

## Global Uranium

## Uranium prices will peak, but not yet. The bull market has further to run. Buy CCJ

Price Objective Change

## Uranium prices lifted as market to remain tight until 2025

We are constructive uranium ( $U_3O_8$ ) prices, currently trading at a 15-year high of US\$92 per pound (lb), given an increasingly tight spot market. We expect the market to remain tight into 2025E when new mined supply is forecast to finally provide relief from lack of supply. With inventories evidently lower than we had previously believed and production slippages a risk, we increase our  $U_3O_8$  price forecasts to \$105/lb (+34%) in 2024E and \$115/lb (+53%) in 2025E with no change to mined supply or demand forecasts. Our long-term (2029E)  $U_3O_8$  price forecast remains \$55/lb, recently increased to account for cost inflation over the last two years. For Cameco (CCJ), we increase our estimates (Exhibit 24) and raise our price objective (PO) to \$55.50 (C\$76) from \$51 (C\$71) per share. With a broad, tier 1 nuclear fuel offering, we see CCJ as well placed to benefit from nuclear energy growth. We reiterate our Buy rating on CCJ.

## Upward pressure on prices as utilities become more active

Utilities became more active in the spot market in 2023, representing 25% of spot volumes vs. 13% in 2022. We think this indicates scarcity of supply as utilities tend to prefer contracted supply. Meanwhile, spot volumes for 2023 totaled 53 million pounds (Mlbs)  $U_3O_8$ , well behind the 61.5Mlbs traded in 2022. As a result, buyers in need are likely chasing fewer pounds, which is putting upward pressure on  $U_3O_8$  prices.

High electricity prices mean higher  $U_3O_8$  prices absorbable

US retail electricity prices increased 14% in the past 2 years with prices averaging 12.75c/kWh in 2023. Cameco (CCJ) noted at their recent investor day that utilities have seen electricity prices rise faster than front-end fuel prices, which has rarely if ever been the case for nuclear. We expect nuclear utilities to be able to withstand higher fuel costs in the near to medium term given electricity prices rising faster than fuel costs.

## Investment fund volumes have picked-up recently

For 2023, the Sprott Physical Uranium Trust (SPUT) has accounted for about 3.9Mlbs of total volume traded. Following a six-month hiatus to September, SPUT re-entered the spot market with the Trust buying 300 thousand pounds (k lbs) in October and 500k lbs in November. SPUT also recently announced an updated at-the-market equity program of up to \$1 billion of trust units. Currently SPUT holds 63.2Mlbs  $U_3O_8$ .

07 January 2024

Equity  
Global  
Metals and Mining

**Lawson Winder, CFA** >>  
Research Analyst  
Merrill Lynch (Canada)  
+1 416 369 7592  
[lawson.winder@bofa.com](mailto:lawson.winder@bofa.com)

**Jason Fairclough** >>  
Research Analyst  
MLI (UK)  
+44 20 7995 0225  
[jason.fairclough@bofa.com](mailto:jason.fairclough@bofa.com)

**Cameron Taylor** >>  
Research Analyst  
Merrill Lynch (Australia)  
+61 2 9226 5043  
[cameronjohn.taylor@bofa.com](mailto:cameronjohn.taylor@bofa.com)

**Sathish Kasinathan**  
Research Analyst  
BofAS  
[sathish.kasinathan@bofa.com](mailto:sathish.kasinathan@bofa.com)

**Harmen Puri** >>  
Research Analyst  
Merrill Lynch (Canada)  
[harmen.puri@bofa.com](mailto:harmen.puri@bofa.com)

>> Employed by a non-US affiliate of BofAS and is not registered/qualified as a research analyst under the FINRA rules.

Refer to "Other Important Disclosures" for information on certain BofA Securities entities that take responsibility for the information herein in particular jurisdictions.

**BofA Securities does and seeks to do business with issuers covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.**

**Refer to important disclosures on page 13 to 17. Analyst Certification on page 12. Price Objective Basis/Risk on page 12.**

12642325

Timestamp: 07 January 2024 02:00PM EST

## Uranium prices at 15-year high

We are constructive on uranium prices as the spot market is becoming increasingly tight and is currently trading at a 15-year high of US\$92/lb U<sub>3</sub>O<sub>8</sub>. Ultimately, we expect the market to remain tight through year-end 2024 as the S&D balance will remain in deficit until additional supply comes online in 2025. Utilities are wrestling with supply risks from Russia, Ukraine and Niger whilst primary production remains behind the pace following a decade of underinvestment.

With inventories low and risk of production slippages, we increase our price forecasts to \$105/lb (+34%) in 2024 and \$115/lb (+53%) in 2025. We maintain our long-term price forecast (2029E) U<sub>3</sub>O<sub>8</sub> of \$55/lb which was lifted recently to account for cost inflation over the last two years.

### Exhibit 1: BofAe annual U<sub>3</sub>O<sub>8</sub> price forecasts

We increase our price forecasts to \$105/lb (+34%) in 2024 and \$115/lb (+53%) in 2025

	US\$/lb	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E(LT)
Old	U <sub>3</sub> O <sub>8</sub>	49.54	58.91	78.1	75	70	65	60	55
Current	U <sub>3</sub> O <sub>8</sub>	49.55	59.9	105	115	85	75	65	55
% change	U <sub>3</sub> O <sub>8</sub>	0.00%	1.70%	34.40%	53.30%	21.40%	15.40%	8.30%	0.00%

Source: BofA Global Research estimates

BofA GLOBAL RESEARCH

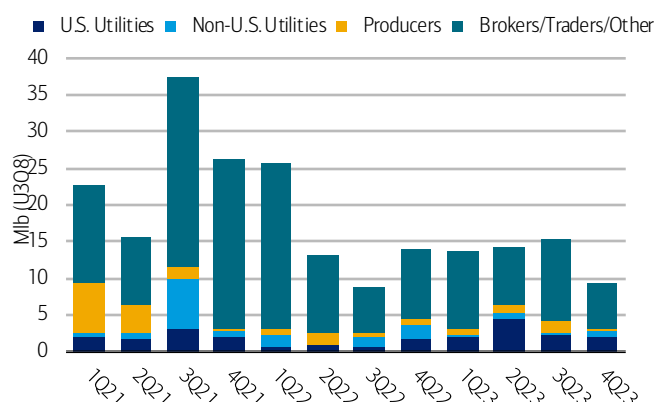
## Spot market faces upward pressure

Utilities have become slightly more active in the spot market in 2023, representing 25% of spot volumes vs. 13% in 2022. An uptick in spot purchases by utilities signal scarcity in supply as utilities usually tend to avoid spot market for fuel needs given the requirement to operate long-term. Due to the growing uranium prices and interest rates, we have also seen a decrease in trader volumes with 36.2Mlb U<sub>3</sub>O<sub>8</sub> purchased, a 26% decline vs. 2022 and a 7% decline in volumes sold for the same period.

Spot volumes 2023 has totaled 53Mlb U<sub>3</sub>O<sub>8</sub>, well behind the 61.5Mlb traded in 2022. As a result, buyers in need are likely chasing fewer pounds, which can create upward pressure on prices.

### Exhibit 2: Quarterly spot market buyer volumes (Mlb U<sub>3</sub>O<sub>8</sub>)

2023 has seen an increase in utilities and decrease in trader volumes

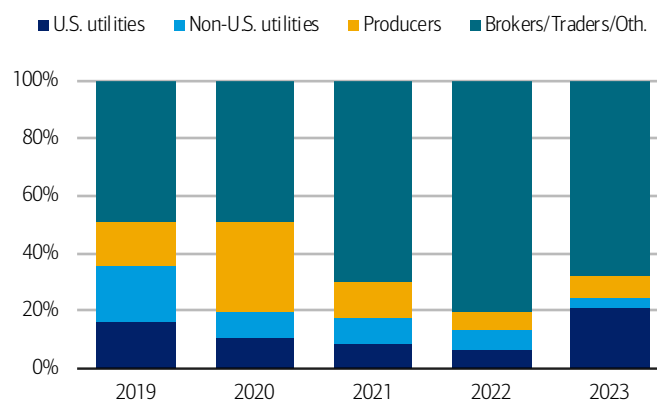


Source: UxC, BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 3: Annual spot market buyer type (%)

An uptick in spot purchases by utilities signal scarcity in uranium supply



Source: UxC, BofA Global Research

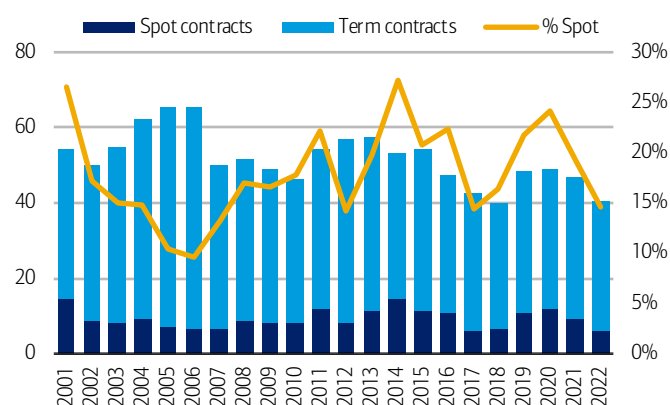
BofA GLOBAL RESEARCH

## U.S. utility purchases continue to decline, down 13% yoy

According to U.S. EIA data, in 2022, U.S. utilities purchased 40.5Mlbs of uranium equivalents, down 13% from 46.7Mlbs in 2021. Of this total, uranium purchased for spot delivery (a single delivery within one year of contract execution) accounted for 5.9Mlbs, or 15%, just below the long-term average of 18% but down from the 19% in 2021. Long-term contracts (one or more deliveries occurring a year or more from contract execution) account for the balance of 35Mlbs, or 85%. Historically, lower levels of spot purchases are associated with strong spot prices.

