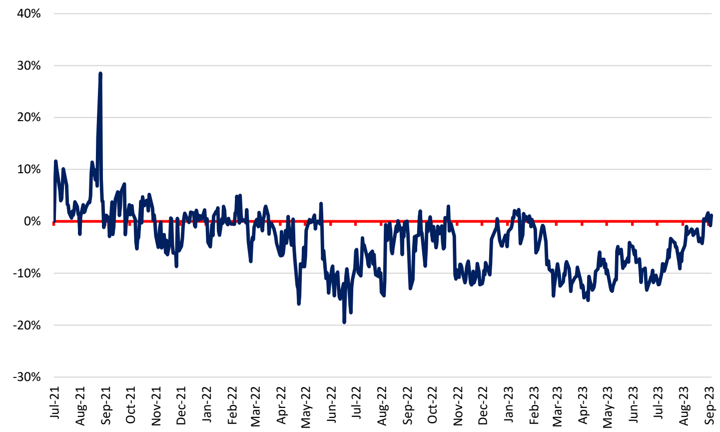
Over the remainder of the year, we'll also be watching Yellow Cake plc, Zuri-invest, ANU Energy, and other uranium holding companies to see if they raise money to purchase more physical.

Figure 5: SPUT daily and cumulative purchases (since inception)



Source: Company Reports, Canaccord Genuity

Figure 6: Historical premium/discount to NAV

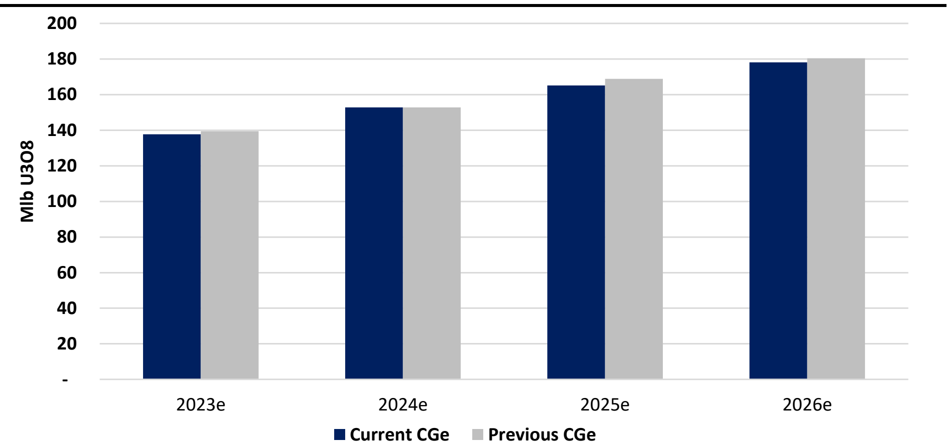


Source: Company Reports, Canaccord Genuity

Primary mine supply – YoY growth expected, but medium-term supply expectations remain beset with risks

Success in long-term contracting and higher prices (as detailed below) has supported growth in primary mine supply. In 2023, we expect primary mine supply to grow ~7% year-over-year to 138mlbs U_3O_8, largely driven by the restart of Cameco's McArthur River mine. In 2024, we project another increase to 153mlbs, followed by ~165mlbs in 2025. Most of these increases are related to mine restarts (Langer Heinrich, Honeymoon, various US projects) as well as increased production out of Kazakhstan as Kazatomprom (KAP-LSE | Not Rated) plans to raise production from 20% below its Subsoil Use Contract level of ~74.6mlbs U_3O_8 to 10% below in 2024. The company is also expected to announce its 2025 production target imminently. Our near-term supply revisions are illustrated in Figure 7 below.

Figure 7: CGe near-term revisions to primary mine supply; modest declines reflect announced project delays



Source: Company Reports, Canaccord Genuity estimates

<u>However, we still foresee some risks to bringing this supply online at targeted rates:</u>

- In Kazakhstan, Kazatomprom acknowledged that "although [its] year-over-year production increase from 2023 to 2024 is modest, the Company may face significant challenges to any increase above current production levels, based on the current state of global supply chains and the availability of key operating materials."

- In the United States, companies with projects that are in the process of restarting production (URE's Lost Creek, EU's Rosita, and Alta Mesa) have also cited supply chain issues and labour constraints (turnover & challenges getting staff) as reasons for delays.

Beyond this, current supply also continues to be challenged, as evidenced by:

- A military coup which commenced in Niger in July, increasing uncertainty in a country which currently produces ~4% of global supply.
    - This development has led Orano to pause production at its Somair project for an undisclosed period of time (~5.2mlbspa). We've reduced our 2023 forecast production by 10%.
    - The coup has also created uncertainty around Global Atomic's Dasa project, which we had previously assumed would come online in 2024 (now delayed to 2025). If issues in country persist or worsen, this timeline could be impacted.
- Ongoing production challenges at Cameco's Cigar Lake mine and Key Lake mill, which led to recent downward guidance revisions (see note here).
- The delay of Peninsula Energy's Lance project, which was expected to produce in 2023, but has since been forced to reassess its timeline to production following the termination of its previous processing agreement with UEC (see note here).
- A potential disruption of the transportation of nuclear materials out of Kazakhstan, as most uranium (ex-China) is shipped through Russia. Earlier this year, there were concerns around the ability to obtain insurance coverage for these shipments. While these issues seem to be resolved for now, any future issues could be very impactful on the market. An alternative route, called the Trans-Caspian (Figure 8), was tested late last year, but the market is still anxious to see whether this route is a long-term reliable solution. One successful shipment was made earlier this year, but it experienced significant delays (and presumably higher costs).

Figure 8: Nuclear fuel transportation routes out of Kazakhstan

Source: Company Reports – Kazatomprom

… and more production is still needed

While we are encouraged by announced production increases at existing operations, our updated supply/demand forecasts indicate that this production alone will not be enough to satisfy longer-term demand.

Advanced greenfield projects will also need to come online, some of which are still at risk of delays given technical, permitting and funding challenges. While we forecast some of these projects coming online before the end of this decade (e.g., NXE's Arrow, DML's Phoenix) to help rebalance the market, we also acknowledge previous challenges in bringing on new large-scale uranium supply. For example, the Cigar Lake mine flooded twice during its construction leading to several delays. First production was eventually achieved in 2014, a seven-year delay from its original target of 2007. Based on our conversations with utilities and other market participants, risks to supply are increasingly being recognized.

