



LTIF Natural Resources

LTIFGEV LX

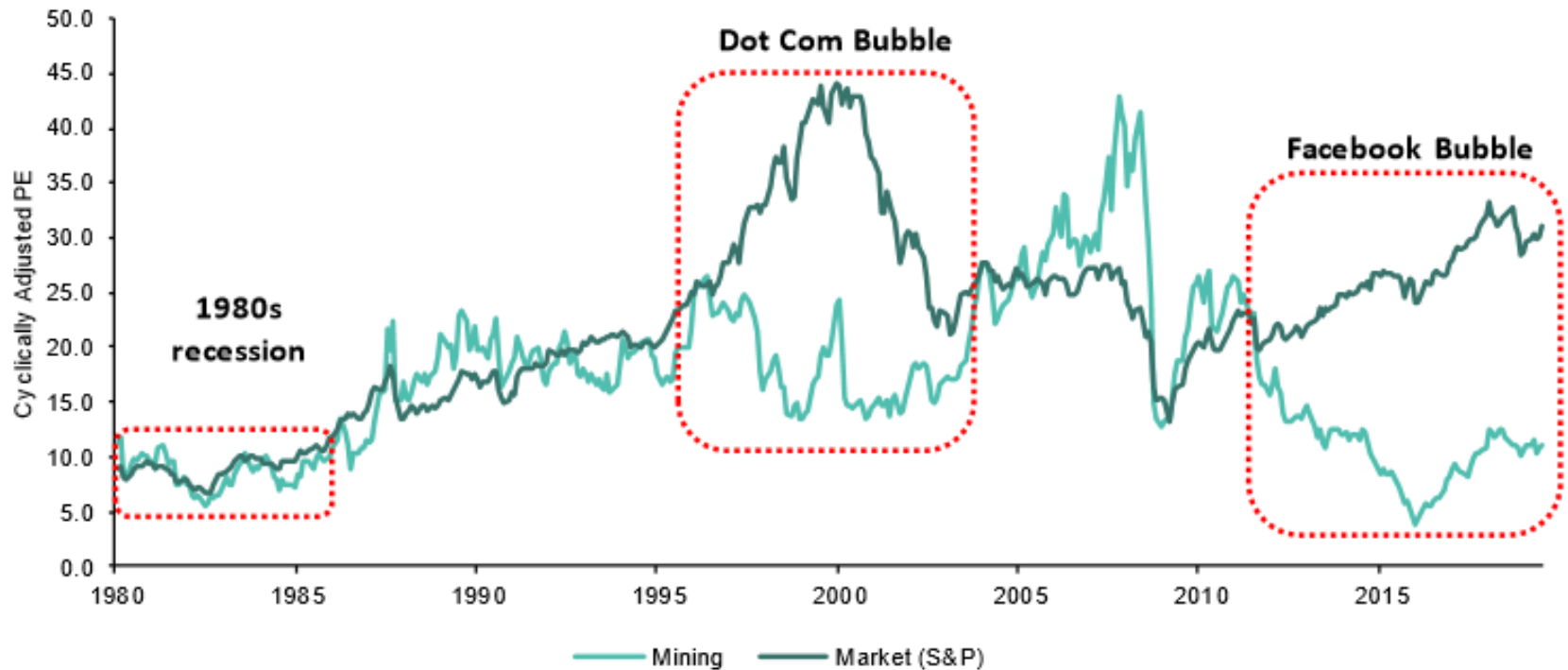
LU0244072335

January 2022



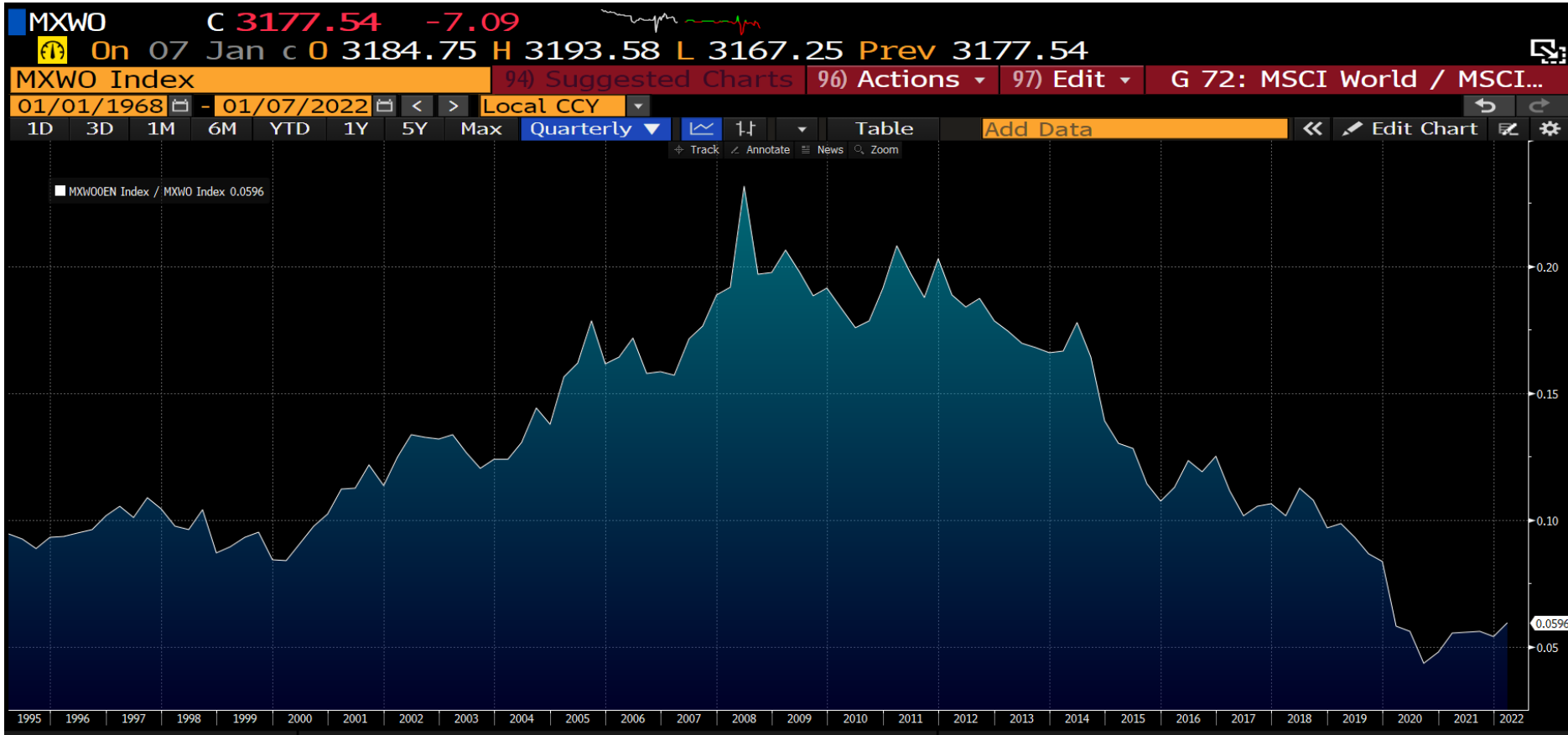
EXHIBIT 18: In modern history we haven't seen such a wide gap emerge between mining and the S&P; only the dotcom bubble came anywhere near today's levels

Mining CAPE vs S&P CAPE Since 1980

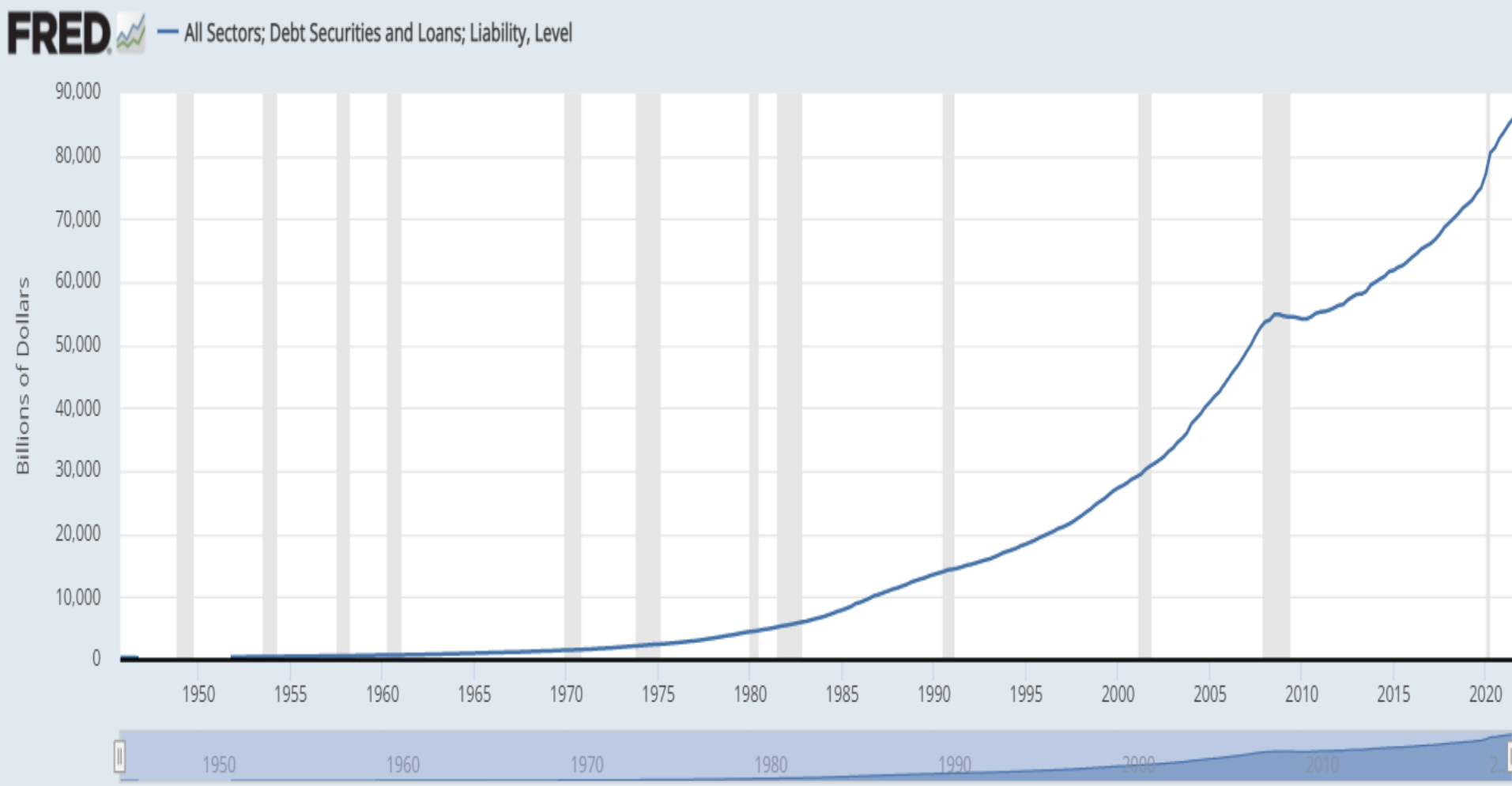


Source: Datastream, Bloomberg, CRSP, Corporate reports, Bernstein analysis & estimates

MSCI World /MSCI Energy, long trends are turning....