### Exhibit 4: Uranium purchased by U.S. civilian nuclear reactors

Spot purchases at 15% of total, down from 19% the year prior

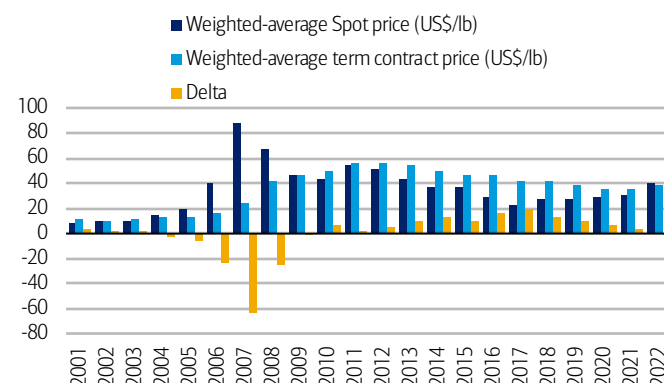


Source: U.S. Energy Information Administration, Uranium Marketing Annual Report

BofA GLOBAL RESEARCH

### Exhibit 5: Spot vs. term contract pricing (US\$/lb)

Short-, medium- and long-term contract pricing currently trades with spot



Source: U.S. Energy Information Administration, Uranium Marketing Annual Report

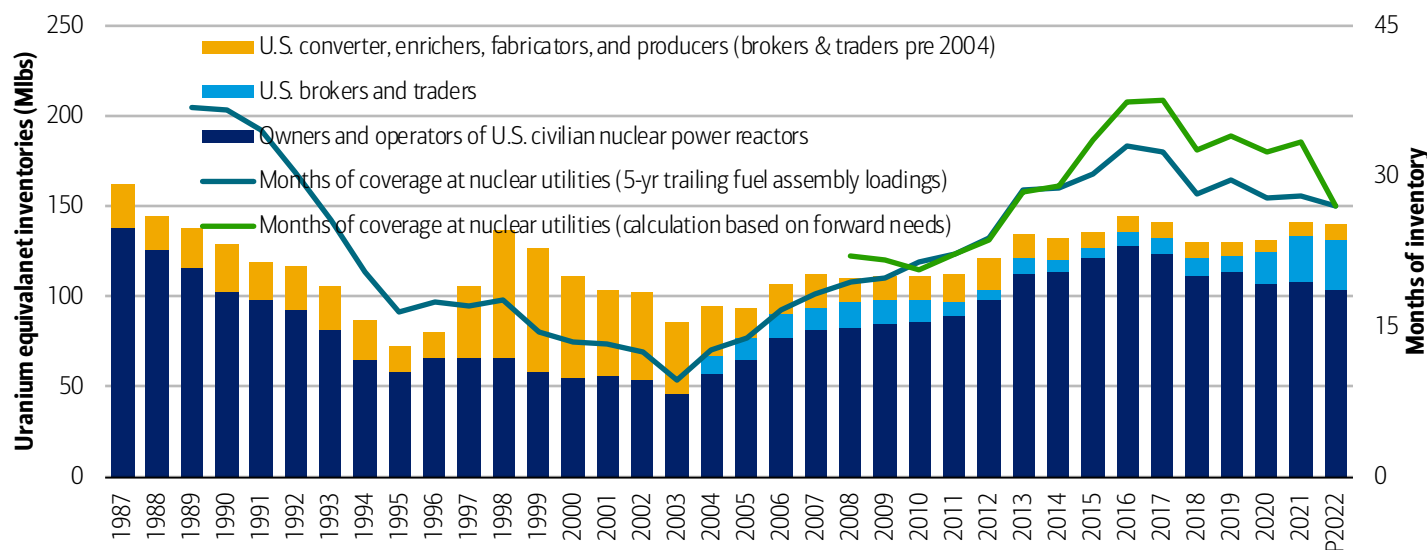
BofA GLOBAL RESEARCH

## Inventory holdings have been steadily declining since 2017

A rapid drawdown of secondary supplies is shaping the uranium market as it fills the gap between primary production and demand. Data from the U.S. Energy Information Administration (EIA) indicates that commercial inventories of uranium held by utilities in the U.S. continue to decline from a multi-decade peak in 2016.

### Exhibit 6: Commercial inventories of uranium in the United States by type of owner (in millions of pounds of uranium equivalents)

U.S. inventories have declined materially since 2016



Source: U.S. Energy Information Administration, Uranium Marketing Annual Report

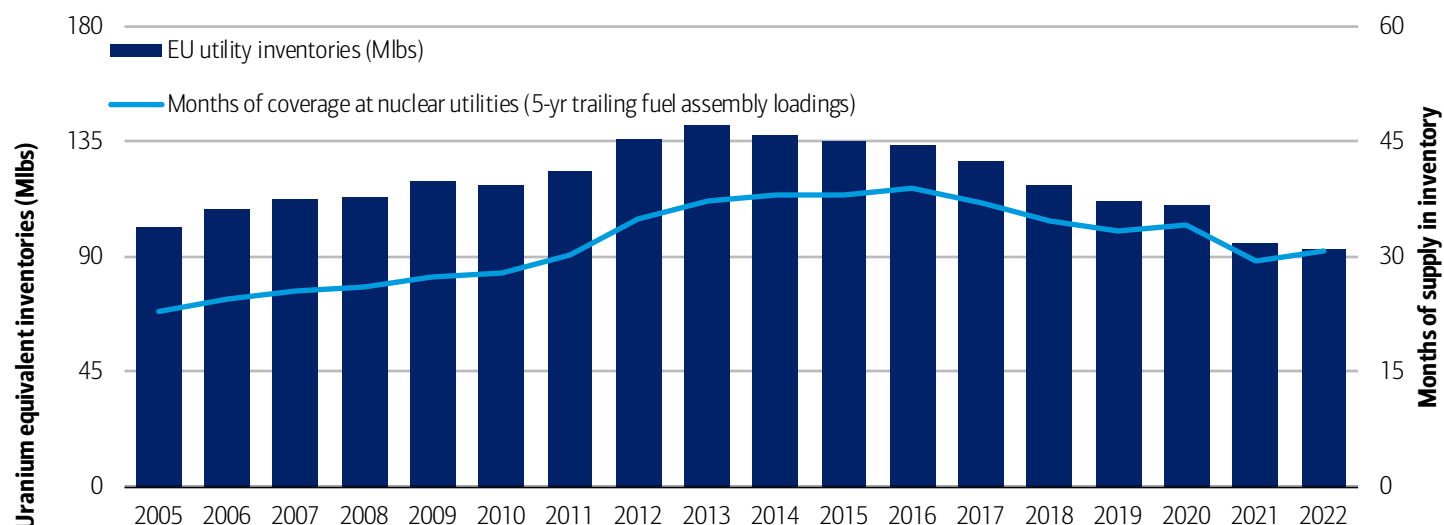
BofA GLOBAL RESEARCH

Months of uranium requirements covered by those inventories has also declined. And with reactor requirements now stable in the U.S., we expect coverage to decline going forward. A loss of access to Russian supply would significantly accelerate this.

Data from the Euratom Supply Agency (ESA) indicates that commercial inventories of uranium in the EU continue to decline from a peak in 2013. Given declining reactor retirements over this period, the months of uranium requirements covered by those inventories declined more slowly, but trending lower nevertheless.

#### Exhibit 7: Total uranium equivalent inventories held at EU and UK utilities

Since the 2013 peak, inventories in the EU and UK have fallen substantially



Source: Euratom Supply Agency Annual Reports. Note: includes all EU-27 states and the U.K. Countries with nuclear reactors as of year-end 2020 are Belgium, Bulgaria, Czechia, Germany, Spain, France, Hungary, Netherlands, Romania, Slovenia, Slovakia, Finland, Sweden and the United Kingdom.

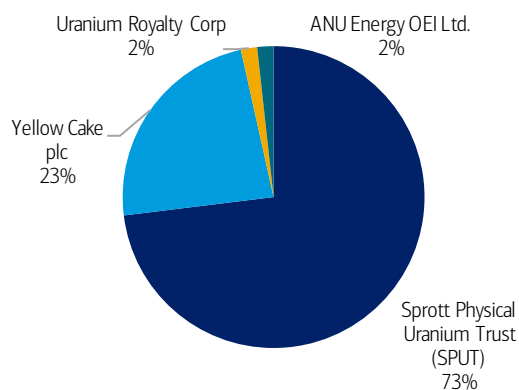
BofA GLOBAL RESEARCH

## The importance of SPUT and Yellow Cake plc

The Sprott Physical Uranium Trust (SPUT) has become an important driver of spot pricing since its inception in July 2021. Thus far for 2023, the Trust has accounted for about 3.4Mlb of total volume traded. Following a six-month hiatus to September, SPUT re-entered the spot market with the Trust buying 300klb in October and 500klb in November. Currently SPUT hold 62.9Mlb of  $U_3O_8$  with capacity to buy more.

#### Exhibit 8: Uranium investment fund holdings

We estimate a total of 86.1Mlb  $U_3O_8$  held



Source: UxC, Sprott, BofA Global Research

BofA GLOBAL RESEARCH

## Lower-than-average lead times due to supply concerns

There has been a notable shift in contract timing and duration, with utilities taking deliveries sooner and some utilities wanting delivery beyond 2030. UxC recently highlighted that term contract lead times have averaged 2.1 years in 2023. The lower than-average lead times reflect stronger utility demand due to heightened security of supply and lower utility inventory levels. Kazatomprom recently highlighted that utilities are willing to enter contracts with price ceilings in the triple digits (US\$100/lb+), supporting our view that uranium prices should rise further despite recent gains.