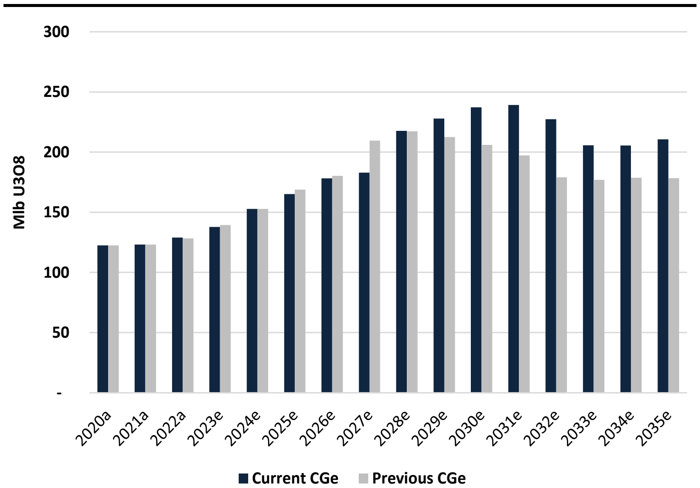
Uranium supply revisions

We present our updated primary mine supply forecasts in Figures 9 and 10 below. Through 2035, our modelled supply has increased by an average of 8% (Figure 9), comprised mostly of restarts, advanced greenfield projects, and increased capacity in Kazakhstan (i.e., Budenoveskye). We estimate average annual supply growth of 8% (CAGR) out to 2030.

Our current pipeline suggests growth through to the end of this decade, but declining supply thereafter based on current identified sources of supply, and reserve depletion of existing mines in operation. However, in order to meet uranium demand going forward, we will need some combination of higher prices to incentivize lower-tier projects, increased (and timely) investment, and increased exploration efforts to discover new deposits.

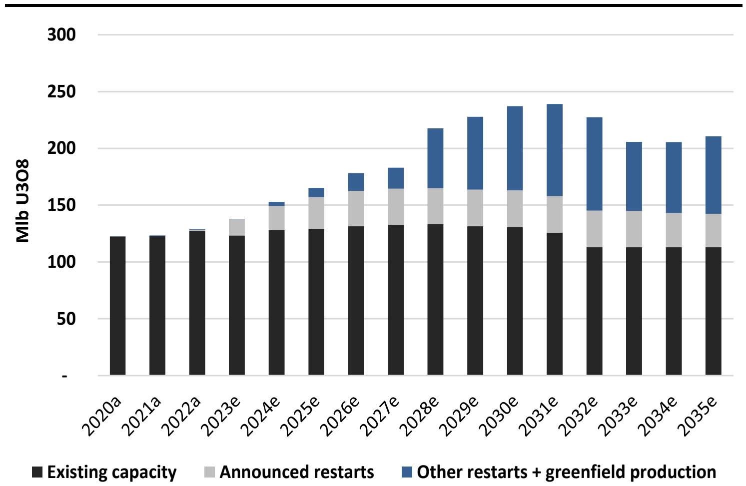
For existing producers and restart projects, our production numbers have been updated to reflect the most recent company guidance with some added conservatism where we deem appropriate. In 2023 and early 2024, we will be closely watching the operating cost performance at a number of restart projects, especially those in the US that have outdated technical reports. We would not be surprised to see costs come in higher than expected, especially given the current inflationary environment. This data will help inform our marginal cost of production forecasts and price deck going forward.

Figure 9: CG forecast mine supply vs. previous



Source: Company Reports, Canaccord Genuity estimates

Figure 10: CG forecast primary mine supply by type



Source: Company Reports, Canaccord Genuity estimates

Secondary supply is also on the decline

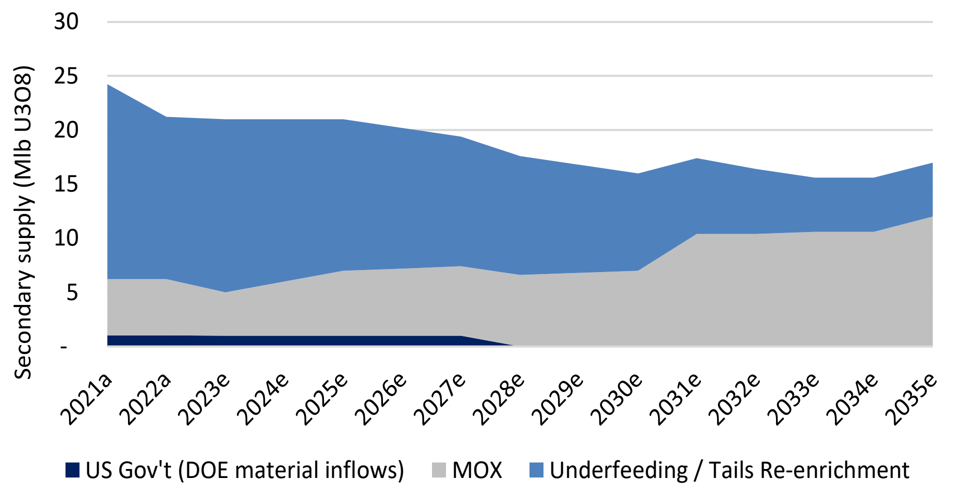
We maintain our view that secondary supply will ultimately shrink toward ~20mlb per year in the long term, down from ~26mlb currently (meeting ~15% of demand). This will only further increase reliance on primary production to meet growing reactor requirements.

As a reminder, specified secondary supply is derived from a variety of sources, with the most volume coming from underfeeding, re-enriched depleted uranium, and mixed uranium and plutonium oxide (MOX) fuel. However, we expect recent increases in enrichment demand and SWU prices to reduce the viability of underfeeding going forward (especially in the West), with separative working units now priced at US$138, up from US$60 early last year.

As explained in our 2023 outlook, global enrichment overcapacity historically resulted in ~18mlbs U_3O_8 per annum from underfeeding. We expect this number to decline to a mere ~5mb by 2030. These forecasts assume a shift towards overfeeding in the West, while Russian facilities continue to underfeed.

This decrease in underfeeding and tails re-enrichment is expected to be slightly offset by an increase in recycled uranium and plutonium as MOX fuel is expected to play a more significant role in the latter half of this decade compared to its current share of secondary supply (~20% - Figure 11). In our forecasts, we also now include ~5mlbs of new secondary supply coming from the re-enrichment of DOE high assay tails by Global Laser Enrichment (GLE) over the next decade.