Asset price deflation would collapse the system



Shaded areas indicate U.S. recessions.

Source: Board of Governors of the Federal Reserve System (US)

fred.stlouisfed.org

It cannot be allowed, whatever it takes...

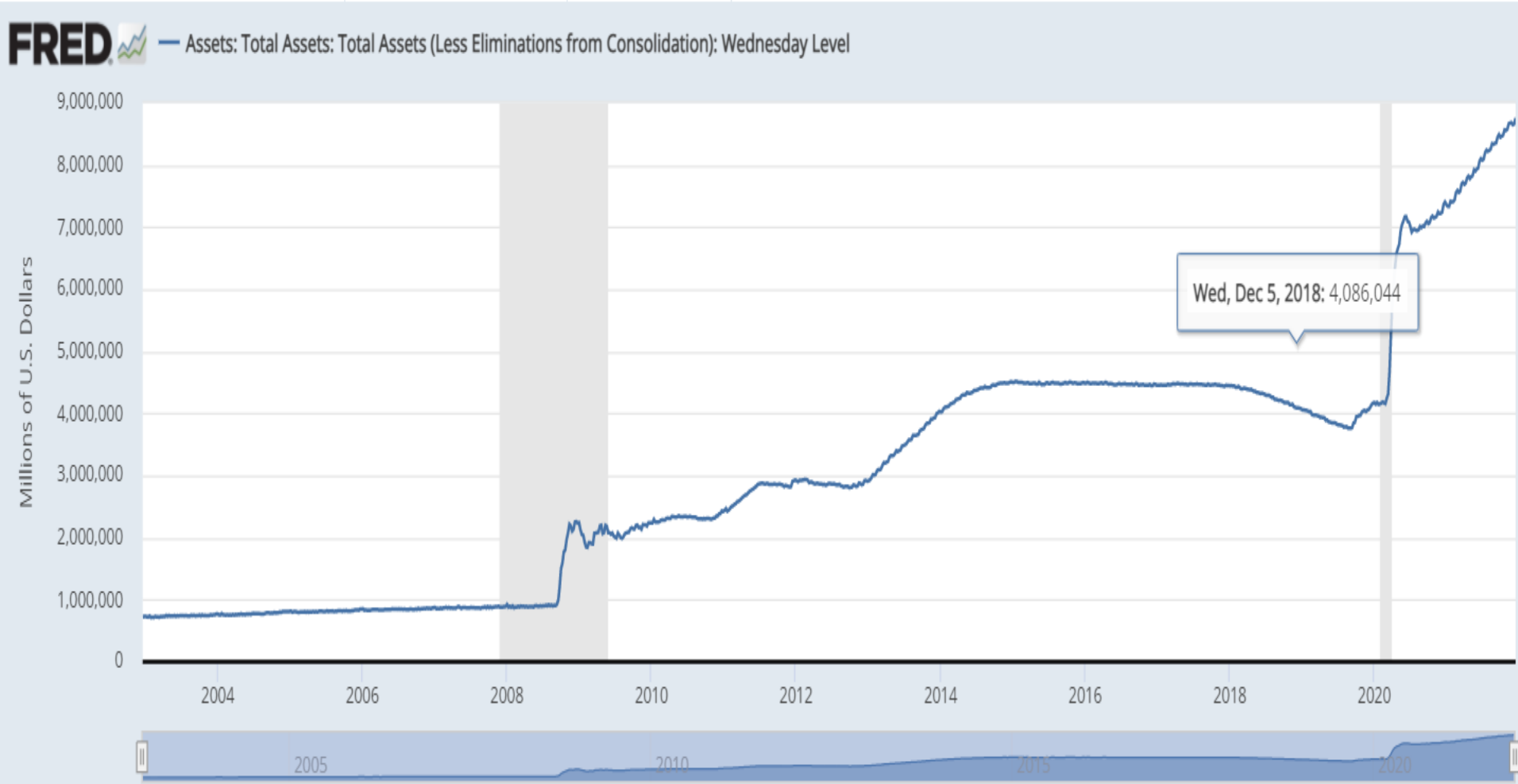


Shaded areas indicate U.S. recessions.

Source: Board of Governors of the Federal Reserve System (US)

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FED Balance sheet. It is not just about QE, but repo eligibility



Shaded areas indicate U.S. recessions.

Source: Board of Governors of the Federal Reserve System (US)

fred.stlouisfed.org

Examples of collateral eligible for SNB repo

ADB African Development Bank	Cote d'Ivoire	0,5	21.03.2019	21.03.2029	EUR	1.000.000.000
ADB African Development Bank	Cote d'Ivoire	0,875	24.05.2018	24.05.2028	EUR	1.250.000.000
ADB African Development Bank	Cote d'Ivoire	0,25	24.01.2017	24.01.2024	EUR	1.150.000.000
Agence Francaise de Developpement SA	France	3,125	04.10.2011	04.01.2024	EUR	1.000.000.000
Autobahn- Schnellstrassenfinanzierung	Austria	2,75	11.06.2012	11.06.2032	EUR	1.000.000.000
CADES	France	0,125	01.02.2017	25.11.2022	EUR	4.000.000.000
Corp Andina Fomento	Bolivarian Republic of Venezuela	1	10.11.2015	10.11.2020	EUR	1.100.000.000
Entwicklungsbank des Europarat	France	2,875	31.08.2011	31.08.2021	EUR	1.850.000.000
Erste Abwickl.	Germany	3,125	07.11.2018	05.11.2021	USD	1.000.000.000
ESM	Luxembourg	0,75	14.03.2017	15.03.2027	EUR	4.500.000.000
Eur Fin Stab, Luxembourg	Luxembourg	1,375	31.05.2016	31.05.2047	EUR	4.500.000.000
FMS Wertmanagement	Germany	1,375	11.09.2012	15.01.2020	EUR	2.500.000.000
OEBB - Infrastruktur AG	Austria	3,625	13.07.2011	13.07.2021	EUR	1.050.000.000
UNEDIC	France	1,25	30.05.2018	25.05.2033	EUR	2.000.000.000
UNEDIC	France	0,875	03.10.2018	25.05.2028	EUR	1.250.000.000
UNEDIC	France	1,25	28.03.2017	28.03.2027	EUR	2.250.000.000
UNEDIC	France	1,5	20.04.2017	20.04.2032	EUR	2.500.000.000
UNEDIC	France	0,125	16.01.2017	25.05.2022	EUR	1.250.000.000
UNEDIC	France	0,125	28.11.2017	25.11.2024	EUR	1.250.000.000
UNEDIC	France	0,5	20.03.2019	20.03.2029	EUR	1.500.000.000
UNEDIC	France	0,125	05.03.2015	05.03.2020	EUR	1.250.000.000
UNEDIC	France	0,25	31.03.2016	24.11.2023	EUR	1.750.000.000
UNEDIC	France	2,375	20.02.2014	25.05.2024	EUR	2.500.000.000
UNEDIC	France	1,5	16.04.2014	16.04.2021	EUR	2.150.000.000
UNEDIC	France	2,25	05.04.2013	05.04.2023	EUR	2.000.000.000
UNEDIC	France	1,25	29.05.2013	29.05.2020	EUR	1.500.000.000
UNEDIC	France	0,875	05.09.2014	25.10.2022	EUR	2.250.000.000
UNEDIC	France	0,3	04.11.2015	04.11.2021	EUR	1.000.000.000
UNEDIC	France	0,625	03.03.2016	03.03.2026	EUR	2.250.000.000
UNEDIC	France	0,625	17.02.2015	17.02.2025	EUR	3.000.000.000
UNEDIC	France	1,25	21.10.2015	21.10.2027	EUR	2.000.000.000

UNEDIC is the acronym of "Union nationale interprofessionnelle pour l'emploi dans l'industrie et le commerce" (*National Professional Union for Employment in Industry and Trade*). It was created in 1958. Until 2009, it was an agency of the [French](#) government which provided unemployed people with social benefits. In 2009, it was merged with the [ANPE](#) into the newly created agency [Pôle emploi](#), and was turned into an independent association.

Former missions [\[edit \]](#)

The Unedic was an agency under governmental control. It was managed by the "social partners", which are both representatives of trade-unions and representatives of companies leaders. There are six trade-unions officially recognized by the government, which are [CGT](#), [CFDT](#), [FO](#), [CFE-CGC](#) and [CFTC](#), and three patronal organizations, [Medef](#), [CGPME](#) et [UPA](#). Representatives of both groups have equal power to manage the agency, as is the case for many other governmental agencies.

The agency used set the amount of unemployment contributions (paid by a part of salaries). It was affiliated to the [Assedic](#) agencies, which collected and paid the contributions. In 2008, it employed almost 15,000 people.

Current mission [\[edit \]](#)

On 1 January 2009, the agency turned into an association led by social partners. The government is not implicated, the agency is totally independent. However, it continues to set the amounts of social contributions and employment benefits.