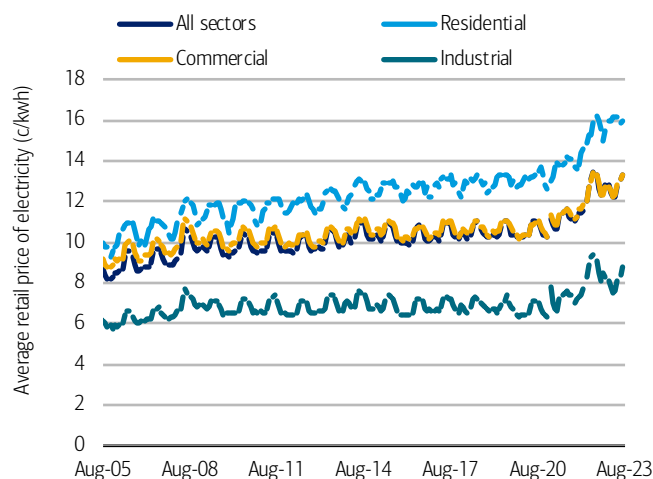
## Electricity prices rising faster than fuel costs

Uranium is a highly concentrated source of energy whereby the quantities needed are much less than for coal or oil. The World Nuclear Association estimates that for uranium prices between US\$10-140/lb the estimated fuel cost is between 0.4 to 1 US cent per kWh. Whilst the impact of uranium price on nuclear generation costs are minimal, uranium must be processed, enriched and fabricated into fuel elements, accounting for more than half of the total fuel cost.

In the US, retail electricity prices have increased 14% in the past 2 years with residential, commercial and industrial prices averaging 12.75c/kWh in 2023. CCJ noted at their recent investor day that utilities have seen electricity prices rise faster than the front-end fuel prices, which has rarely if ever been the case for nuclear. We expect nuclear utilities to be able to withstand higher fuel costs given electricity prices rising faster than fuel costs.

### Exhibit 9: Average retail price of electricity US (cents/kWh)

Retail electricity prices have increased 14% in 24 months

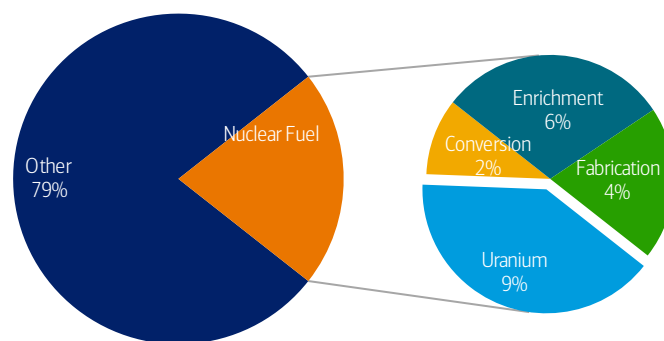


Source: EIA, BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 10: Average US nuclear plant opex breakdown

WNA estimates uranium accounts for ~9% of nuclear opex



Source: BofA Global Research estimates, WNA

BofA GLOBAL RESEARCH

## Uranium prices have further to run

The main driver of the uranium market for decades has been excess inventory, i.e., production exceeded demand (inventory +2,000Mlb from 1990). But now the era of excess inventory is over, the focus has shifted from inventory to mobility. How much of it is likely to change hands even in a rising market? With spot volumes declining and an expectation for SPUT and YCA to continue drawing down from the spot market, we think the uranium price has further to run.

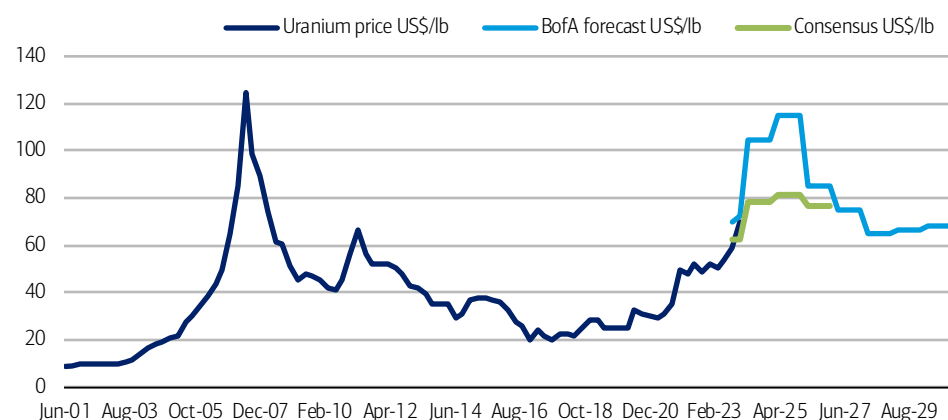
We do expect a surplus in 2025E (+5.1Mlb) as Kazatomprom (KAP), the world's largest uranium producer, recently increased production guidance +20%/23% in 2024/25.

Until then, uranium prices could go higher, particularly if there are unexpected disruptions to current production and delayed supply from idled mine restarts. In term of our model and upside to pricing in the next year, the big unexpected (i.e., unmodeled factors) could be:

1. Continued geopolitical pressure on uranium producing countries, i.e., SOMAIR shutting in Niger or sanctions/restrictions on Kazatomprom exports via Russia.
2. The spot market is very thin, so it's difficult to buy meaningful volumes in the spot market without impacting the price. If SPUT/YCA/Zuri/KAZ ETFs buy greater than 5Mlb in 2024, this would further disrupt supply/demand balance.
3. Japan restarting more than 15 reactors, there are around 29 that could be eligible.
4. Cameco missing production (and this could be on either Cigar or McArthur).
5. Potential delays in ramp-up (although modest volumes) from Paladin's Langer Heinrich Mine restart due 1Q 2024 and Boss Energy's Honeymoon now due 1Q 2024. In 2024, we expect 850klb in 2024 from Honeymoon and 3.4Mlb from Langer Heinrich.
6. An easing up in UF<sub>6</sub> supply leading to a ramp-up in over-feeding. A lack of excess conversion is one of the drivers on keeping overfeeding to a modest level.

### Exhibit 11: Uranium price US\$/lb

Spot uranium is currently trading at US\$92/lb U3O8 (+87% YTD 2023) with the market expected to remain in deficit until year-end 2024.



Source: BofA Global Research estimates

BofA GLOBAL RESEARCH

# Uranium (U<sub>3</sub>O<sub>8</sub>) market prices

While the spot price of uranium (U<sub>3</sub>O<sub>8</sub>) has been improving steadily since late 2017, when Cameco idled its McArthur River uranium mine, it has been quite volatile.

## Exhibit 12: Daily price of uranium (U<sub>3</sub>O<sub>8</sub>) in \$/lb

U<sub>3</sub>O<sub>8</sub> has been strengthening steadily since Cameco idled its McArthur River mine in late 2017

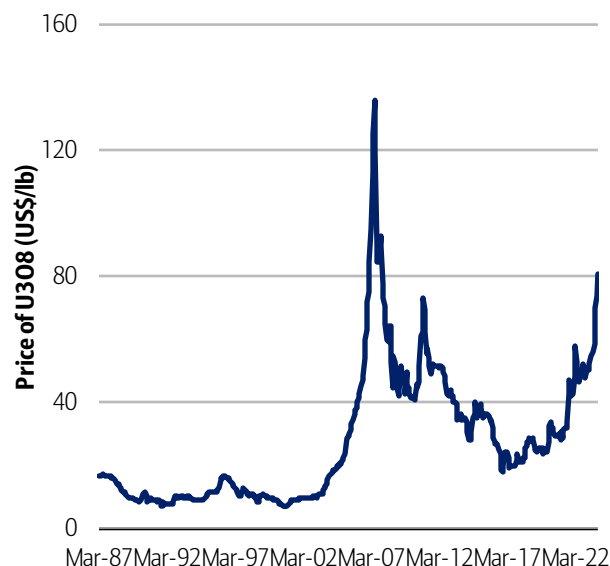


Source: UxC, LLC

BofA GLOBAL RESEARCH

## Exhibit 13: Monthly price of uranium (U<sub>3</sub>O<sub>8</sub>) in \$/lb

...Yet U<sub>3</sub>O<sub>8</sub> prices are still well below long-term peak prices reach in 2007



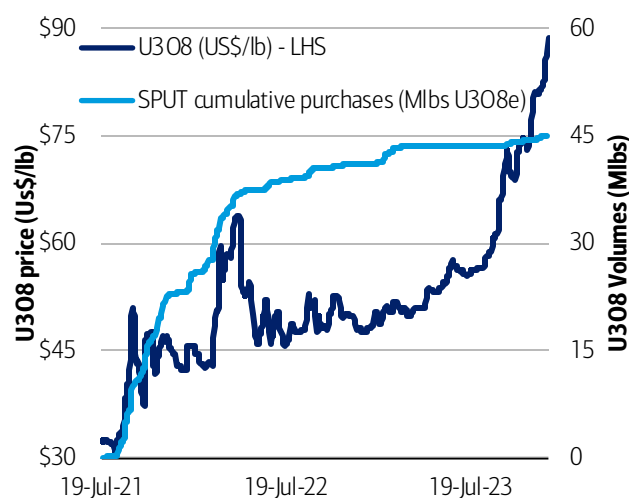
Source: UxC, LLC

BofA GLOBAL RESEARCH

The Sprott Physical Uranium Trust (SPUT) has become an important driver of spot pricing since its inception in July 2021. But more recently, it's been less active in the market as it has more frequently traded at a discount to its net asset value (NAV). In our view, the rising uranium price has been driven more by end-use (nuclear utility) demand.