Figure 11: CG forecast secondary supply



Source: WNA, Canaccord Genuity estimates

The inventory overhang is over

As reactor demand continues to grow and supply remains challenged, pressure on existing inventory levels is only increasing, and data suggests that the era of inventory overhang is over. As a result, we believe that the uranium market is transitioning away from being inventory-driven to production-driven, with pricing now being dictated by the cost curve.

Inventories are held by different industry players for different uses, with commercial volumes held by national utilities for direct use in reactors making up the bulk of the stock. Based on our research, current holdings by country are as follows:

- United States - The EIA reported that US utilities held ~104mlbs at the end of 2022 (-4% yoy), or approximately 2 years of forward coverage. Inventories in the US have been in decline since 2016. Inventory volumes also differ by utility, with some utilities well covered (>3 years) while others are short (<12 months of inventory and keen to purchase more material).
- European Union– The Euratom Supply Agency reported that the EU held ~94mlbs at the end of 2022 (-3% yoy). EU utility inventories have declined for eight years in a row and currently sit at their lowest level since 2005.
- China – Unlike the US and Europe, China prefers to maintain high levels of inventory to feed its growing reactor fleet. As of 2022, the WNA estimates China alone holds ~343mlbs of inventory, enough to service about 12 years of reactor requirements at current consumption levels. In our view, this

inventory is not mobile; China is not a seller but rather a buyer as it continues to import U_3O_8 and EUP volumes in excess of its annual needs.

- India - held an estimated 44mlbs U_3O_8 at the end of 2022.
- Survey data collected by the WNA suggested that total inventory holdings by utilities in the rest of the major East Asian markets (Japan, Korea, and Taiwan) totalled ~127mlbs U_3O_8 in 2022.
- Japan – As a country, Japan has historically represented one of the largest sources of surplus inventories, given the extended shutdown of its reactors post-Fukushima. However, as Japan continues its efforts to restart its reactor fleet, we expect these inventories to stay in-country and be drawn down. Some Japanese utilities have actually been reported to be buying.

These inventory levels may appear large; however, the mobility of these pounds is growing increasingly less flexible as reactor needs grow and utilities look to secure additional fuel for their reactors. Industry consultants UxC believe that 2022 data actually reflects a low point in terms of utility inventories, and that levels are likely to increase over the next few years as a response to concerns over security of supply (especially following Russia's invasion of Ukraine). We agree and stress the fact that maintaining adequate inventory as a utility is crucial to support the ongoing operation of one's nuclear fleet and protect against future supply disruptions.

Other relevant holders of inventory in the market include:

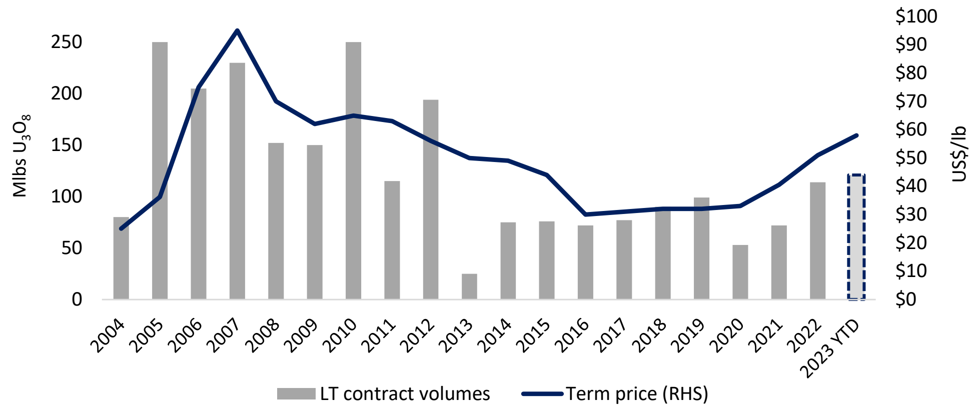
- Uranium miners who build and maintain uranium stockpiles in an effort to meet sale commitments and delivery timelines. Exact volumes are difficult to estimate at any given time, but key producers Kazatomprom and Cameco held approximately 17.1mlbs and 12.0mlbs respectively at the end of last year. These inventory levels have held steady (replaced when sold), suggesting that producers have reached the limit of how low they are willing to go when it comes to working stocks.
    - Furthermore, producers are seeing increased demand for pounds as utilities exercise their option to "upflex" existing contracts. With primary production under pressure, producers are having to draw down inventory to meet this incremental demand and/or purchase pounds in the spot market.
- We have also seen various pre-production uranium developers engage in purchasing of physical uranium for a variety of reasons, including servicing existing sales contracts and building leverage to rising prices (~6mlbs total).
- Financial players have also secured material largely through the spot market. Current volumes held between SPUT, Yellowcake, Uranium Royalty Corp, ANU Energy, and Zuri-invest are estimated to total ~100mlbs.
- Governments (US and Russia) also have legacy stockpiles from their Cold War weapons programs, most of which are in a form that would require further progressing or upgrading.

Overall, while we acknowledge the presence of inventory, we don't believe there is a "black box" of inventory that could rapidly hit the market and depress pricing. If there was, it would have likely already emerged in the recent price run.

Term market activity remains strong, replacement rates in reach

As we predicted in our 2023 outlook, this year is shaping up to be another strong year for term contracting. As of last week, UxC has reported that ~121mlbs have been put under long-term contract year-to-date. This compares to a total of 114mlbs in 2022 (the highest level in 10 years, Figure 12).

Figure 12: Historical long-term contract volumes and term price



Source: UxC LLC, Canaccord Genuity

While higher volumes remain encouraging, perhaps more important is that these long-term contracts are being signed at continuously higher prices. The term price has risen ~20% since the beginning of the year to US$61/lb, which, when combined with the ~26% increase seen over the course of 2022, results in the highest term price we've seen in almost 11 years. Within these contracts, we are also seeing terms improve, with floor discussions now near spot and ceilings >US$80/lb U_3O_8.

History suggests that contracting begets more contracting, and if history repeats itself, we are on track to outpace 2022 volumes, bringing us closer to achieving replacement rate for the first time in over a decade. As a reminder, we finished 2022 far below replacement rate with 114mlbs contracted, compared to the ~180mlbs consumed by utilities.

Based on our discussions with market participants, utilities are expected to remain active in the second half of this year. Our industry channel checks indicate that there are approximately 10 RFPs that are expected to hit the market before year-end, from a mix of European and US utilities. It sometimes takes 6-9 months to finalize a contract, so if these volumes do not appear as completed contracts in 2023, they should be in 2024. In our view, this year is the first year of what could be a multi-year long contracting cycle. Prices should push higher as contracting volumes rise against a backdrop of low primary production, reduced inventory levels, and shrinking secondary supply.