<https://outlook.gihub.org/>

Global forecasts

① Investment estimates

\$79 Trillion

Investment current trends

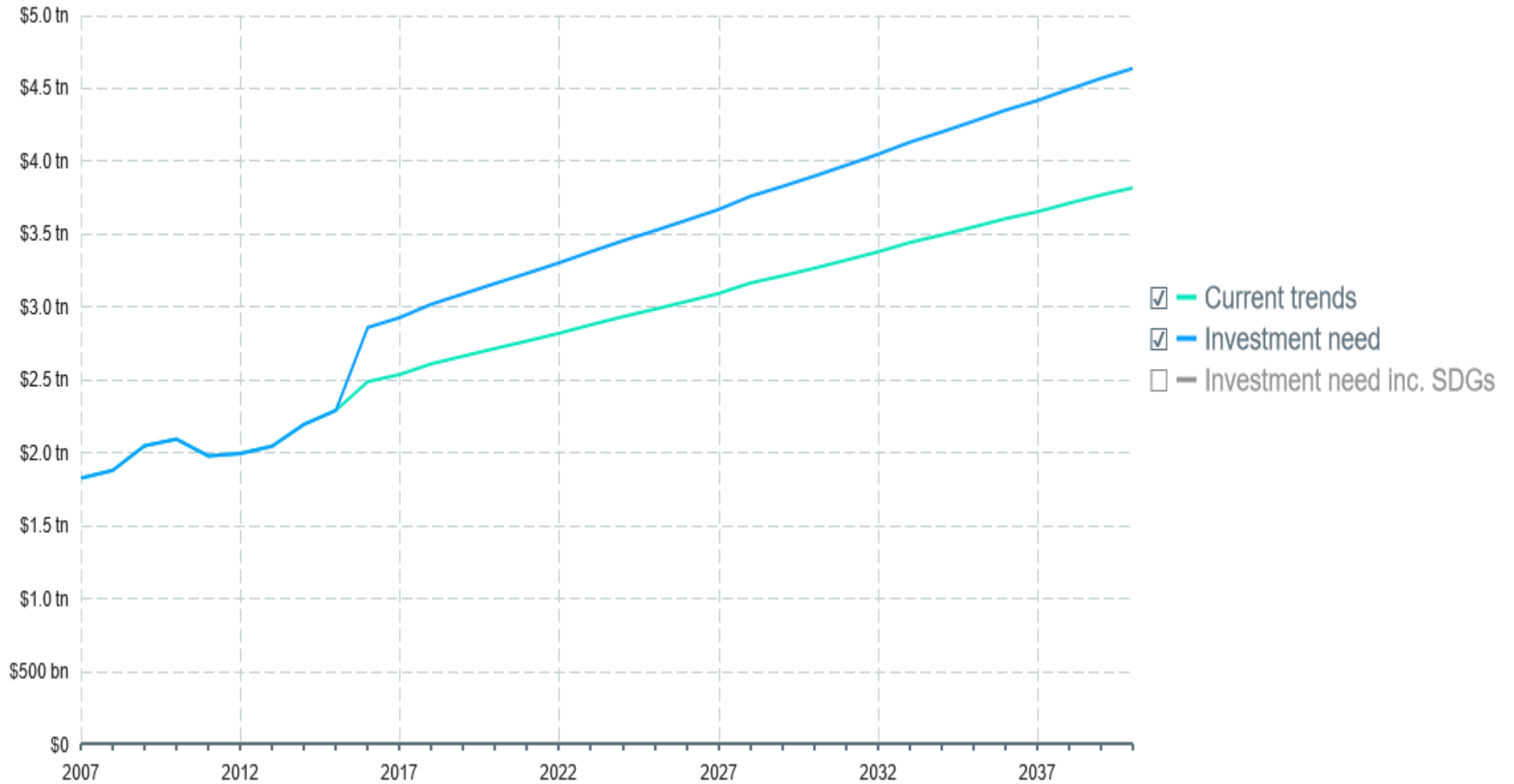
\$94 Trillion

Investment needed

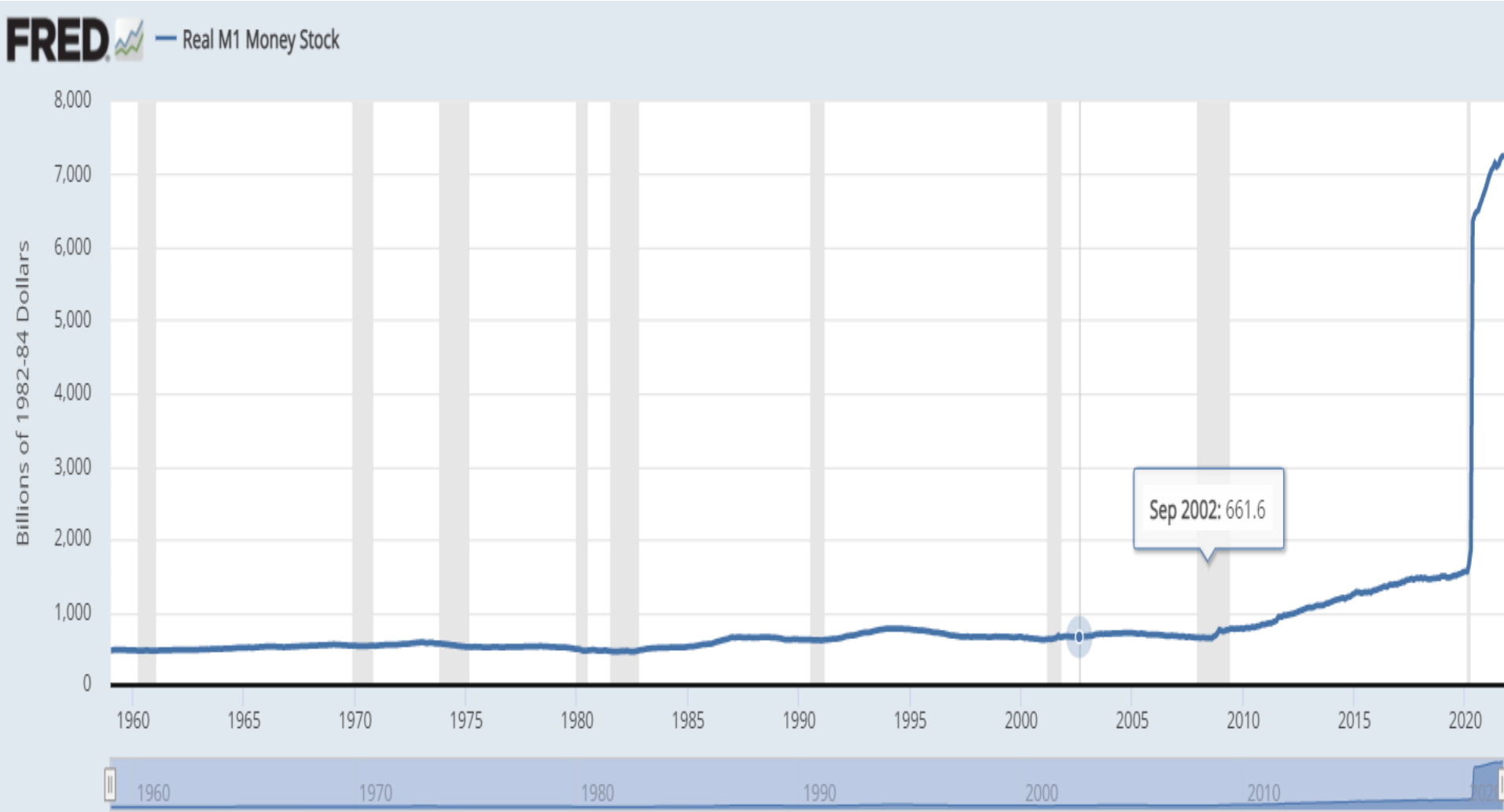
\$15 Trillion

Investment gap

Infrastructure investment at current trends and need



Bang zoom, you're going to the moon, Alice.



Source: <https://fred.stlouisfed.org>

World Bank chief calls on G20 to reconsider gold standard

World Bank President Robert Zoellick has called on bickering G20 nations to bring gold back into the global monetary system as an anchor to guide currency movements.

Carney Urges Libra-Like Reserve Currency to End Dollar Dominance

By [Brian Swint](#)

23 August 2019, 21:00 CEST

- ▶ BOE governor says global economic order needs dramatic revamp
- ▶ Sees benefits to markets, economies from a multipolar system



China omits US dollar from forex trading fee waivers in bid to bolster yuan

Yuan internationalization: The sooner the better

Russia's Gazprom and China's CNPC to exclude dollar from gas settlements

China Creates \$16-Billion Silk Road Gold Fund

Beijing-China (Jun 14) Little by little, it's becoming clear how far-reaching China's Silk Road economic initiative really is.

Proposed in 2013 by President Xi Jinping, the Belt and Road Initiative involves massive infrastructure spending, growing trade along the Silk Road Economic Belt and 21st Century Maritime Silk Road.

Yuan globalization: The world needs a new reserve currency

By Laurence Brahm | chinadaily.com.cn | Updated: 2019-01-31 13:44



China calls for new reserve currency

Jamil Anderlini in Beijing MARCH 24 2009

China's central bank on Monday proposed replacing the US dollar as the international reserve currency with a new global system controlled by the International Monetary Fund.

It is over. Creditors refuse to accept it. It ends now.



CHINA Charting China's changing economic terrain
ECONOMIC REVIEW Since 1990

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HOME » BANKING & FINANCE » CHINA AND RUSSIA DITCH DOLLAR IN MOVE TOWARDS 'FINANCIAL ALLIANCE'

China and Russia ditch dollar in move towards 'financial alliance'

on: August 17, 2020 In: Banking & Finance, Brief, Economics & Trade, Politics & Society Tags:

No Comments

Print Email

Source: <https://fred.stlouisfed.org>

August 27, 2019 by Mike Brown

Why are Russia, China and central banks stockpiling gold?



The world's second-largest economy is buying gold like it's no one's business. According to analysts, as the US-China trade war intensifies, **China is bulking up its bullion reserves – most likely in an attempt to de-dollarize. Russia is doing the same, along with a number of central banks in developing economies.** So why is gold being stockpiled? And why on such a large scale?

China's bullion boost – a safety net in uncertain trading times

Source: <https://fred.stlouisfed.org>

Russian Gold, Money Reserves Can Now Cover Country's Entire External Debt

April 1, 2019



Russia's gross international reserves (GIR), including gold, continue to rise, reaching \$487.1 billion as of late March – enough to cover Russia's external debt dollar for dollar in cash, [Intellinews](#) reported.

World needs to end risky reliance on U.S. dollar: BoE's Carney

4 MIN READ



JACKSON HOLE, Wyo. (Reuters) - Bank of England Governor Mark Carney took aim at the U.S. dollar's "destabilizing" role in the world economy on Friday and said central banks might need to join together to create their own replacement reserve currency.