## Exhibit 14: UxC daily spot price vs. cumulative SPUT purchases of U<sub>3</sub>O<sub>8</sub>

Slow SPUT purchasing helps explain the sideways U<sub>3</sub>O<sub>8</sub> price

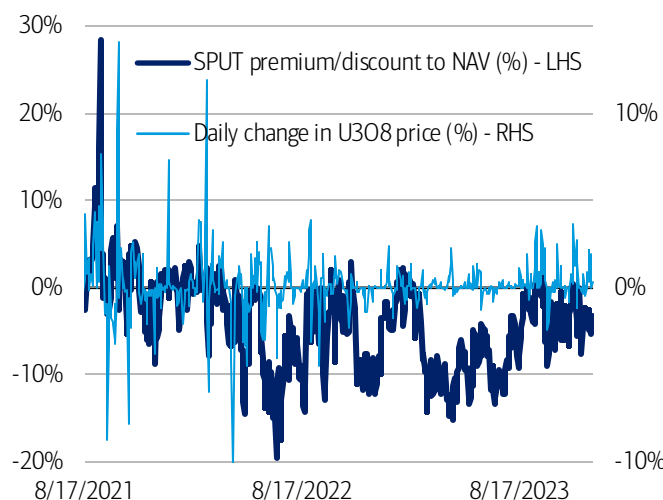


Source: UxC, LLC; Sprott Physical Uranium Trust website

BofA GLOBAL RESEARCH

## Exhibit 15: SPUT price premium to NAV vs. daily U<sub>3</sub>O<sub>8</sub> price changes

When priced at a discount to NAV, SPUT U<sub>3</sub>O<sub>8</sub> purchases slow



Source: UxC, LLC; Sprott Physical Uranium Trust website

BofA GLOBAL RESEARCH

## Conversion market prices

Conversion pricing in North America and the European Union are at all-time highs and could remain robust given reports of continued tight supply. While several facilities are now ramping-up in the west that could provide some relief over the longer-term, continued tightness in the near-term seems likely, suggesting a building of pent-up demand for natural uranium ( $U_3O_8$ ).

### Exhibit 16: North American (NA) conversion pricing (US\$/ KgU)

Conversion pricing is at all-time highs.



Source: UxC, LLC

BofA GLOBAL RESEARCH

### Exhibit 17: European Union (EU) conversion pricing (EUR/ KgU)

Conversion pricing is at all-time highs.



Source: UxC, LLC

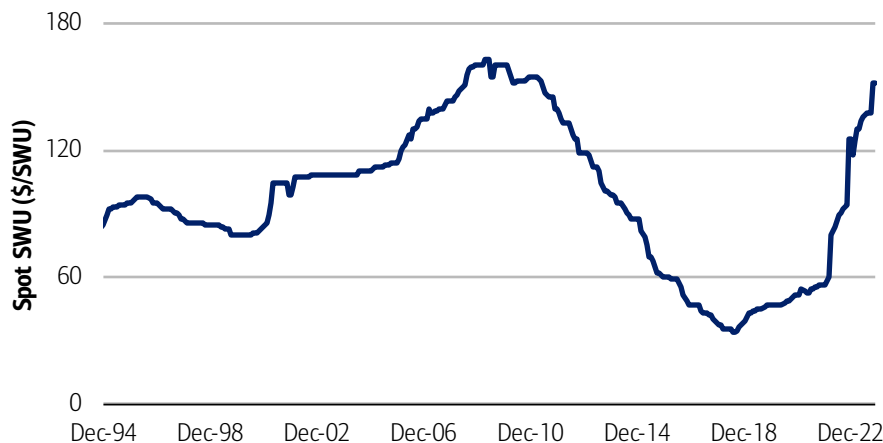
BofA GLOBAL RESEARCH

## Enrichment market prices

Global enrichment markets are tightening rapidly which should lead to increasing demand for  $U_3O_8$  through a rising rate of overfeeding.

### Exhibit 18: Enrichment prices as measure in USD per separative work unit (SWU)

SWU pricing has strengthened substantially since Russia's invasion of Ukraine



Source: UxC, LLC

BofA GLOBAL RESEARCH



# Uranium global supply & demand

## Exhibit 19: Demand for uranium (thousands of pounds (klbs) of uranium / yellowcake / tri-uranium octoxide (U<sub>3</sub>O<sub>8</sub>))

The forecast 21% growth in power reactor consumption demand through to 2030E vs. 2022E is driven by China

URANIUM DEMAND	2020	2021	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E	2034E	2035E
Country																
Canada	4,218	3,927	5,188	5,188	5,188	4,411	4,022	4,022	4,022	4,022	4,022	4,022	4,022	4,022	4,022	4,022
% y/y	-7%	-7%	32%	0%	0%	-15%	-9%	0%	0%	0%	0%	0%	0%	0%	0%	0%
China	21,185	25,988	22,750	26,457	30,795	34,863	37,238	37,803	47,081	50,482	61,513	54,418	63,706	70,409	70,959	76,718
% y/y	5%	23%	-12%	16%	16%	13%	7%	2%	25%	7%	22%	-12%	17%	11%	1%	8%
France	15,574	22,849	23,119	24,371	23,465	23,465	23,465	23,465	23,465	17,420	22,457	20,056	13,872	17,834	21,733	18,708
% y/y	0%	47%	1%	5%	-4%	0%	0%	0%	0%	-26%	29%	-11%	-31%	29%	22%	-14%
Japan	3,134	3,342	6,891	6,373	8,000	7,992	8,272	12,931	11,292	11,068	9,663	7,501	10,878	10,478	10,216	8,108
% y/y	46%	7%	106%	-8%	26%	0%	4%	56%	-13%	-2%	-13%	-22%	45%	-4%	-3%	-21%
Russia	5,718	8,432	12,902	13,019	13,787	12,745	13,548	12,739	13,010	9,506	10,236	12,492	8,701	10,224	10,892	7,882
% y/y	-33%	47%	53%	7%	6%	-8%	6%	-6%	2%	-27%	8%	22%	-30%	18%	7%	-28%
South Korea	11,690	12,315	11,928	12,358	12,863	12,371	12,196	12,196	12,196	13,554	16,823	15,157	14,580	16,910	14,588	15,547
% y/y	23%	5%	-3%	4%	4%	-4%	-1%	0%	0%	11%	24%	-10%	-4%	16%	-14%	7%
United States	43,477	45,567	49,167	49,821	49,135	49,298	49,298	49,298	49,298	52,396	45,267	54,285	49,225	49,179	50,315	51,944
% y/y	-9%	5%	8%	7%	-1%	0%	0%	0%	0%	6%	-14%	20%	-9%	0%	2%	3%
Other	55,805	31,265	44,429	41,483	39,965	40,447	37,964	43,203	41,738	41,761	44,304	39,440	43,348	40,908	41,120	41,744
% y/y	-1%	-44%	42%	-7%	-4%	1%	-6%	14%	-3%	0%	6%	-11%	10%	-6%	1%	2%
Power Requirements	160,800	153,685	176,373	179,069	183,199	185,591	186,005	195,658	202,103	200,211	214,285	207,371	208,331	219,965	223,846	224,674
% y/y	-23%	-4.4%	14.8%	1.5%	2.3%	1.3%	0.2%	5.2%	3.3%	-0.9%	7.0%	-3.2%	0.5%	5.6%	1.8%	0.4%
Total inventory build	20,100	66,171	20,500	15,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	9,000	10,000	9,000	9,000
Total Underlying Demand	180,900	219,856	196,873	194,069	193,199	195,591	196,005	205,658	212,103	210,211	224,285	217,371	217,331	229,965	232,846	233,674

Source: BofA Global Research, UxC LLC

BofA GLOBAL RESEARCH

## Exhibit 20: Supply for uranium and market balances (thousand pounds (klbs) of uranium / yellowcake / triuranium octoxide (U<sub>3</sub>O<sub>8</sub>))

Before accounting for uranium inventory drawdowns, 2024E is expected to experience another large deficit