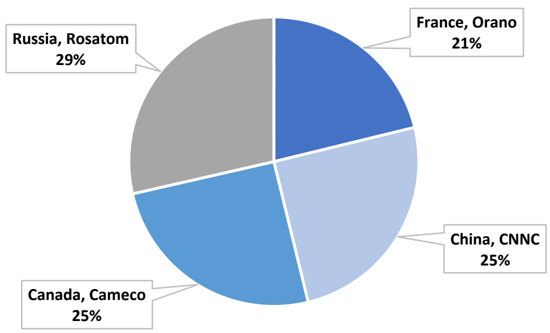
Geopolitics drive bifurcation in the global nuclear fuel market

Below is an excerpt from our 2023 outlook, with updated pricing and information where relevant.

As highlighted in our 2023 outlook, Russia's invasion of Ukraine acted as a catalyst for the beginning of structural shifts in world energy markets.

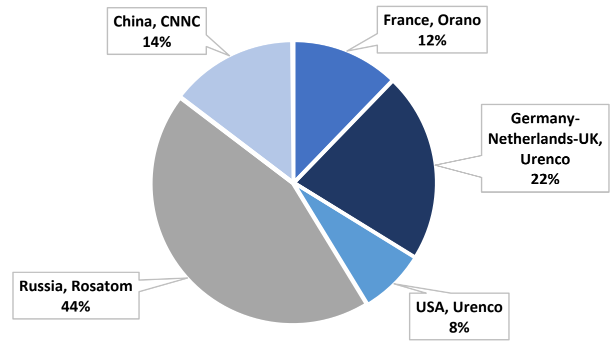
For decades, Russia has been an integral part of the global nuclear fuel market. On the supply side, Russia produces ~20mlbs U_3O_8 per year through its domestic uranium mining company ARMZ and its global uranium arm Uranium One (with production in both Russia and Kazakhstan). This is equivalent to ~15% of global primary mine supply. More important is Russia's dominance in both the conversion and enrichment markets, where it represents ~29% and ~44% of current global capacity (Figures 13 and 14).

Figure 13: World conversion capacity by country



Source: World Nuclear Association – 2023 Fuel Report (2022 production)

Figure 14: World enrichment capacity (SWU/yr) by country

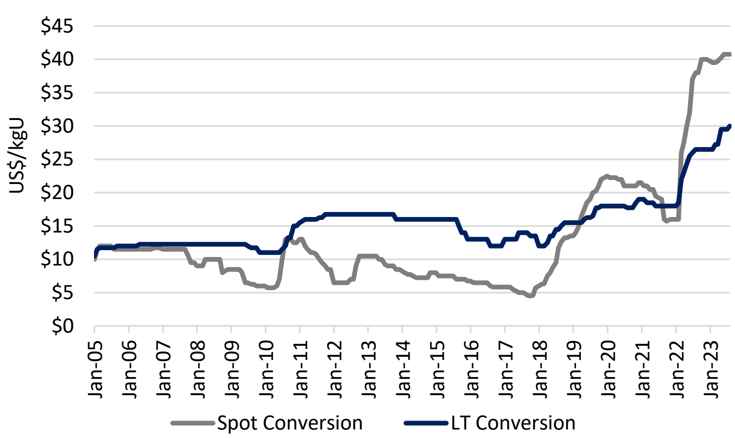


Source: World Nuclear Association – 2023 Fuel Report (2022 SWU capacity)

<u>In our view, a primary question facing the industry right now is "how and to what extent does the West decouple from Russia" and what does that mean for pricing.</u>

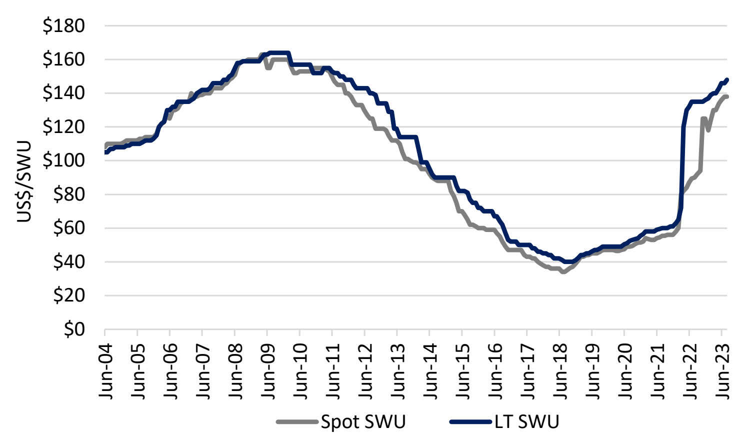
Based on our discussions with market participants, Western utilities are already self-sanctioning and moving to reduce and/or eliminate their reliance on Russian services, which we believe will have large knock-on effects on the entire nuclear fuel cycle (Figure 17). This shift in demand is already being reflected in record-high prices, with spot conversion and SWU sitting near all-time highs (Figures 15 and 16).

Figure 15: Spot and LT conversion price



Source: UxC LLC

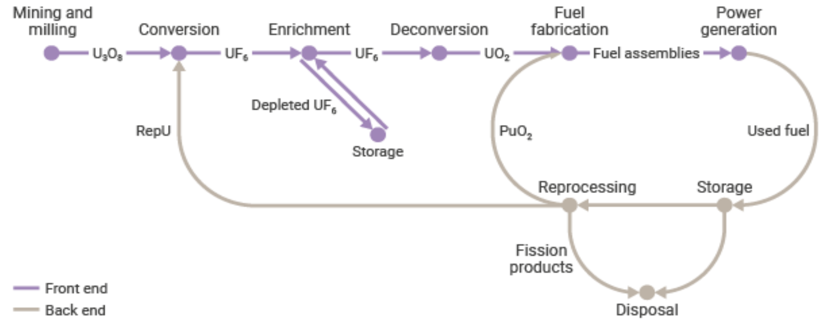
Figure 16: Spot and LT SWU price



Source: UxC LLC

<u>In our view, the forward implication of these higher prices will be a future rise in demand for uranium as the feedstock.</u> As we explain in detail below, there is currently not enough Western enrichment and conversion capacity to meet existing demand. A switch to "overfeeding" is already occurring, and this will create additional demand for UF_6 and uranium (U_3O_8) as the feedstock. We expect this additional demand to put further upward pressure on prices, with the U_3O_8 market already extremely tight.