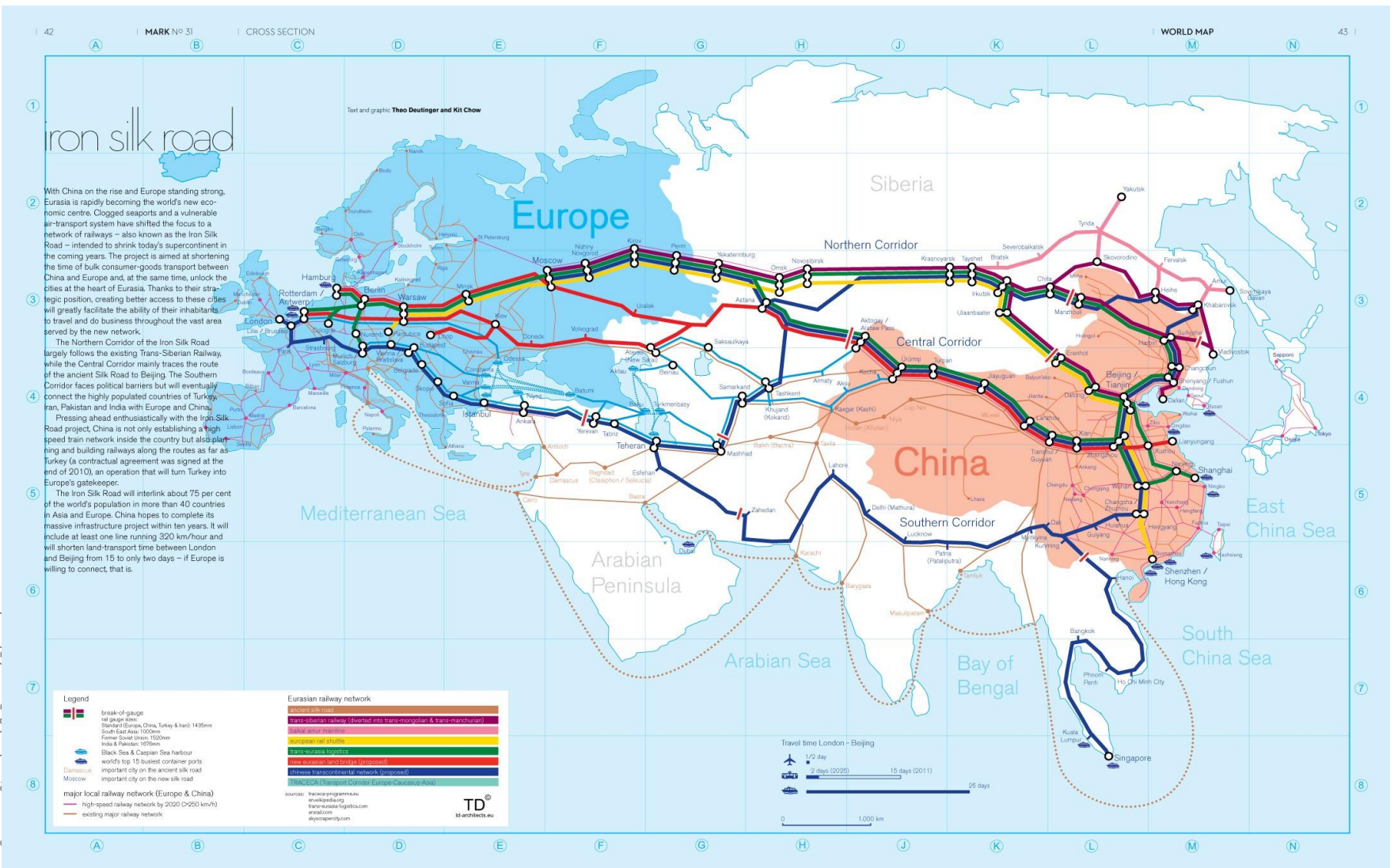
Gold: anchor of trust

Shares, bonds and other securities are not without risk, and prices can go down. But a bar of gold retains its value, even in times of crisis. That is why central banks, including DNB, have traditionally held considerable amounts of gold. Gold is the perfect piggy bank – it's the anchor of trust for the financial system. If the system collapses, the gold stock can serve as a basis to build it up again. Gold bolsters confidence in the stability of the central bank's balance sheet and creates a sense of security.

[Read more on DNB's management of its gold stock and foreign reserve assets.](#)

<https://www.dnb.nl/en/>

New silk road, a form to diversify into real assets



- The concept was unveiled by Xi Jinping in September 2013.
- China's Marshall Plan to aid development in Central Asian countries and build relations with its neighbors.
- "One Belt, One Road" is the name of the development strategy to revive the land and maritime Silk Roads dating back to the days of Marco Polo. "Belt" refers to a vast area in Eurasia, and "Road" stands for the sea route that links China's coastal cities to Africa and the Mediterranean, passing key ports in Southeast Asia and the Suez Canal.
- The world's largest infrastructure project ever. A huge free trade area linking together 65 countries and 5 billion people.
- It challenges the old hegemony of the Atlantic alliance (ports, channels, bottlenecks, etc.).
- New Development Bank, Silk Road Fund, FTA's, Dying Petro\$, Ruble/Yuan currency swaps, Ruble priced Urals futures on SPIMEX (St. Petersburg Mercantile Exchange), gold flows east, military supremacy follows economic power, Yuan/IMF SDR's, Yuan convertibility/Reserve currency.
- It is being built on gold. There is no other reserve currency in a multipolar world. How could you use a basket of currencies when everybody just prints as much as he likes???
- Crypto might be suitable as the technical way to implement. It might be the form but not the basis.

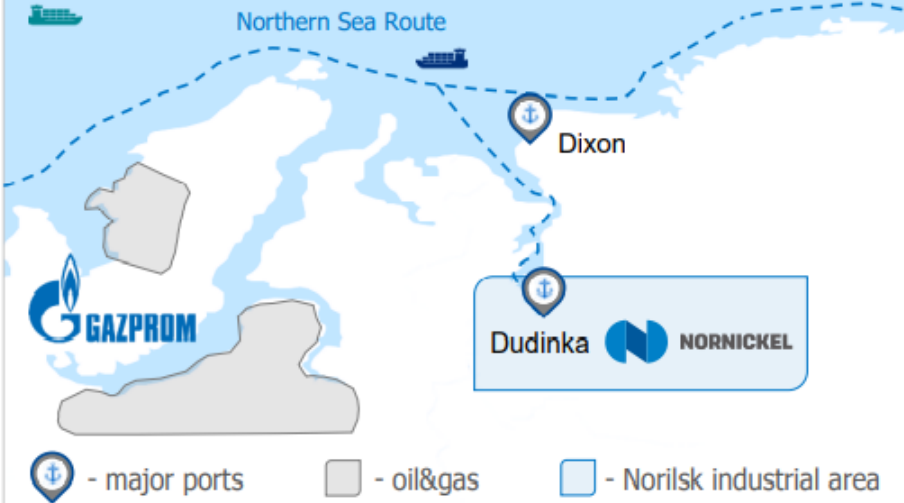
Norilsk Nickel Capital Markets Day 2021 | Strategy Update

New Era of Russian Arctic Development: Challenges and Opportunities

Russian Arctic Development: From Remote Region...

Northern Sea Route Freight Volumes

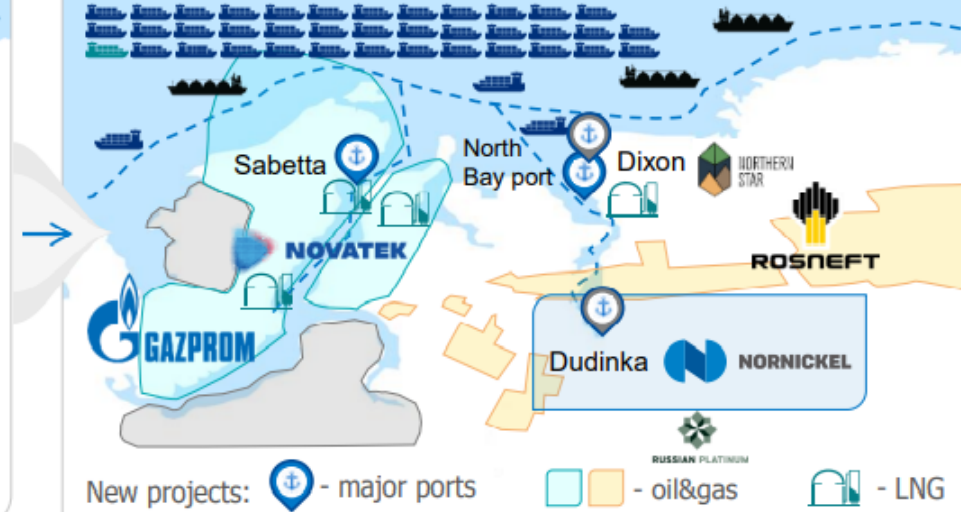
2014: 4 Mt



...to Exponential Growth in Investments

Northern Sea Route Freight Volumes

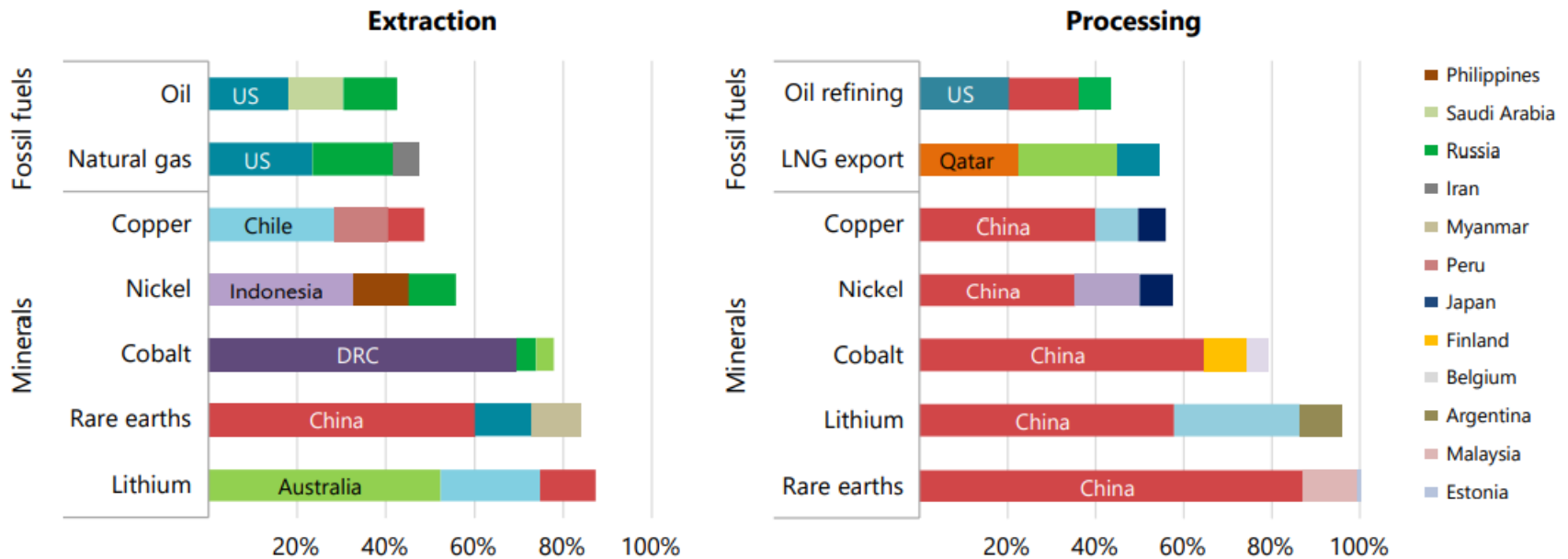
2030: 150 Mt



- New level of competition for resources – logistics & supply chain, human capital and other resources
- Norilsk Nickel is uniquely positioned to leverage its vast expertise and capabilities to facilitate accelerated development of major investment projects alongside the Northern Sea Route