URANIUM SUPPLY	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E	2034E	2035E
Mine Supply																
Africa	19,118	20,656	20,219	20,500	24,000	25,200	24,670	27,100	28,450	30,440	31,210	32,875	30,720	28,975	27,670	27,310
% y/y	-3%	8%	-2%	1%	17%	5%	-2%	10%	5%	7%	3%	5%	-7%	-6%	-5%	-1%
Australia	16,025	9,721	12,163	13,600	14,700	15,725	16,400	16,325	15,800	11,200	10,200	10,200	10,050	9,750	9,750	9,400
% y/y	-6%	-39%	25%	12%	8%	7%	4%	0%	-3%	-29%	-9%	0%	-1%	-3%	0%	-4%
Canada	10,070	12,200	19,160	30,355	36,000	37,300	37,300	36,300	37,000	41,000	49,000	53,000	54,000	54,000	54,000	40,000
% y/y	-44%	21%	57%	58%	19%	4%	0%	-3%	2%	11%	20%	8%	2%	0%	0%	-26%
Kazakhstan	50,641	56,811	55,193	54,821	65,445	77,319	77,320	77,531	75,581	75,049	69,101	68,663	68,712	63,818	63,818	55,468
% y/y	-15%	12%	-3%	-1%	19%	18%	0%	0%	-3%	-1%	-8%	-1%	0%	-7%	-1%	-13%
Russia	7,400	7,360	6,521	7,660	8,260	8,560	8,960	9,360	9,360	9,360	9,360	9,360	9,360	9,360	9,360	9,360
% y/y	-2%	-1%	-11%	17%	8%	4%	5%	4%	0%	0%	0%	0%	0%	0%	0%	0%
Ukraine	1,182	752	125	1,000	1,500	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
% y/y	-43%	-36%	-83%	700%	50%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
United States	213	0	194	350	850	850	850	850	150	150	150	0	0	0	0	0
% y/y	22%	-100%	nm	80%	143%	0%	0%	0%	-82%	0%	0%	-100%	nm	nm	nm	nm
Uzbekistan	8,800	8,800	9,100	8,800	8,800	8,800	8,800	8,800	8,800	8,800	8,800	8,800	8,800	8,800	8,800	8,800
% y/y	-3%	0%	3%	-3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other	5,837	6,330	6,323	7,466	7,669	7,932	9,315	9,761	10,340	11,130	11,130	11,130	11,130	11,130	11,130	11,130
% y/y	3%	8%	0%	18%	3%	3%	17%	5%	6%	8%	0%	0%	0%	0%	0%	0%
Total mine production	119,286	122,630	128,998	144,552	167,224	183,686	185,615	188,027	189,431	189,661	196,899	196,466	194,723	192,727	186,528	163,468
% y/y	-14%	3%	5%	12%	16%	10%	1%	1%	1%	0%	4%	0%	-1%	-1%	-3%	-12%
Secondary Supply																
Russian Govt Stocks	4,000	4,000	4,000	4,000	4,000	4,000	3,000	3,000	2,500	2,500	2,000	2,000	1,500	1,500	1,200	1,200
RussiaReenrich/underfeed	12,000	11,200	7,500	8,500	7,500	5,000	4,500	4,500	4,500	4,000	3,000	3,000	2,500	2,000	1,500	1,500
Western enricher Sales	8,150	8,860	7,340	2,088	1,725	0	0	0	0	0	0	0	0	0	0	0
Commercial inventory	29,500	36,300	38,000	26,385	4,716	-5,126	-5,080	1,244	8,873	7,324	14,653	9,727	12,686	27,056	35,129	56,392
US Gov. stocks (DOE, TVA)	3,042	828	888	1,895	1,798	2,014	2,101	3,003	959	928	1,887	1,659	700	1,659	4,200	6,700
MOX + Reprocessed	8,371	7,392	7,094	6,649	6,236	6,017	5,868	5,884	5,840	5,798	5,846	4,519	5,222	5,023	4,289	4,414
Total secondary supply	65,063	68,580	64,822	49,517	25,975	11,905	10,389	17,631	22,672	20,550	27,386	20,905	22,608	37,238	46,318	70,206
Total Supply	184,349	191,210	193,820	194,069	193,199	195,591	196,005	205,658	212,103	210,211	224,285	217,371	217,331	229,965	232,846	233,674
% y/y	-7%	4%	1%	0%	0%	1%	0%	5%	3%	-1%	7%	-3%	0%	6%	1%	0%
Surplus (Deficit) bef. com. Inv.	-26,051	-64,946	-41,053	-26,385	-4,716	5,126	5,080	-1,244	-8,873	-7,324	-14,653	-9,727	-12,686	-27,056	-35,129	-56,392
surplus/(deficit) % bef. inv.	-14%	-30%	-21%	-14%	-2%	3%	3%	-1%	-4%	-3%	-7%	-4%	-6%	-12%	-15%	-24%
Surplus (Deficit) bef Com. Inv.	-5,951	1,225	-20,553	-11,385	5,284	15,126	15,080	8,756	1,127	2,676	-4,653	273	-3,686	-17,056	-26,129	-47,392
surplus/(deficit) % of rctr req.	-4%	1%	-12%	-6%	3%	8%	8%	4%	1%	1%	-2%	0%	-2%	-8%	-12%	-21%
Surplus (Deficit) after inv.	3,449	-28,646	-3,053	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: BofA Global Research estimates, UxC LLC

BofA GLOBAL RESEARCH

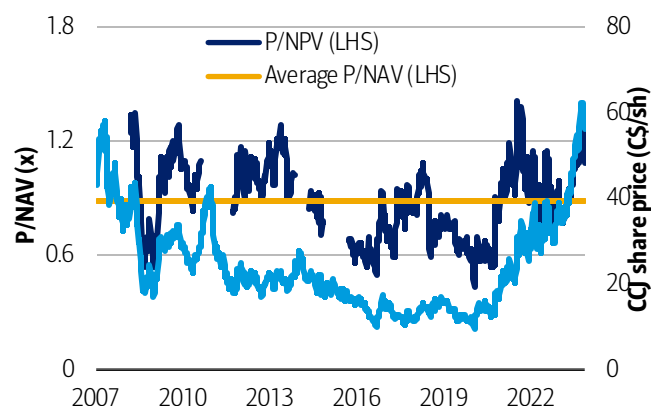


## Cameco (CCJ US, CCO CN)

We increase our PO for CCJ to \$55.50 (C\$76) per share from \$51 (C\$70) per share, driven by our higher U<sub>3</sub>O<sub>8</sub> prices forecasts. We see potential upside to CCJ's share price given its historical tendency to trade in line with spot uranium which we think is set to remain well supported. CCJ is the only large, liquid, US listed vehicle for exposure to uranium and is trading at a discount to its historical EV/EBITDA multiple, in our view. On a P/NAV basis, CCJ is now trading at 1.09x, still below the all-time peak at 1.35x but above the long-term average of just below 1x. On a rolling next twelve-month (NTM) EV/EBITDA basis, CCJ is now trading at 11x, significantly below the last cycle peak at 30x, and also below to the long-term average of 14x. With a broad, tier 1 nuclear fuel offering, we see CCJ as well placed to benefit from nuclear energy growth. We reiterate our Buy rating.

### Exhibit 21: CCJ historical P/NAV

At 1.24x, CCJ is trading above the 0.88x historical average

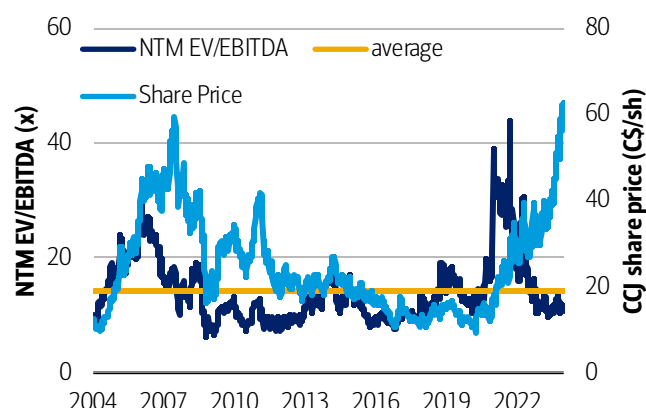


Source: BofA Global Research, Bloomberg, Company reports

BofA GLOBAL RESEARCH

### Exhibit 22: CCJ EV/EBITDA NTM

CCJ is trading at 11x EV/EBITDA NTM, below the 14x historical average.



Source: BofA Global Research, Bloomberg, Company reports

BofA GLOBAL RESEARCH

We note that on 2025E EBITDA, when both of CCJ's flagship assets, Cigar Lake and McArthur River are expected to be operating at much closer to full capacity, CCJ is trading at 9.5x. This is well below the CCJ's long-term average (which we estimate on a normalized basis is around 11x, but with the additional of Westinghouse should be 12x-13x) and in line with copper producers that usually trade at a sharp discount to CCJ.

### Exhibit 23: Uranium Comparable Valuations

CCJ trades at a slight premium to the peer average on P/NAV as well as on EV/EBITDA 2024E and 2025E

Priced as of 5-Jan-24	BofA Sym	BofA Rating	Shr. Price	MC (US\$M)	EV (US\$M)	EV/EBITDA			FCF yield		P/NAV	Dividend yield		ND/EBITDA	
						2023E	2024E	2025E	2023E	2024E	2023E	2023E	2024E	2023E	2024E
<b>Uranium Producers</b>															
Boss Energy	BQSSF	BUY	AUD 4.23	1,117	1,117	93.8	21.7	6.8	-3%	-4%	1.80	0.0%	0.0%	(5.6)	(2.0)
Cameco	YCCO	BUY	CAD 56.48	18,339	21,111	38.7	11.7	9.5	1%	5%	1.09	0.2%	0.1%	2.0	0.1
Kazatomprom	XWREF	BUY	KZT 41.15	10,673	11,454	7.1	3.5	2.9	5%	8%	0.76	4.1%	3.6%	0.1	0.0
Paladin Energy	PALAF	BUY	AUD 1.02	2,033	1,801	NA	26.9	8.0	0%	2%	1.34	0.0%	0.0%	7.3	(1.5)
Yellow Cake Plc	YLLXF	BUY	GBP 617.00	1,555	1,470	NA	NA	NA	0%	-1%	1.38	0.0%	0.0%	NA	NA
<b>Market Cap Weighted Avg.</b>						<b>29.8</b>	<b>10.1</b>	<b>7.2</b>	<b>2%</b>	<b>5%</b>	<b>1.04</b>	<b>1.4%</b>	<b>1.2%</b>	<b>1.4</b>	<b>(0.1)</b>

Source: BofA Global Research Estimates, Bloomberg, Company Reports

BofA GLOBAL RESEARCH

## CCJ estimate changes

### Exhibit 24: Estimate changes for Cameco

Our 2024 and 2025 estimates for CCJ increased markedly while 2023 estimates are lower on a Q4'23 mark-to-market