Figure 17: Nuclear fuel cycle



Source: World Nuclear Association

Enrichers switching to a U-heavy diet…

In the West, there are currently two enrichers: Urenco and Orano, who have a combined capacity of ~26 million SWU per year. This capacity alone will not be enough to satisfy rising Western demand.

Expansions in enrichment capacity will be required (by ~2027), but these are highly capital-intensive and could take ~3-5 years to complete. In our view, both Urenco and Orano will be reluctant to expand capacity unless there is permanent trade action against Russia (still a possibility, in our view) or they have long-term contracts in hand that justify the capital risk. Given some recent contracting success, Urenco confirmed its plan to add an additional 700,000 SWU/yr of new enrichment capacity at its UUSA plant, with ramp-up beginning in 2025.

In the near term, we estimate that Western enrichment needs *could* be met – but only with a significant switch from underfeeding to overfeeding.

Reminder: What is underfeeding vs. overfeeding?

Historically, there has been a significant oversupply of enrichment capacity (SWU), which has led to **underfeeding**, one of the largest contributors to secondary supply. When enrichers underfeed, they use their excess SWU capacity to enrich the uranium hexafluoride (UF_6) from the conversion plant more thoroughly.

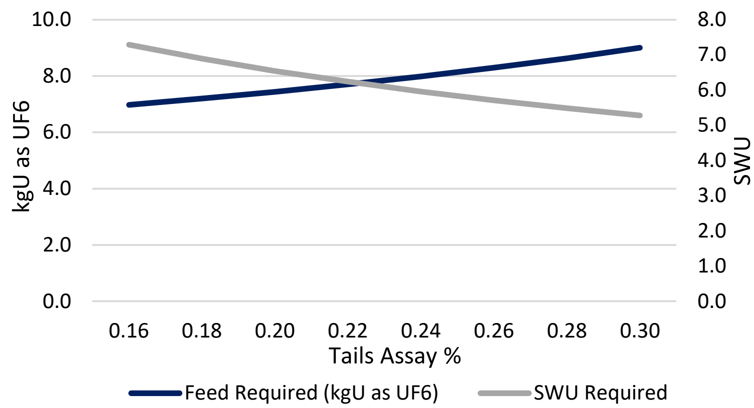
What this means is that enrichers can produce the same volume of end-product (enriched uranium product / EUP) by using less UF_6 and instead more SWU capacity. This process, known as underfeeding, results in a lower tails assay (concentration of U-235 in the "leftover stuff") and extra UF_6 to sell back into the market. However, when SWU is in high demand and the price of SWU rises dramatically (as it is right now), the incentive to underfeed disappears. In this scenario, enrichers are incentivized to overfeed.

Overfeeding means that enrichers are using more UF_6 less efficiently in the enrichment process to produce more EUP. In Figure 18, we show the relationship between uranium requirements (U_3O_8/UF_6) and SWU requirements based on different tails assays.

As utilities look to diversify their supply away from Russia, we're seeing a switch from underfeeding to overfeeding by Western utilities in addition to increasing tail assays in long-term enrichment contracts. Based on our discussions with market participants, contracts are now being signed at ~0.30% tails, a material step-up from the <0.20% reported over the last decade.

This is important because when a utility signs a forward SWU contract at higher tails (or operates at a higher operational tails), **it automatically implies they need more uranium** (in the form of UF_6). Based on our estimates, a rise from 0.20% tails to 0.30% tails by Western enrichers could increase uranium demand by ~21%.

Figure 18: Relationship between uranium requirements and SWU requirements based on different tail assays



Source: Urenco SWU calculator, Canaccord Genuity estimates

…but overfeeding creates a large problem for conversion supply

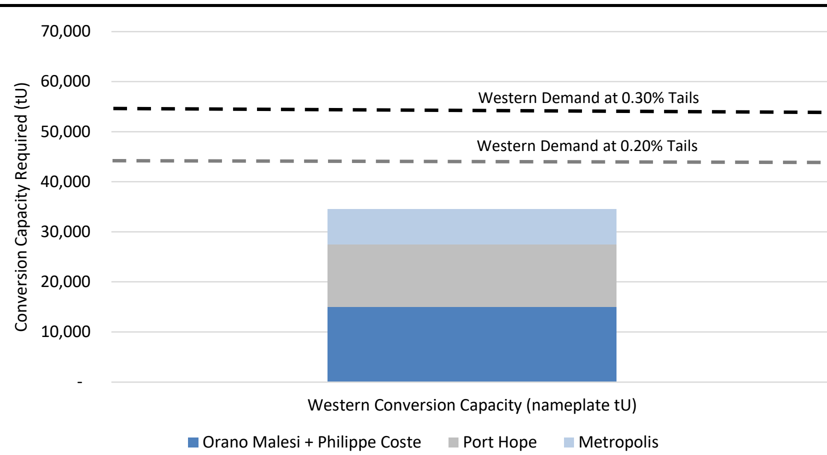
While overfeeding seems like an easy solution, it requires large volumes of UF_6 as the feedstock, and there is currently not enough conversion capacity in the West to make up the difference, even after the ConverDyn restart.

Current nameplate capacity stands at ~34,500tU from four facilities vs. demand of ~44,400tU at 0.20% tails. If tails increase to 0.30% (already happening), there is an even bigger gap with demand estimated at ~53,700tU.

In the near term, the only way to potentially fill the gap is to continue to rely on Russia. In our view, if utilities are serious about diversifying their supply away from Russia or if they get hit with sanctions, it will be critical that they sign contracts with Western converters that support capacity expansions as soon as possible or the restart of shut down capacity (i.e., Springfields in the UK; Westinghouse received £13 million from the UK government to help prepare new conversion capabilities from 2028).

In July 2023, ConverDyn's Metropolis finally restarted after delays, and we will continue to watch the ramp-up at Orano's Philippe Coste facility, which is expected to achieve at least 12,000tU in 2024 (vs. 8,900tU in 2022). This material is desperately needed by the market, and any issues in delivery could put further upward pressure on prices.

Figure 19: Western conversion capacity



Source: Urenco SWU Calculator, WNA, Canaccord Genuity estimates

Price deck – key changes

Updating our price deck – key changes

Our last price deck update was in January 2023. In January, we predicted a spot price rise to US$60/lb U_3O_8 by year-end and US$65/lb by mid-2024 (vs. US$48/lb at the start of 2023). Pricing has clearly exceeded our expectations with spot currently sitting at US$70.00/lb U_3O_8 (as reported by UxC). We detail our current pricing assumptions below.