Many mineral supply chains lack diversity

Share of top three producing countries in production of selected minerals and fossil fuels, 2019



Production and processing of many minerals such as lithium, cobalt and some rare earth elements are geographically concentrated, with the top three producers accounting for more than 75% of supplies



Product Category

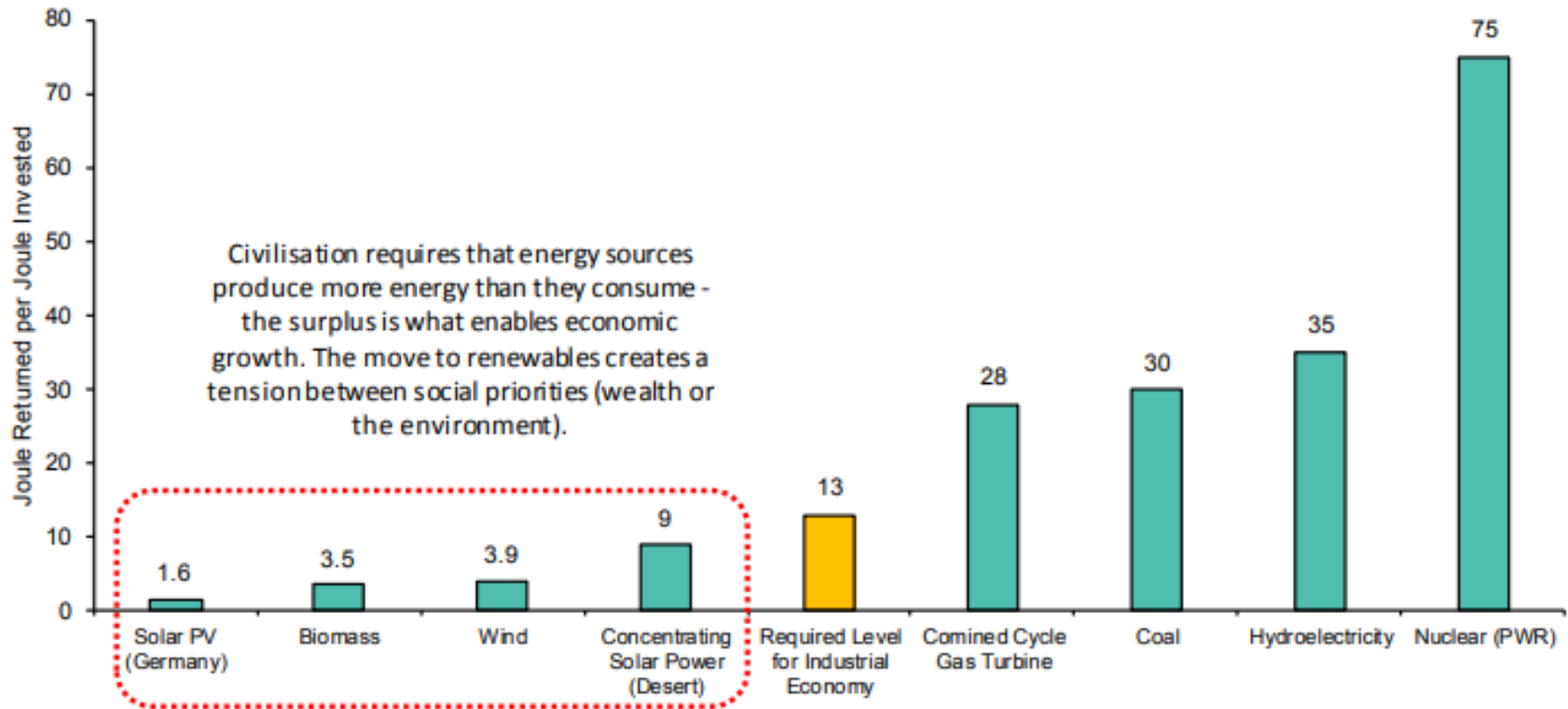
Animals	Clothing & Derivatives	Electrical Energy	Luxury Goods	Medical Goods	Ores	Wood	N/A
Chemicals	Drugs & Beverages	Food	Machinery	Oil	Vehicles	Other	

Article & Sources:
<https://howmuch.net/articles/top-export-around-the-world>
 UN Comtrade Database 2018 - <https://comtrade.un.org>
 CEPII - BACI - <http://www.cepii.fr/CEPII/>



Quelle: Visual Capitalist, themarket.ch

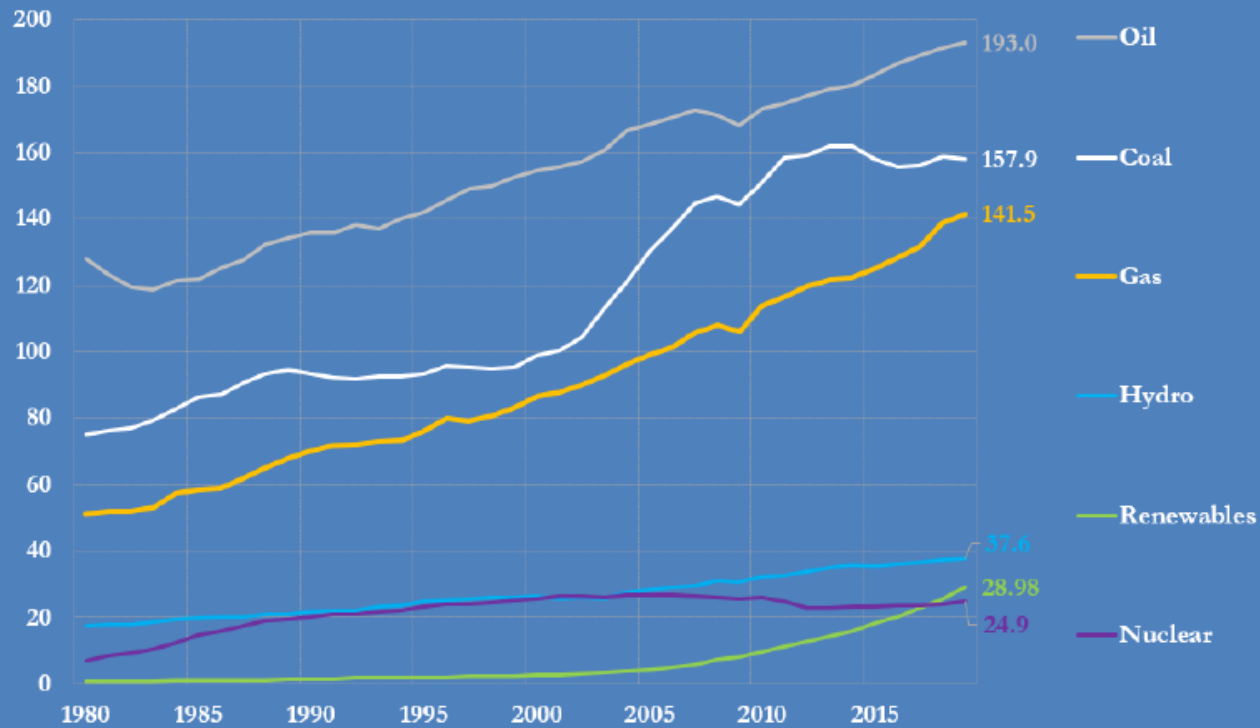
Buffered Energy Return on Investment by Source



Source: Bernstein

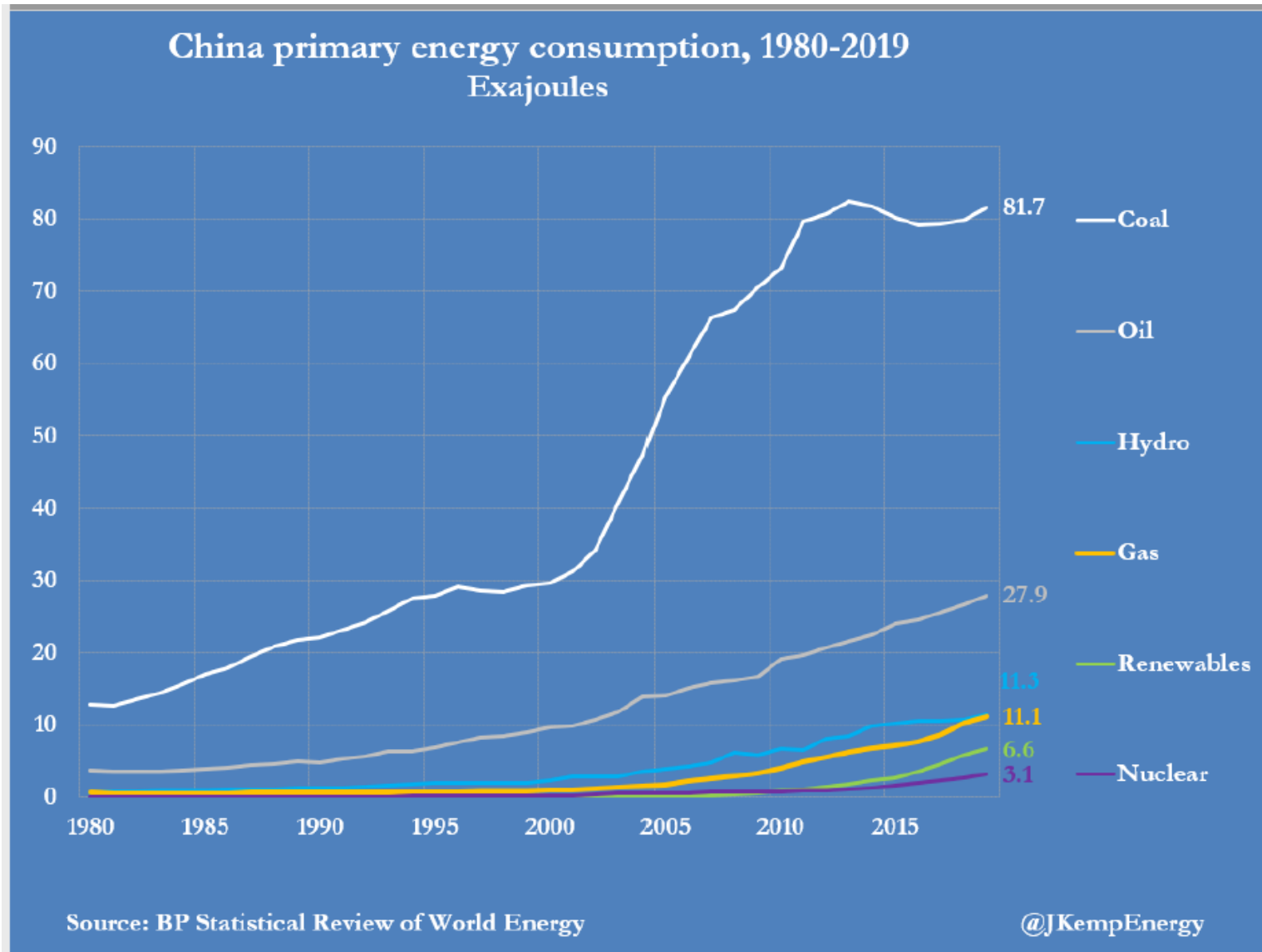
Global energy consumption has risen +1.8% per year since 1979
Most energy sources have seen continuous growth