C\$ millions / C\$ per share	2023E			2024E			2025E		
	Old	New	% Chg	Old	New	% Chg	Old	New	% Chg
Revenues	2,567	2,560	0%	2,650	2,789	5%	2,945	3,303	12%
COGS	1,821	1,850	2%	1,095	1,214	11%	1,096	1,283	17%
Depreciation	257	256	0%	318	335	5%	365	410	12%
EBITDA	513	476	-7%	1,370	1,391	2%	1,664	1,835	10%
Adjusted EBITDA (IFRS definition)	724	673	-7%	1,885	1,913	2%	2,202	2,429	10%
Adjusted EBITDA (JV's rolled-up)	760	728	-4%	2,261	2,415	7%	2,575	2,954	15%
Adjusted net income	331	306	-7%	1,175	1,284	9%	1,363	1,621	19%
Adjusted EPS C\$/sh	0.76	0.70	-8%	2.70	2.95	9%	3.13	3.72	19%
Cashflow from operations	446	414	-7%	1,379	1,404	2%	1,741	2,044	17%
Capex	151	151	0%	175	175	0%	125	125	0%
Free cash flow to the firm	295	263	-11%	1,204	1,229	2%	1,616	1,919	19%
Year-end (net debt) / net cash	-1,480	-1,473	NM	-311	-279	NM	1,271	1,605	26%
NPV per share (CAD)	49.90	51.80	4%	46.40	48.50	5%	50.60	52.60	4%
Uranium production (Mlbs)	18.7	18.7	0%	22.4	22.4	0%	23.3	23.3	0%
Uranium sales (Mlbs)	32.0	32.0	0%	26.0	26.0	0%	27.1	27.1	0%
Total costs (C\$/lb)	45.01	46.03	2%	27.66	32.13	16%	26.36	33.08	26%
USDCAD FX rate	1.35	1.35	0%	1.37	1.37	0%	1.37	1.37	0%

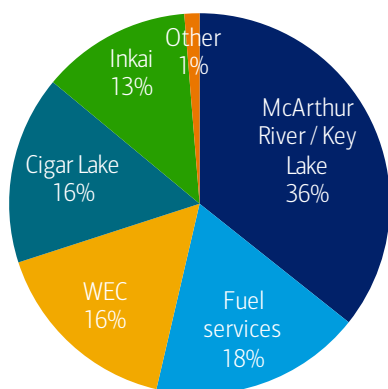
Source: BofA Global Research, Company reports

BofA GLOBAL RESEARCH

## CCJ NAV breakdowns

### Exhibit 25: CCJ net present value (NPV) by asset

McArthur River / Key Lake is CCJ's highest value asset at 36% of total

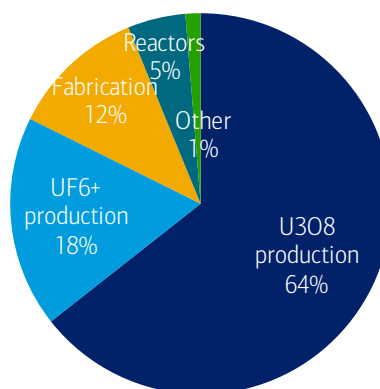


Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 26: CCJ net present value (NPV) by product

U<sub>3</sub>O<sub>8</sub> production is CCJ's most valuable product at 64% of total



Source: BofA Global Research

BofA GLOBAL RESEARCH

### Stocks mentioned

Prices and ratings for stocks mentioned in this report

BofA Ticker	Bloomberg ticker	Company name	Price	Rating
YCCO	CCO CN	Cameco Corp	C\$ 56.48	B-1-7
CCJ	CCJ US	Cameco Corp.	US\$ 42.25	C-1-7



## Investment Rationale

### Cameco Corporation

Our Buy rating on Cameco reflects our positive outlook for the price of uranium concentrate (Cameco's principal product) as well as Cameco's influential global market position, suite of high-quality uranium exploration, mining and processing assets and direct exposure to nuclear power via a 49% interest in nuclear services company, Westinghouse. A growing term contract book should ultimately lead to a material improvement in long-term profitability.

## Price objective basis & risk

### Cameco Corporation (YCCO / CCJ)

Our US\$55.50 (C\$76) PO is based on 1.0x our NAV, and 13.5x 2024E & 13x 2025E EV/EBITDA (all three equally weighted). We use a CADUSD FX rate of 1.37. The 1.0x P/NAV is above the longer term avg around 0.9x but below peak of 1.35x. We think 1.0x is justified given Cameco's world-class tier one assets in favorable jurisdictions (Canada) partially offset by the fact one of those tier-one assets has been voluntarily idled (but is in the process of restarting).

Downside risks: 1) slower-than-expected global energy demand growth, 2) continued push-out of a Japanese nuclear fleet restart, 3) any worsening in sentiment toward nuclear or more favorable sentiment toward alternative power fuel sources, and 4) any production problems at Cameco's only operating mine, Cigar Lake. Upside risks: 1) additional potential mine disruptions that may further improve supply-demand dynamics, 2) better pace of reactor development in key future demand countries (China, Japan, and India), 3) more stringent carbon emissions restrictions in key countries, encouraging nuclear power as an environmentally friendly base line energy source, 4) a material rise in NatGas prices making nuclear power generation competitive in the US.

## Analyst Certification

I, Lawson Winder, CFA, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

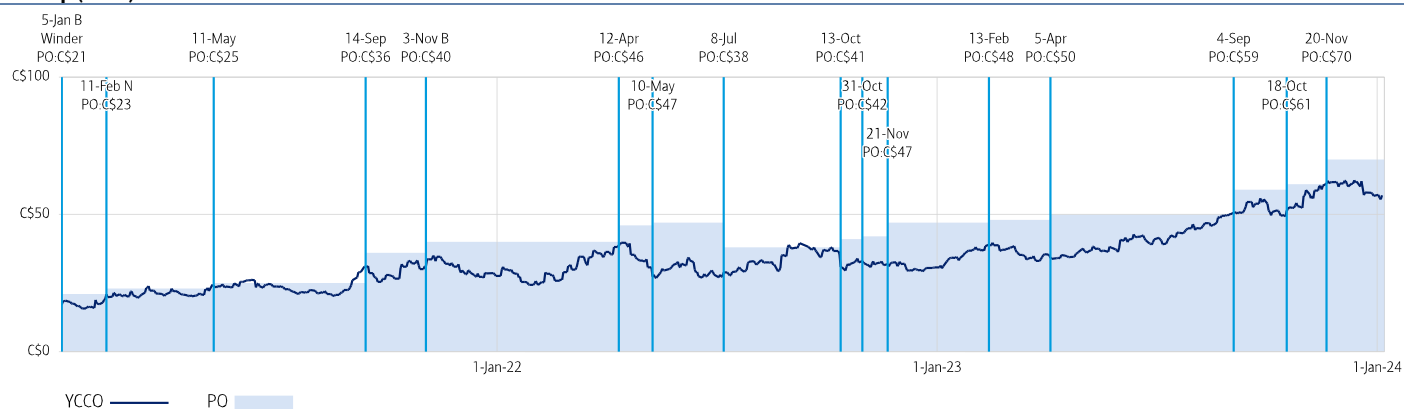
## North America - Metals and Mining Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
<b>BUY</b>				
	Agnico Eagle Mines	AEM	AEM US	Lawson Winder, CFA
	B2Gold Corp	YBTO	BTO CN	Harmen Puri
	B2Gold Corp	BTG	BTG US	Harmen Puri
	Barrick Gold	GOLD	GOLD US	Lawson Winder, CFA
	Cameco Corporation	YCCO	CCO CN	Lawson Winder, CFA
	Cameco Corporation	CCJ	CCJ US	Lawson Winder, CFA
	Commercial Metals	CMC	CMC US	Lawson Winder, CFA
	Endeavour Mining	YEDV	EDV CN	Harmen Puri
	Endeavour Mining	EDVMF	EDVMF US	Harmen Puri
	Endeavour Mining PLC	XEDVF	EDV LN	Harmen Puri
	Franco-Nevada	YFNV	FNV CN	Lawson Winder, CFA
	Franco-Nevada	FNV	FNV US	Lawson Winder, CFA
	IAMGOLD	YIMG	IMG CN	Lawson Winder, CFA
	IAMGOLD Corp.	IAG	IAG US	Lawson Winder, CFA
	Ivanhoe Mines	YIVN	IVN CN	Lawson Winder, CFA
	Ivanhoe Mines	IVPAF	IVPAF US	Lawson Winder, CFA
	Lundin Mining	XLPRF	LUMI SS	Lawson Winder, CFA
	Lundin Mining Corp	YLUN	LUN CN	Lawson Winder, CFA
	Lundin Mining Corp	LUNMF	LUNMF US	Lawson Winder, CFA
	MP Materials	MP	MP US	Lawson Winder, CFA
	Newmont Corporation	NEM	NEM US	Lawson Winder, CFA
	Newmont Corporation	XNCRF	NEM AU	Lawson Winder, CFA
	Nucor	NUE	NUE US	Lawson Winder, CFA
	Pan American Silver	PAAS	PAAS US	Lawson Winder, CFA
	Teck Resources	YTECK	TECK/B CN	Lawson Winder, CFA
	Teck Resources Ltd	TECK	TECK US	Lawson Winder, CFA
	Triple Flag Precious Metals Corp.	YTFPM	TFPM CN	Lawson Winder, CFA
	Triple Flag Precious Metals Corp.	TFPM	TFPM US	Lawson Winder, CFA
	Wheaton Precious Metals	WPM	WPM US	Lawson Winder, CFA
<b>NEUTRAL</b>				
	Alamos Gold	YAGI	AGI CN	Harmen Puri
	Alamos Gold	AGI	AGI US	Harmen Puri
	Alcoa Corporation	AA	AA US	Lawson Winder, CFA
	Cleveland-Cliffs	CLF	CLF US	Lawson Winder, CFA
	First Quantum	FQVLF	FQVLF US	Lawson Winder, CFA
	First Quantum Minerals	YFM	FM CN	Lawson Winder, CFA
	Freeport-McMoRan	FCX	FCX US	Lawson Winder, CFA
	Hudbay Minerals	YHBM	HBM CN	Lawson Winder, CFA
	HudBay Minerals	HBM	HBM US	Lawson Winder, CFA
	Reliance Steel & Aluminum	RS	RS US	Lawson Winder, CFA
	Steel Dynamics	STLD	STLD US	Lawson Winder, CFA
<b>UNDERPERFORM</b>				
	Centerra Gold	YCG	CG CN	Lawson Winder, CFA
	Centerra Gold	CGAU	CGAU US	Lawson Winder, CFA
	Eldorado Gold	EGO	EGO US	Harmen Puri
	Eldorado Gold	YELD	ELD CN	Harmen Puri
	Kinross Gold	KGC	KGC US	Lawson Winder, CFA
	New Gold Inc.	YNGD	NGD CN	Harmen Puri
	New Gold Inc.	NGD	NGD US	Harmen Puri
	Nexa Resources	NEXA	NEXA US	Lawson Winder, CFA
	Royal Gold	RGLD	RGLD US	Lawson Winder, CFA
	SSR Mining Inc.	SSRM	SSRM US	Lawson Winder, CFA
	SSR Mining Inc.	YSSRM	SSRM CN	Lawson Winder, CFA