Spot price:

- In the near term, we see potential for the spot uranium price to continue its upward trajectory. In our view, recent transactions suggest there is very little material available, with even small transactions moving the price higher.
- Utilities were more active in enrichment and conversion in 2022, given projected shortages in those areas. However, in 2023, we have seen this demand make its way back upstream, leading to a more competitive market.
- Any additional buying by physical funds such as SPUT, Yellowcake, ANU Energy, and Zuri-invest could also push spot prices rapidly higher.
- Although it is nearly impossible to predict the uranium spot price (and its ultimate peak), we provide a hypothetical scenario in Figure 20.
- Any further rise in spot uranium will be positive for the uranium equities.

Figure 20: CGe U_3O_8 spot price deck – hypothetical scenario

U_3O_8 Spot Price Deck	2021a	2022a	2023e	2024e	2025e	2026e	2027e	LT
CGe Spot Uranium (U_3O_8) - Current	$35.06	$49.76	$58.96	$91.25	$111.25	$77.50	$75.00	$75.00
CGe Spot Uranium (U_3O_8) - Previous	$35.06	$49.76	$54.25	$63.75	$65.00	$65.00	$65.00	$65.00
% Change		0%	9%	43%	71%	19%	15%	15%

Source: UxC LLC, Canaccord Genuity estimates

Long-term realized price:

- We remind investors that the spot market is not the fundamental market; the majority of uranium is still bought and sold under long-term contracts.
- Our realized price forecast represents the average price we assume our coverage receives based on negotiated contract terms (both current and future yet to be negotiated).
- The CGe U_3O_8 (Realized Price) forms the basis for our DCF-derived developer valuations.
- As seen in Figure 21, we've increased our near-term forecasts based on recent spot price moves and an expected increase in term activity in the coming months.
- Long-term, we are also increasing our realized price forecast to US$75/lb (from US$65/lb). In our view, the marginal cost of production has increased globally as evidenced by inflationary impacts to current producers and developers in the process of restart. Available technical reports in the market are also outdated, and do not reflect current economics, in our view.

Figure 21: CGe U_3O_8 realized price deck

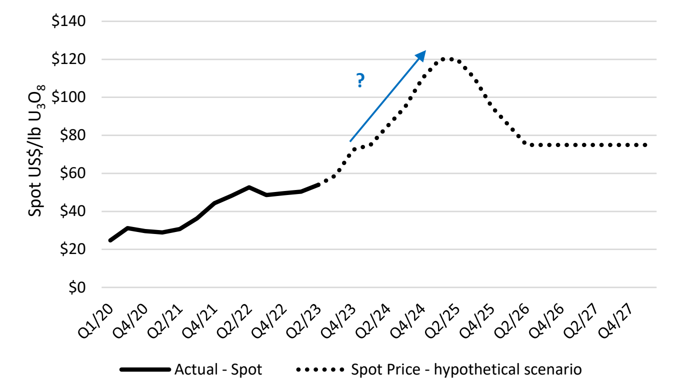
U_3O_8 Realized Price Deck	2022a	2023e	2024e	2025e	2026e	2027e	LT
CGe U_3O_8 (Realized Price) - Current*	$48.21	$57.58	$70.00	$72.50	$75.00	$75.00	$75.00
CGe U_3O_8 (Realized Price) - Previous*	$48.21	$54.25	$63.75	$65.00	$65.00	$65.00	$65.00
% Change	0%	6%	10%	12%	15%	15%	15%

Source: UxC LLC, Canaccord Genuity estimates

Western premium:

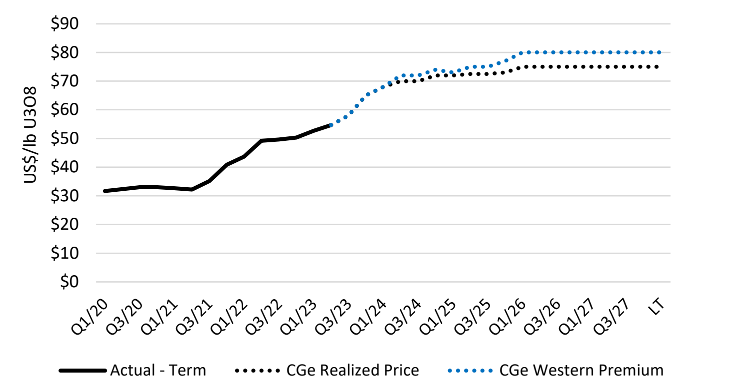
- Given our previously outlined view of the potential for market bifurcation and the likelihood of Western utilities seeking to incentivise supply from lower-risk jurisdictions, we continue to believe a potential Western premium could materialize.
- Clearly the situation in energy markets is a rapidly evolving one and we will regularly test this assumption as political policy becomes clear and market data becomes available.
- We now model US$80/lb long-term for Western producers. This reflects a reduction in our Western Premium to US$5/lb (US$10/lb prior) as we take into account recent discussions we have had with market participants that indicate that some utilities are offering +$3-$5/lb premiums for US-based production (to better diversify their future deliveries).

Figure 22: CG spot price estimate – hypothetical scenario



Source: UxC LLC, Canaccord Genuity estimates

Figure 23: CG realized price estimate



Source: UxC LLC, Canaccord Genuity estimates

Revisions to our supply/demand forecasts:

- We continue to expect the market to be in a meaningful structural deficit over the next few years, even before secondary demand from financial players is considered and the potential impact of small modular reactors.
  - We note that the below SxD model does not consider the impact of ~34mlbs of U_3O_8 purchases from these players in 2021 and >20mlbs in 2022 (CGe).
- We continue to assume that Western enrichers shift from underfeeding to overfeeding. This has two primary impacts: 1) lower secondary supply from underfeeding; and 2) increased Western uranium demand due to a change in tails assays.
- We have adjusted timelines for recently announced delays (Dasa, Lance, etc.), as well as incorporated assumed production from several production-ready assets in the US (Rosita, Lost Creek, etc.). This has resulted in modest variations in our near-term supply forecasts.
- These projects alone will not be sufficient to meet growing long-term demand. Investments in new mine supply will be required; however, many

of these projects (Arrow, Wheeler River, etc.) face significant upfront capital costs in addition to outstanding permits.