Global primary energy consumption, 1980-2019
Exajoules



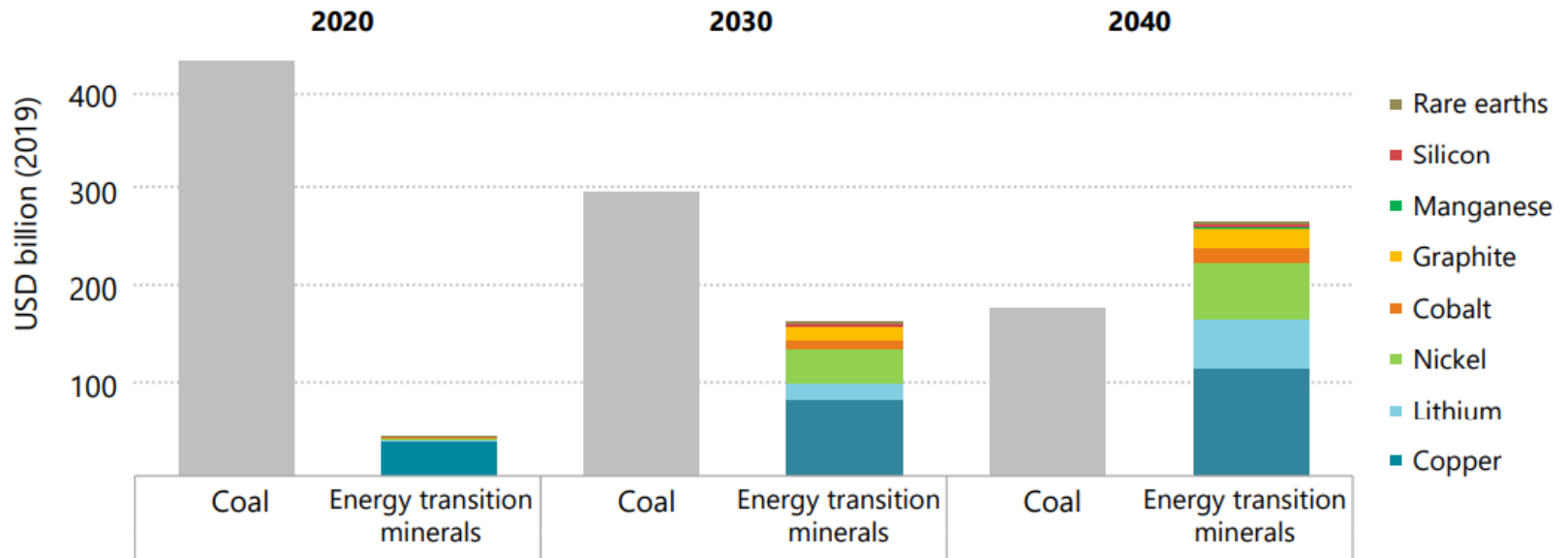
Source: BP Statistical Review of World Energy

@JKempEnergy



New reasons to go underground

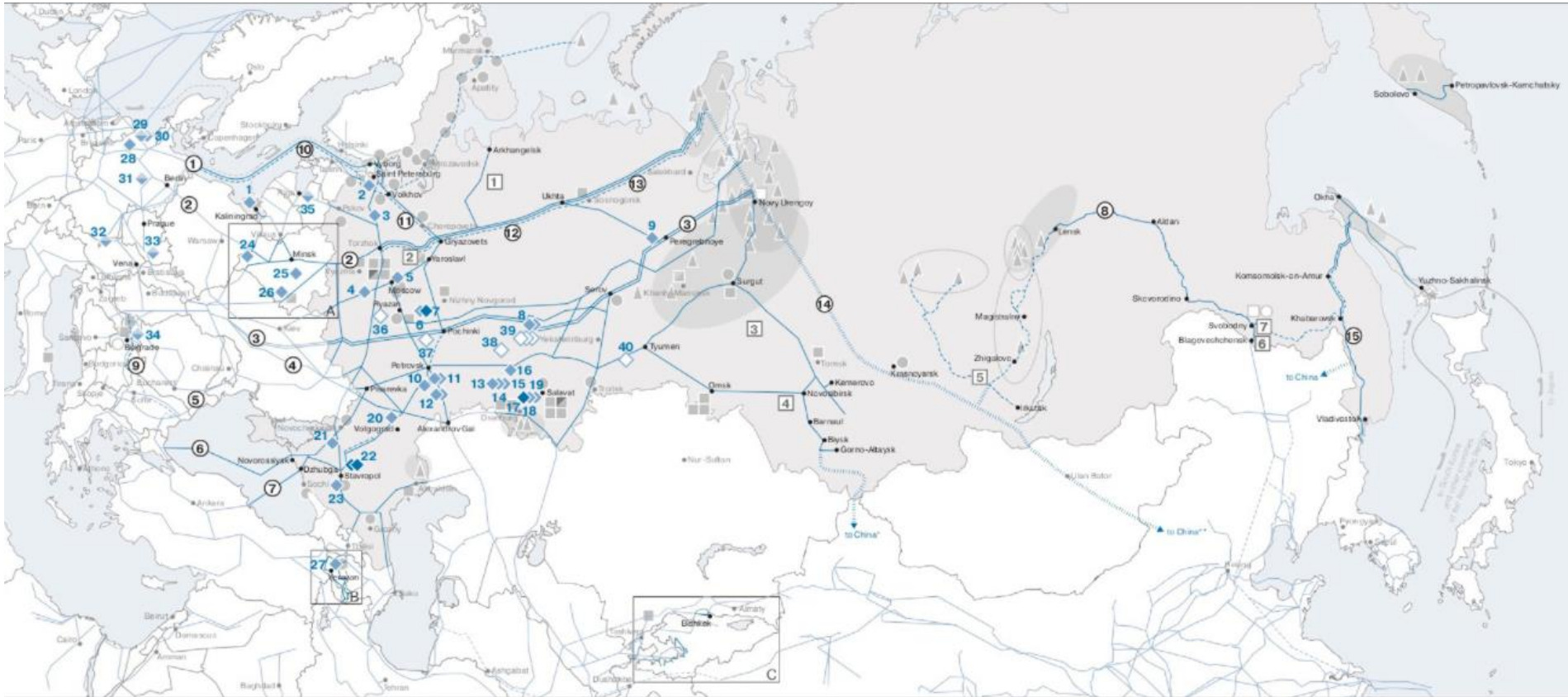
Revenue from production of coal and selected energy transition minerals in the SDS



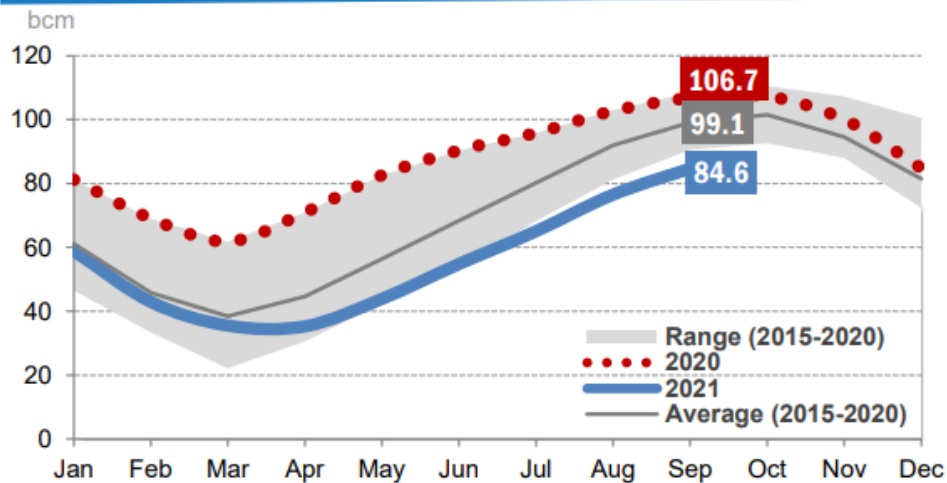
Today's revenue from coal production is ten times larger than from energy transition minerals. However, in climate-driven scenarios, these positions are reversed well before 2040

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Gazprom, an Eurasian energy monopoly?



EUROPEAN UNDERGROUND GAS STORAGE CAPACITIES



Sources: Gazprom Export, Eurostat, national statistics agencies, National Grid, US Department of Energy, International Energy Agency, ENTSOG, Argus, Bloomberg, IHS Markit, S&P Platts.