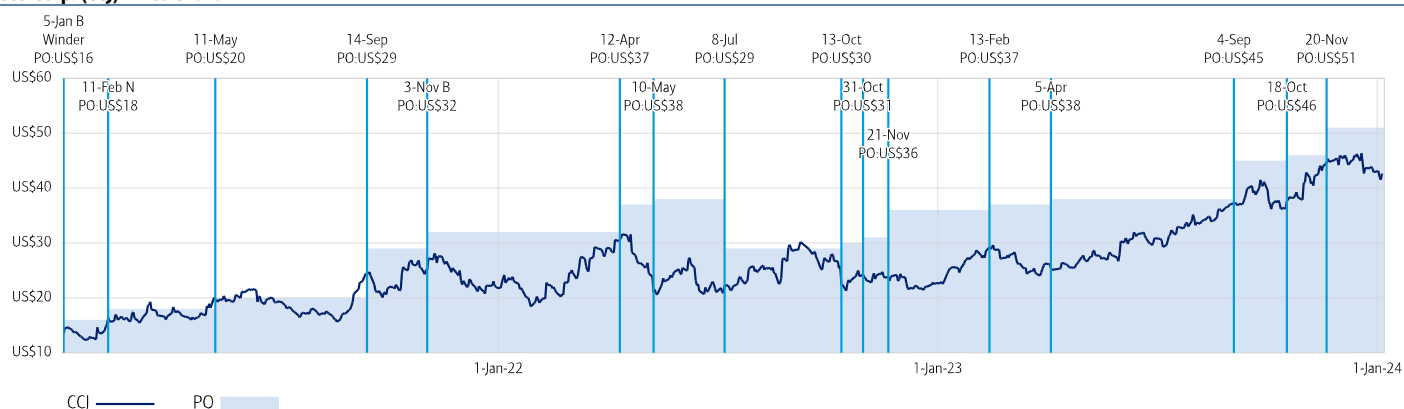
## Disclosures

## Important Disclosures



**Cameco Corp (YCCO) Price Chart**

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

**Cameco Corp. (CCJ) Price Chart**

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

**Equity Investment Rating Distribution: Non-Ferrous Metals/Mining & Minerals Group (as of 31 Dec 2023)**

Coverage Universe	Count	Percent	Inv. Banking Relationships <sup>R1</sup>	Count	Percent
Buy	58	53.70%	Buy	26	44.83%
Hold	24	22.22%	Hold	10	41.67%
Sell	26	24.07%	Sell	13	50.00%

**Equity Investment Rating Distribution: Global Group (as of 31 Dec 2023)**

Coverage Universe	Count	Percent	Inv. Banking Relationships <sup>R1</sup>	Count	Percent
Buy	1895	53.62%	Buy	1083	57.15%
Hold	832	23.54%	Hold	454	54.57%
Sell	807	22.84%	Sell	383	47.46%

<sup>R1</sup> Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

**FUNDAMENTAL EQUITY OPINION KEY:** Opinions include a Volatility Risk Rating, an Investment Rating and an Income Rating. **VOLATILITY RISK RATINGS**, indicators of potential price fluctuation, are: A - Low, B - Medium and C - High. **INVESTMENT RATINGS** reflect the analyst's assessment of both a stock's absolute total return potential as well as its attractiveness for investment relative to other stocks within its Coverage Cluster (defined below). Our investment ratings are: 1 - Buy stocks are expected to have a total return of at least 10% and are the most attractive stocks in the coverage cluster; 2 - Neutral stocks are expected to remain flat or increase in value and are less attractive than Buy rated stocks and 3 - Underperform stocks are the least attractive stocks in a coverage cluster. An investment rating of 6 (No Rating) indicates that a stock is no longer trading on the basis of fundamentals. Analysts assign investment ratings considering, among other things, the 0-12 month total return expectation for a stock and the firm's guidelines for ratings dispersions (shown in the table below). The current price objective for a stock should be referenced to better understand the total return expectation at any given time. The price objective reflects the analyst's view of the potential price appreciation (depreciation).

Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster <sup>R2</sup>
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

<sup>R2</sup> Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

**INCOME RATINGS**, indicators of potential cash dividends, are: 7 - same/higher (dividend considered to be secure), 8 - same/lower (dividend not considered to be secure) and 9 - pays no cash dividend. **Coverage Cluster** is comprised of stocks covered by a single analyst or two or more analysts sharing a common industry, sector, region or other classification(s). A stock's coverage cluster is included in the most recent BofA Global Research report referencing the stock.

Price Charts for the securities referenced in this research report are available on the [Price Charts website](#), or call 1-800-MERRILL to have them mailed.

BofAS or one of its affiliates acts as a market maker for the equity securities recommended in the report: Cameco Corp.

The issuer is or was, within the last 12 months, a non-securities business client of BofAS and/or one or more of its affiliates: Cameco Corporation.

BofAS together with its affiliates beneficially owns one percent or more of the common stock of this issuer. If this report was issued on or after the 9th day of the month, it reflects the ownership position on the last day of the previous month. Reports issued before the 9th day of a month reflect the ownership position at the end of the second month preceding the date of the report: Cameco Corporation.

BofAS or one of its affiliates is willing to sell to, or buy from, clients the common equity of the issuer on a principal basis: Cameco Corp.

BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall profitability of Bank of America Corporation, including profits derived from investment banking. The analyst(s) responsible for this report may also receive compensation based upon, among other factors, the overall profitability of the Bank's sales and trading businesses relating to the class of securities or financial instruments for which such analyst is responsible.

## Other Important Disclosures

From time to time research analysts conduct site visits of covered issuers. BofA Global Research policies prohibit research analysts from accepting payment or reimbursement for travel expenses from the issuer for such visits.

Prices are indicative and for information purposes only. Except as otherwise stated in the report, for any recommendation in relation to an equity security, the price referenced is the publicly traded price of the security as of close of business on the day prior to the date of the report or, if the report is published during intraday trading, the price referenced is indicative of the traded price as of the date and time of the report and in relation to a debt security (including equity preferred and CDS), prices are indicative as of the date and time of the report and are from various sources including BofA Securities trading desks.

The date and time of completion of the production of any recommendation in this report shall be the date and time of dissemination of this report as recorded in the report timestamp.

Recipients who are not institutional investors or market professionals should seek the advice of their independent financial advisor before considering information in this report in connection with any investment decision, or for a necessary explanation of its contents.

Officers of BofAS or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments.

Refer to [BofA Global Research policies relating to conflicts of interest](#).

**"BofA Securities" includes BofA Securities, Inc. ("BofAS") and its affiliates. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor if they have questions concerning this report or concerning the appropriateness of any investment idea described herein for such investor. "BofA Securities" is a global brand for BofA Global Research.**

### Information relating to Non-US affiliates of BofA Securities and Distribution of Affiliate Research Reports:

BofAS and/or Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by The Financial Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no 842 602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code), BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at [www.bofam.com/BofASEdisclaimer](http://www.bofam.com/BofASEdisclaimer); BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSF); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada Inc, regulated by the Canadian Investment Regulatory Organization; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; BofAS Japan: BofA Securities Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; BofAS India: BofA Securities India Limited, regulated by the Securities and Exchange Board of India (SEBI); Merrill Lynch (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority.

This information: has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSF; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by BofAS India; and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distributes



this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of Bank of America N.A., Australia Branch, neither MLEA nor any of its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil and its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information prepared and issued by Merrill Lynch (DIFC) is done so in accordance with the requirements of the DFSA conduct of business rules. BofA Europe (Frankfurt) distributes this information in Germany and is regulated by BaFin, the ECB and the CBI. BofA Securities entities, including BofA Europe and BofASE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BofA Securities group. You may be contacted by a different BofA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider. Please refer to the [Electronic Communications Disclaimers](#) for further information.