- Even after including these projects, we continue to see the potential for sustained market deficits beyond 2030. In our view, Tier 2 and Tier 3 greenfield projects will be required to meet this demand, which have notably higher incentive prices, especially in the current inflationary environment.

Figure 24: Uranium SxD model summary

(in million lbs U3O8)	2019A	2020A	2021A	2022A	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E	2034E	2035E
Mine Supply																	
Kazakhstan	60	51	57	55	55	59	61	62	65	65	65	66	68	68	68	68	68
Canada	18	10	12	19	30	36	36	36	36	66	74	84	84	73	52	55	61
Australia	16	16	10	12	12	14	15	15	15	15	12	10	10	10	10	10	10
Africa	23	22	21	20	19	20	24	30	30	31	34	32	33	33	33	33	33
China	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Russia	8	7	7	7	7	6	6	7	7	8	9	10	10	10	10	10	10
RoW	12	12	12	11	11	13	19	23	26	28	30	30	29	28	27	25	24
Total Mine Supply	**142**	**122**	**123**	**129**	**138**	**153**	**165**	**178**	**183**	**218**	**228**	**237**	**239**	**227**	**206**	**205**	**211**
Mine Supply as a % of Demand		69%	69%	72%	72%	76%	78%	82%	81%	93%	96%	96%	94%	87%	77%	75%	75%
YoY % Change		-13%	1%	5%	7%	11%	8%	8%	3%	19%	5%	4%	1%	-5%	-10%	0%	3%
Secondary Supply																	
Underfeeding / Tails re-enrichment	18	17	18	15	16	15	14	13	12	11	10	9	7	6	5	5	5
US Government (DOE material inflows)	3	2	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-
Global reprocessed uranium / MOX	6	6	5	5	4	5	6	6	6	7	7	7	10	10	11	11	12
Other	5	5	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Total Secondary Supply	**31**	**30**	**30**	**26**	**26**	**26**	**26**	**25**	**24**	**23**	**22**	**21**	**22**	**21**	**21**	**21**	**22**
Secondary Supply as a % of Demand		17%	17%	15%	14%	13%	12%	12%	11%	10%	9%	8%	9%	8%	8%	7%	8%
Total Supply	**173**	**152**	**153**	**155**	**164**	**179**	**191**	**203**	**207**	**240**	**250**	**258**	**262**	**249**	**226**	**226**	**233**
World Nuclear Operating Capacity (GWe)	368	367	368	369	378	393	402	413	432	451	469	490	503	519	532	545	554
Reactor Capacity (GWe)																	
China	46	47	50	52	54	58	62	67	76	86	94	107	115	124	133	142	150
United States	98	97	96	95	97	98	98	98	98	98	98	98	98	98	98	98	98
Canada	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Europe	134	132	129	124	122	122	120	122	125	126	125	126	126	127	130	130	130
Russia	29	29	28	28	30	30	30	31	33	36	37	42	42	42	42	43	43
Japan	9	9	9	9	11	14	16	17	17	19	19	19	19	19	19	19	19
South Korea	23	23	23	24	27	29	29	29	29	29	29	29	30	31	31	31	31
India	6	6	7	7	7	7	9	11	13	13	16	18	20	21	23	23	23
RoW	9	11	13	15	16	21	24	25	27	32	38	39	39	43	43	47	47
Total Reactor Capacity - Operating (GWe)	**368**	**367**	**368**	**369**	**378**	**393**	**402**	**413**	**432**	**451**	**469**	**490**	**503**	**519**	**532**	**545**	**554**
CG Demand (U3O8)	**176**	**177**	**178**	**178**	**183**	**190**	**194**	**200**	**209**	**218**	**226**	**237**	**243**	**250**	**257**	**263**	**267**
Demand from Change in Tails Assay (U3O8)	**-**	**-**	**-**	**-**	**9**	**11**	**17**	**17**	**17**	**17**	**11**	**12**	**12**	**12**	**12**	**12**	**12**
Total Demand (U3O8)	**176**	**177**	**178**	**178**	**192**	**201**	**211**	**217**	**226**	**235**	**238**	**248**	**254**	**262**	**269**	**275**	**279**
YoY % Change		1%	0%	0%	8%	5%	5%	3%	4%	4%	1%	4%	2%	3%	2%	2%	2%
Market Balance	**(3)**	**(25)**	**(24)**	**(23)**	**(28)**	**(22)**	**(20)**	**(13)**	**(18)**	**5**	**12**	**10**	**7**	**(13)**	**(42)**	**(49)**	**(46)**

*Excludes the impact of secondary demand and SMRs
Source: WNA, UxC LLC, Company Reports, Canaccord Genuity estimates

	2019A	2020A	2021A	2022A	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E	2034E	2035E
Demand growth %		1%	0%	0%	8%	5%	5%	3%	4%	4%	1%	4%	2%	3%	2%	2%	2%
Primary mine production growth %		-13%	1%	5%	7%	11%	8%	8%	3%	19%	5%	4%	1%	-5%	-10%	0%	3%
Secondary supply growth %		-4%	1%	-13%	-1%	0%	0%	-3%	-3%	-7%	-4%	-4%	7%	-4%	-4%	0%	7%
China demand growth %		4%	5%	4%	3%	7%	7%	9%	13%	13%	10%	13%	8%	8%	7%	7%	6%
Western world demand growth %		-2%	-1%	-2%	0%	1%	-1%	1%	1%	0%	0%	0%	0%	0%	1%	0%	0%

Source: World Nuclear Association, UxC LLC, Company Reports, Canaccord Genuity estimates

Uranium equities

We have updated our estimates for each of the companies we cover to reflect our revised uranium price deck and company-specific updates. Our revised target prices and ratings are presented in Figure 25 below.

While we remain bullish on uranium, we recognize the opaque nature of the market and inherent risks in uranium mining and project development. Accordingly, we continue to prefer companies with quality assets, a sound balance sheet and positive company-specific catalysts.

Our preferred equity exposures are NexGen Energy (NXE-TSX) and Denison Mines (DML-TSX) in North America; Paladin Energy (PDN-ASX) and Lotus Resources (LOT-ASX) Australia; and Yellow Cake plc (YCA-AIM) in the UK. For US-specific exposure, we like enCore Energy (EU-TSX) and Uranium Energy Corp. (UEC-US).