...WHILE GAS INVENTORIES WERE AT RECORD LOWS

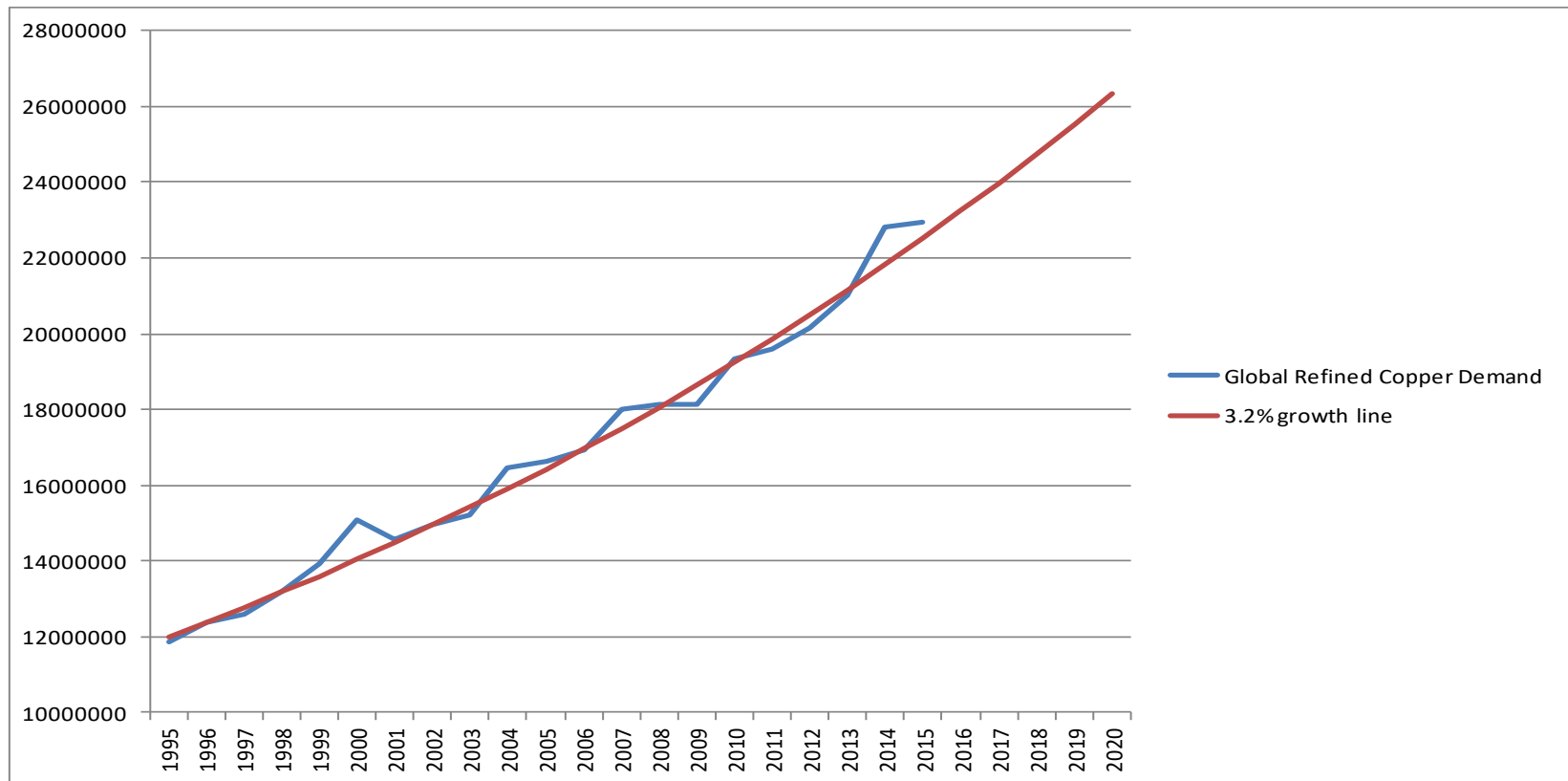
- Lofty gas prices curtailed **the pace of EU storage restocking**
- Gazprom focused on **filling in Russian underground gas storages** depleted after the 2020/2021 winter season

Electrification of India. Any copper left for EV?

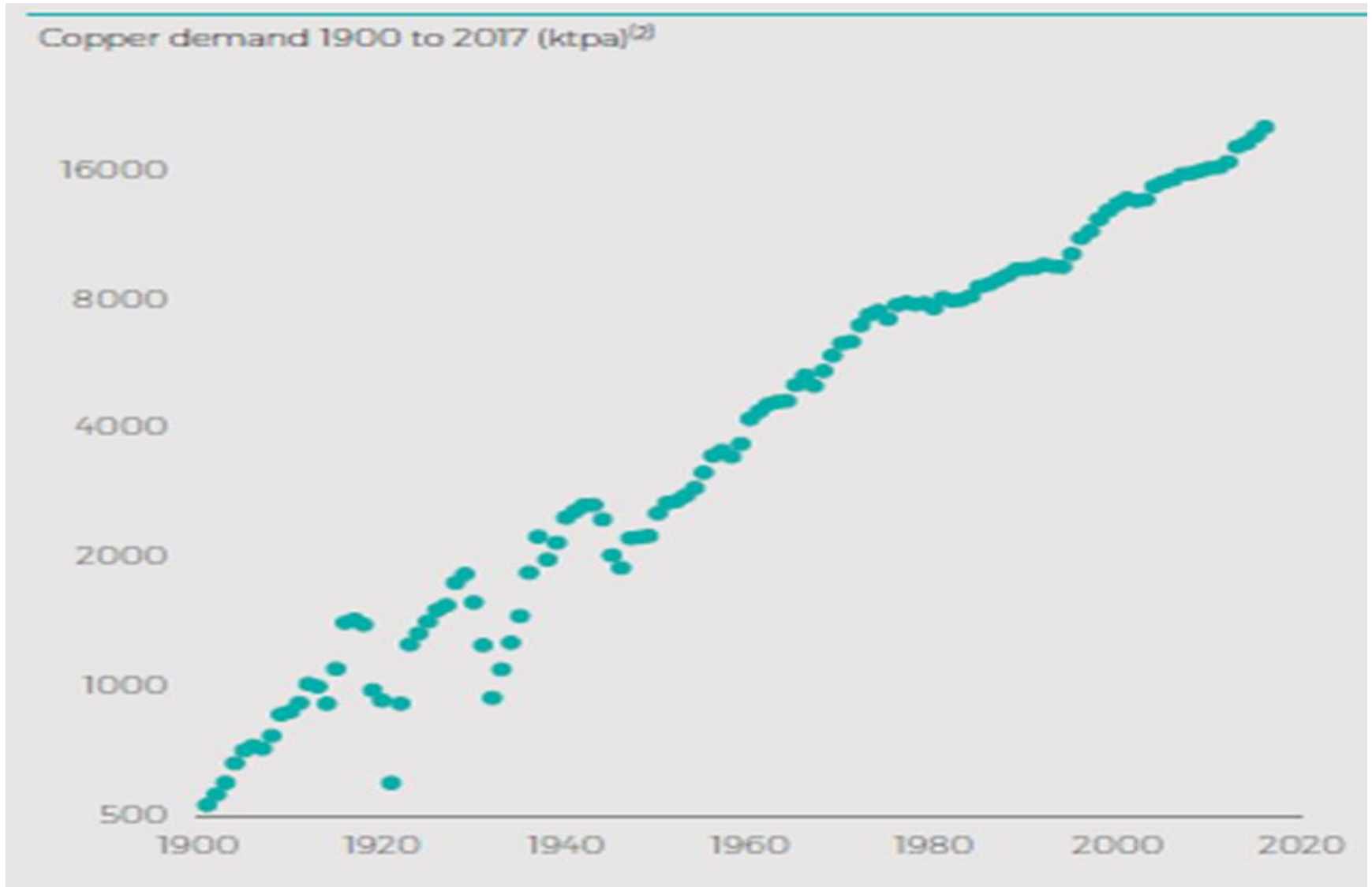
India has one of the lowest levels of copper installed per capita in the world. With a real per capita GDP of \$4,500 (in real 2005 US dollars), we calculate India has less than **14 pounds of copper** installed in its economy per person. **China, on the other hand, has nearly 170 pounds** of copper installed per person today and when China's real GDP per capita was comparable to India's (in **2004**), we estimate it still had **45 pounds per person**. In other words, at comparable levels of real GDP, China had three times the installed copper base per capita than India. (Goehring & Rozenchwajg)



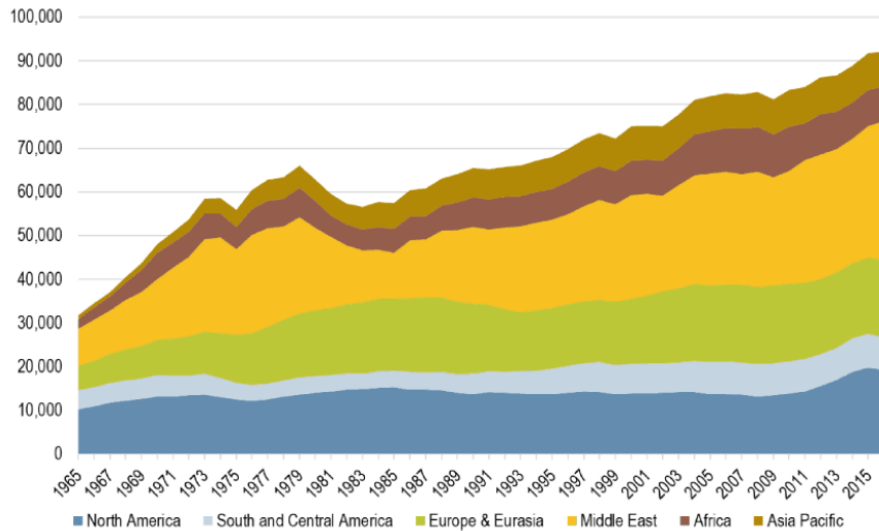
Copper apparent demand over the past 20 years shows a trend growth of just above 3%, in line with the growth of the global economy.