This information has been prepared and issued by BofAS and/or one or more of its non-US affiliates. The author(s) of this information may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so. BofAS and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofAS and/or MLPF&S clients in the US by its non-US affiliates. Any US person receiving this information and wishing to effect any transaction in any security discussed herein should do so through BofAS and/or MLPF&S and not such foreign affiliates. Hong Kong recipients of this information should contact Merrill Lynch (Asia Pacific) Limited in respect of any matters relating to dealing in securities or provision of specific advice on securities or any other matters arising from, or in connection with, this information. Singapore recipients of this information should contact Merrill Lynch (Singapore) Pte Ltd in respect of any matters arising from, or in connection with, this information. For clients that are not accredited investors, expert investors or institutional investors Merrill Lynch (Singapore) Pte Ltd accepts full responsibility for the contents of this information distributed to such clients in Singapore.

#### General Investment Related Disclosures:

Taiwan Readers: Neither the information nor any opinion expressed herein constitutes an offer or a solicitation of an offer to transact in any securities or other financial instrument. No part of this report may be used or reproduced or quoted in any manner whatsoever in Taiwan by the press or any other person without the express written consent of BofA Securities. This document provides general information only, and has been prepared for, and is intended for general distribution to, BofA Securities clients. Neither the information nor any opinion expressed constitutes an offer or an invitation to make an offer, to buy or sell any securities or other financial instrument or any derivative related to such securities or instruments (e.g., options, futures, warrants, and contracts for differences). This document is not intended to provide personal investment advice and it does not take into account the specific investment objectives, financial situation and the particular needs of, and is not directed to, any specific person(s). This document and its content do not constitute, and should not be considered to constitute, investment advice for purposes of ERISA, the US tax code, the Investment Advisers Act or otherwise. Investors should seek financial advice regarding the appropriateness of investing in financial instruments and implementing investment strategies discussed or recommended in this document and should understand that statements regarding future prospects may not be realized. Any decision to purchase or subscribe for securities in any offering must be based solely on existing public information on such security or the information in the prospectus or other offering document issued in connection with such offering, and not on this document.

Securities and other financial instruments referred to herein, or recommended, offered or sold by BofA Securities, are not insured by the Federal Deposit Insurance Corporation and are not deposits or other obligations of any insured depository institution (including, Bank of America, N.A.). Investments in general and, derivatives, in particular, involve numerous risks, including, among others, market risk, counterparty default risk and liquidity risk. No security, financial instrument or derivative is suitable for all investors. Digital assets are extremely speculative, volatile and are largely unregulated. In some cases, securities and other financial instruments may be difficult to value or sell and reliable information about the value or risks related to the security or financial instrument may be difficult to obtain. Investors should note that income from such securities and other financial instruments, if any, may fluctuate and that price or value of such securities and instruments may rise or fall and, in some cases, investors may lose their entire principal investment. Past performance is not necessarily a guide to future performance. Levels and basis for taxation may change.

This report may contain a short-term trading idea or recommendation, which highlights a specific near-term catalyst or event impacting the issuer or the market that is anticipated to have a short-term price impact on the equity securities of the issuer. Short-term trading ideas and recommendations are different from and do not affect a stock's fundamental equity rating, which reflects both a longer term total return expectation and attractiveness for investment relative to other stocks within its Coverage Cluster. Short-term trading ideas and recommendations may be more or less positive than a stock's fundamental equity rating.

BofA Securities is aware that the implementation of the ideas expressed in this report may depend upon an investor's ability to "short" securities or other financial instruments and that such action may be limited by regulations prohibiting or restricting "shortselling" in many jurisdictions. Investors are urged to seek advice regarding the applicability of such regulations prior to executing any short idea contained in this report.

Foreign currency rates of exchange may adversely affect the value, price or income of any security or financial instrument mentioned herein. Investors in such securities and instruments, including ADRs, effectively assume currency risk.

BofAS or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BofAS or one of its affiliates may, at any time, hold a trading position (long or short) in the securities and financial instruments discussed in this report.

BofA Securities, through business units other than BofA Global Research, may have issued and may in the future issue trading ideas or recommendations that are inconsistent with, and reach different conclusions from, the information presented herein. Such ideas or recommendations may reflect different time frames, assumptions, views and analytical methods of the persons who prepared them, and BofA Securities is under no obligation to ensure that such other trading ideas or recommendations are brought to the attention of any recipient of this information.

In the event that the recipient received this information pursuant to a contract between the recipient and BofAS for the provision of research services for a separate fee, and in connection therewith BofAS may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofAS has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofAS). If such recipient uses the services of BofAS in connection with the sale or purchase of a security referred to herein, BofAS may act as principal for its own account or as agent for another person. BofAS is and continues to act solely as a broker-dealer in connection with the execution of any transactions, including transactions in any securities referred to herein.

#### BofA ESGMeter Methodology:

ESGMeter is a proprietary metric based on quantitative analysis and fundamental analyst inputs that reflects our assessment of a company's Environmental, Social and Governance-related attributes. The ESGMeter is intended to indicate a company's likelihood of experiencing stronger financial stability (higher return on equity and lower earnings and price volatility) over the next three years relative to peer group. There are three ESGMeter levels - Low, Medium, and High - which indicate whether a company has attributes most likely to translate into superior financial stability (in the case of a High level) or weaker financial stability (in the case of a Low level) over the next three years relative to its peer group. A Medium level suggests that a company exhibits ESG characteristics that are likely associated with financial stability results in line with its peer group over the next three years. Full details of our methodology, financial stability definition and disclaimers are available at [BofA ESGMeter methodology](#). ESGMeter is not indicative of a company's future stock price performance and is not an investment recommendation or rating. ESGMeter is independent of the BofA Global Research fundamental equity analyst's investment rating, volatility risk rating, income rating or price objective for that company.

#### Copyright and General Information:

Copyright 2024 Bank of America Corporation. All rights reserved. iQDatabase® is a registered service mark of Bank of America Corporation. This information is prepared for the use of BofA Securities clients and may not be redistributed, retransmitted or disclosed, in whole or in part, or in any form or manner, without the express written consent of BofA Securities. BofA Global Research information is distributed simultaneously to internal and client websites and other portals by BofA Securities and is not publicly-available material. Any unauthorized use or disclosure is prohibited. Receipt and review of this information constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion, or information contained herein (including any investment recommendations, estimates or price targets) without first obtaining express permission from an authorized officer of BofA Securities.

Materials prepared by BofA Global Research personnel are based on public information. Facts and views presented in this material have not been reviewed by, and may not reflect information known to, professionals in other business areas of BofA Securities, including investment banking personnel. BofA Securities has established information barriers between BofA Global Research and certain business groups. As a result, BofA Securities does not disclose certain client relationships with, or compensation received from, such issuers. To the extent this material discusses any legal proceeding or issues, it has not been prepared as nor is it intended to express any legal conclusion, opinion or advice. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BofA Global Research personnel's knowledge of legal proceedings in which any BofA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public information. Facts and views presented in this material that relate to any such proceedings have not been reviewed by, discussed with, and may not reflect information known to, professionals in other business areas of BofA Securities in connection with the legal proceedings or matters relevant to such proceedings.

This information has been prepared independently of any issuer of securities mentioned herein and not in connection with any proposed offering of securities or as agent of any issuer of any securities. None of BofAS or any of its affiliates or their research analysts has any authority whatsoever to make any representation or warranty on behalf of the issuer(s). BofA Global Research



policy prohibits research personnel from disclosing a recommendation, investment rating, or investment thesis for review by an issuer prior to the publication of a research report containing such rating, recommendation or investment thesis.

Any information relating to the tax status of financial instruments discussed herein is not intended to provide tax advice or to be used by anyone to provide tax advice. Investors are urged to seek tax advice based on their particular circumstances from an independent tax professional.

The information herein (other than disclosure information relating to BofA Securities and its affiliates) was obtained from various sources and we do not guarantee its accuracy. This information may contain links to third-party websites. BofA Securities is not responsible for the content of any third-party website or any linked content contained in a third-party website. Content contained on such third-party websites is not part of this information and is not incorporated by reference. The inclusion of a link does not imply any endorsement by or any affiliation with BofA Securities. Access to any third-party website is at your own risk, and you should always review the terms and privacy policies at third-party websites before submitting any personal information to them. BofA Securities is not responsible for such terms and privacy policies and expressly disclaims any liability for them.

All opinions, projections and estimates constitute the judgment of the author as of the date of publication and are subject to change without notice. Prices also are subject to change without notice. BofA Securities is under no obligation to update this information and BofA Securities ability to publish information on the subject issuer(s) in the future is subject to applicable quiet periods. You should therefore assume that BofA Securities will not update any fact, circumstance or opinion contained herein.

Subject to the quiet period applicable under laws of the various jurisdictions in which we distribute research reports and other legal and BofA Securities policy-related restrictions on the publication of research reports, fundamental equity reports are produced on a regular basis as necessary to keep the investment recommendation current.

Certain outstanding reports or investment opinions relating to securities, financial instruments and/or issuers may no longer be current. Always refer to the most recent research report relating to an issuer prior to making an investment decision.

In some cases, an issuer may be classified as Restricted or may be Under Review or Extended Review. In each case, investors should consider any investment opinion relating to such issuer (or its security and/or financial instruments) to be suspended or withdrawn and should not rely on the analyses and investment opinion(s) pertaining to such issuer (or its securities and/or financial instruments) nor should the analyses or opinion(s) be considered a solicitation of any kind. Sales persons and financial advisors affiliated with BofAS or any of its affiliates may not solicit purchases of securities or financial instruments that are Restricted or Under Review and may only solicit securities under Extended Review in accordance with firm policies.

Neither BofA Securities nor any officer or employee of BofA Securities accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this information.