Figure 25: Revisions to target prices and rating

		Target Price		Rating		Share Price	% Return
		New	Previous	New	Previous	2023-09-22	
Bannerman Energy Ltd.	BMN-ASX	A$3.59	A$3.33	SPEC BUY	SPEC BUY	A$2.47	45%
Boss Energy Ltd.	BOE-ASX	A$4.73	A$4.28	SPEC BUY	SPEC BUY	A$4.50	5%
Cameco Corp.	CCO-TSX	C$60.00	C$56.00	BUY	BUY	C$53.90	11%
Denison Mines Corp.	DML-TSX	C$3.25	C$3.00	SPEC BUY	SPEC BUY	C$2.19	48%
enCore Energy Corp.	EU-TSX	C$6.00	C$6.00	SPEC BUY	SPEC BUY	C$4.33	39%
Energy Fuels Inc.	EFR-TSX	C$12.50	C$12.00	SPEC BUY	SPEC BUY	C$11.07	13%
Fission Uranium Corp.	FCU-TSX	C$1.40	C$1.30	SPEC BUY	SPEC BUY	C$0.88	59%
Lotus Resources Ltd.	LOT-ASX	A$0.45	A$0.39	SPEC BUY	SPEC BUY	A$0.25	84%
NexGen Energy Ltd.	NXE-TSX	C$11.50	C$10.75	SPEC BUY	SPEC BUY	C$8.23	40%
Paladin Energy Ltd.	PDN-ASX	A$1.23	A$1.15	BUY	BUY	A$0.99	25%
Peninsula Energy Ltd.	PEN-ASX	A$0.22	A$0.20	SPEC BUY	SPEC BUY	A$0.11	100%
Silex Systems Ltd.	SLX-ASX	A$5.42	A$5.00	SPEC BUY	SPEC BUY	A$3.24	67%
Sprott Physical Uranium Trust	U.UN-TSX	C$28.00	C$22.00	BUY	BUY	C$23.24	20%
Uranium Energy Corp.	UEC-US	US$6.50	US$6.50	SPEC BUY	SPEC BUY	US$5.20	25%
Uranium Royalty Corp.	URC-TSX	C$6.25	C$6.00	SPEC BUY	SPEC BUY	C$3.89	61%
Yellow Cake Plc	YCA-LON	£6.35	£5.30	BUY	BUY	£5.48	16%

Source: Factset, Canaccord Genuity estimates

Figure 26: Global uranium coverage universe

Uranium Coverage Universe	Ticker	Price 2023-09-22	Market Capitalization	Enterprise Value	Rating	Target Price	Return to Target	P/NAV	Primary Project(s)	Metal(s)	Location(s)	Analyst
Bannerman Energy Ltd.	BMN-ASX	A$2.47	A$415	US$211	SPEC BUY	A$3.59	45%	0.69	Etango	U_3O_8	Namibia	JB
Boss Resources Ltd.	BOE-ASX	A$4.50	A$1,669	US$973	SPEC BUY	A$4.73	5%	0.95	Honeymoon	U_3O_8	South Australia	JB
Cameco Corp.	CCO-TSX	C$53.90	C$23,819	US$16,297	BUY	C$60.00	11%	1.45	Cigar Lake, Inkai, McArthur River	U_3O_8, UF_6	Canada, Kazakhstan	KL
Denison Mines Corp.	DML-TSX	C$2.19	C$1,897	US$1,335	SPEC BUY	C$3.25	48%	0.81	Wheeler River	U_3O_8	Saskatchewan, Canada	KL
enCore Energy Corp.	EU-TSX	C$4.33	C$655	US$494	SPEC BUY	C$6.00	39%	0.76	Rosita, Alta Mesa, Dewey-Burdock	U_3O_8	Texas & S. Dakota, USA	KL
Energy Fuels Inc.	EFR-TSX	C$11.07	C$1,869	US$1,206	SPEC BUY	C$12.50	13%	0.92	White Mesa, Nichols Ranch	U_3O_8	Wyoming & Utah, USA	KL
Fission Uranium Corp.	FCU-TSX	C$0.88	C$667	US$437	SPEC BUY	C$1.40	59%	0.68	Triple R	U_3O_8	Saskatchewan, Canada	KL
Lotus Resources Ltd.	LOT-ASX	A$0.25	A$325	US$196	SPEC BUY	A$0.45	84%	0.65	Kayelekera	U_3O_8	Malawi	JB
NexGen Energy Ltd.	NXE-TSX	C$8.23	C$4,167	US$2,985	SPEC BUY	C$11.50	40%	0.80	Rook I - Arrow	U_3O_8	Saskatchewan, Canada	KL
Paladin Energy Ltd.	PDN-ASX	A$0.99	A$3,115	US$1,786	BUY	A$1.23	25%	0.80	Langer Heinrich	U_3O_8	Namibia	JB
Peninsula Energy Ltd.	PEN-ASX	A$0.11	A$151	US$63	SPEC BUY	A$0.22	100%	0.49	Lance	U_3O_8	Wyoming, USA	JB
Silex Systems Ltd.	SLX-ASX	A$3.24	A$821	US$400	SPEC BUY	A$5.42	67%	0.60	Paducah	U_3O_8, UF_6	Kentucky, USA	JB
Sprott Physical Uranium Trust	U.UN-TSX	C$23.24	C$5,960	NA	BUY	C$28.00	20%	0.99	Holding Company	U_3O_8, UF_6	Various	KL
Uranium Energy Corp.	UEC-US	US$5.20	US$2,001	US$1,936	SPEC BUY	US$6.50	25%	0.87	Texas / Wyoming Hub & Spoke	U_3O_8	Texas & Wyoming, USA	KL
Uranium Royalty Corp.	URC-TSX	C$3.89	C$413	US$253	SPEC BUY	C$6.25	61%	1.29	Royalty Company	U_3O_8	Various	KL
Yellow Cake Plc	YCA-LON	£5.48	£1,134	US$1,161	BUY	635p	16%	0.86	Holding Company	U_3O_8	Various	AB
Uranium Average								**0.86**				

*KL = Katie Lachapelle, Canaccord Genuity Corp (Canada), JB = James Bullen, Canaccord Genuity (Australia) Ltd, AB = Alex Bedwany, Canaccord Genuity Ltd (UK)

Source: Factset, Company Reports, Canaccord Genuity estimates

Appendix: Important Disclosures

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Investment Recommendation

Date and time of first dissemination: September 25, 2023, 20:37 ET

Date and time of production: September 25, 2023, 20:37 ET

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Speculative Buy	159	17.28%	46.54%
	920*	100.0%	

*Total includes stocks that are Under Review

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