Price vola of Dr. Copper is a 0 indicator for demand

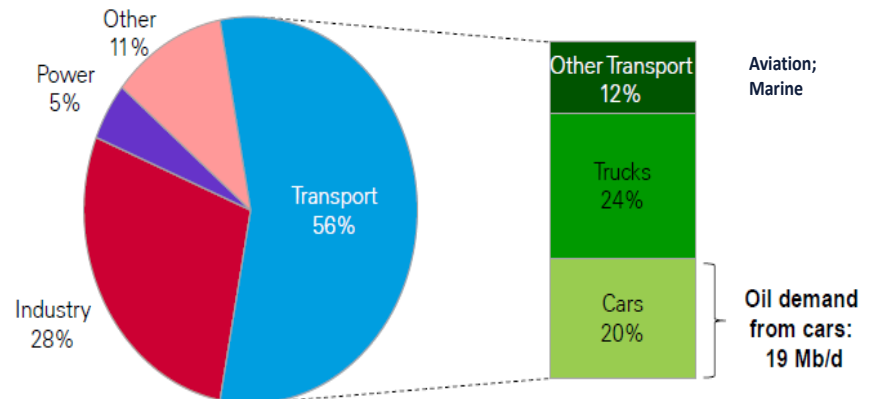


World Crude Oil Production and Consumption, 1965-2016



Source: United States Energy Information Administration

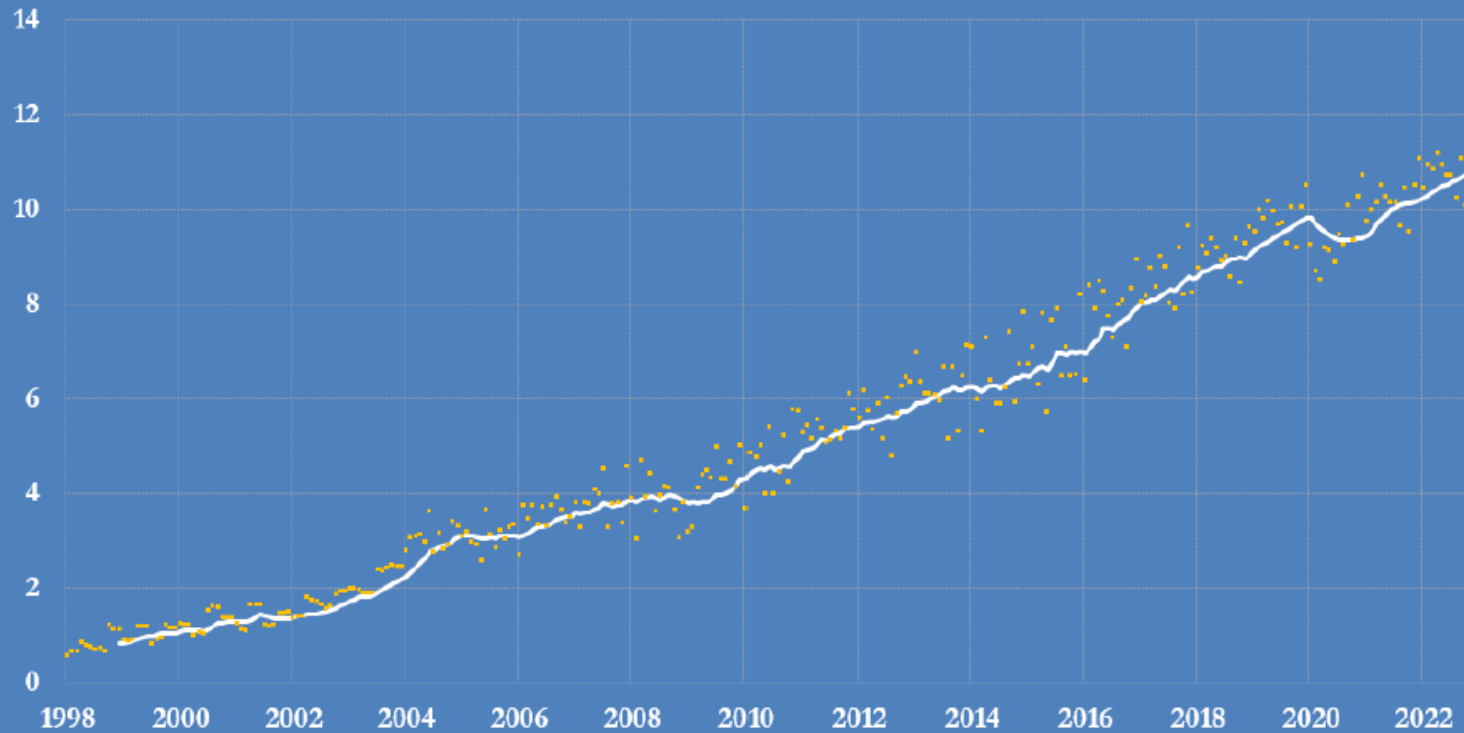
Because most of its uses are very stable



Source: BP, 2016 / Burggraben

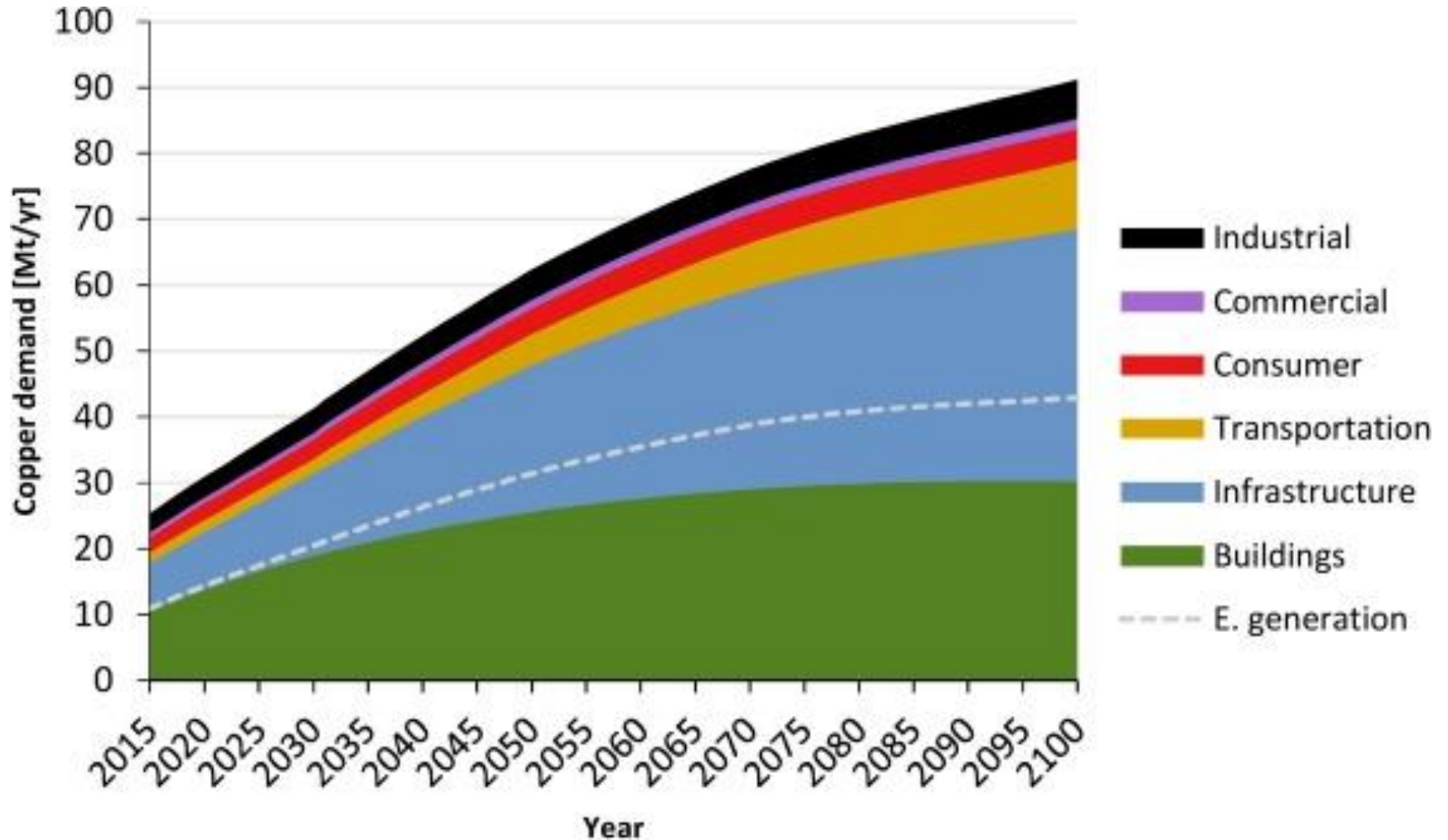
And the strongest source of additional demand is depletion

China net petroleum imports, 1998-2020
crude and refined products, monthly million b/d
actual values through Dec 2020, forecast through Dec 2022



• Monthly net oil imports
— 12-month moving average

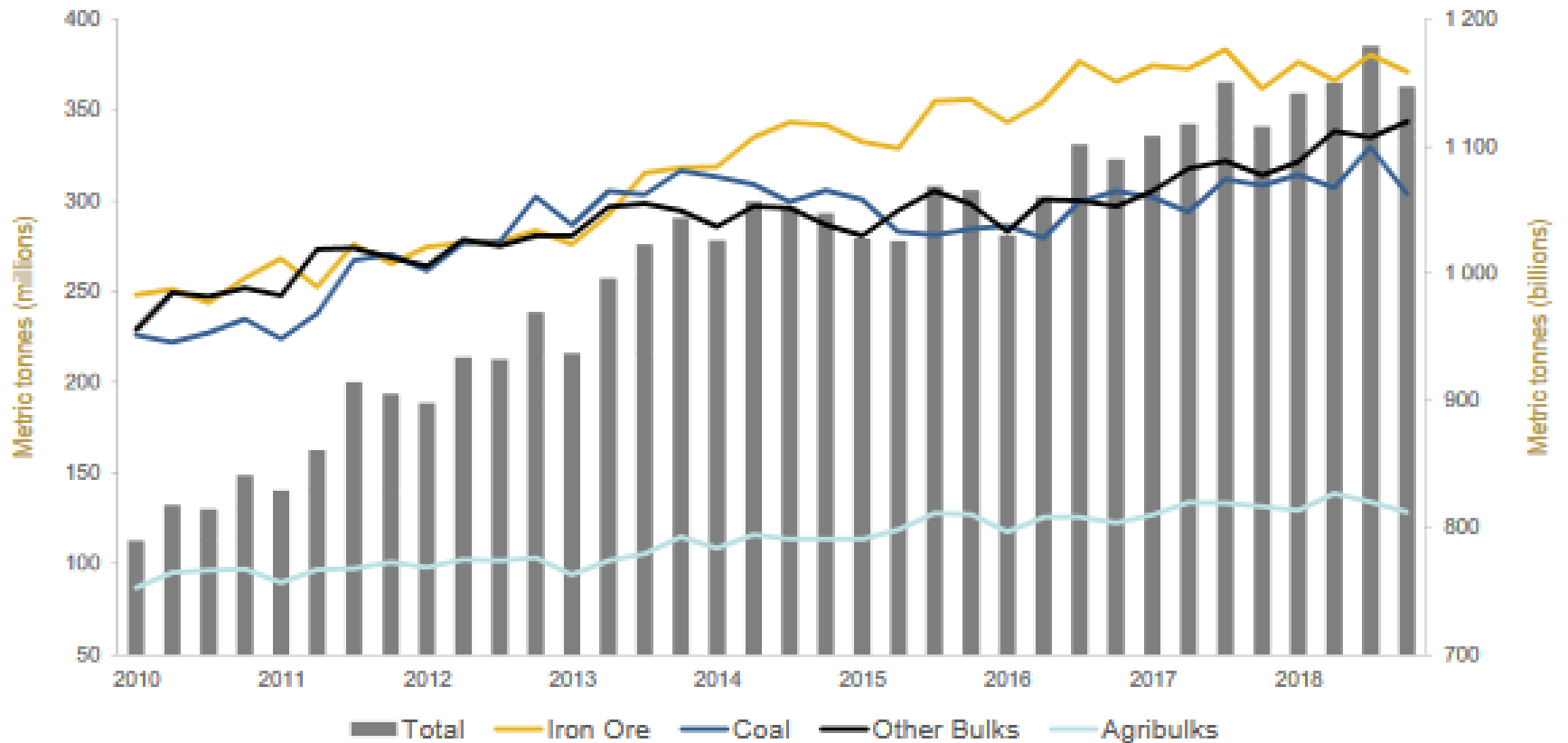
Source: U.S. Energy Information Administration
@JKempEnergy



A good indicator for the «economy»/demand?

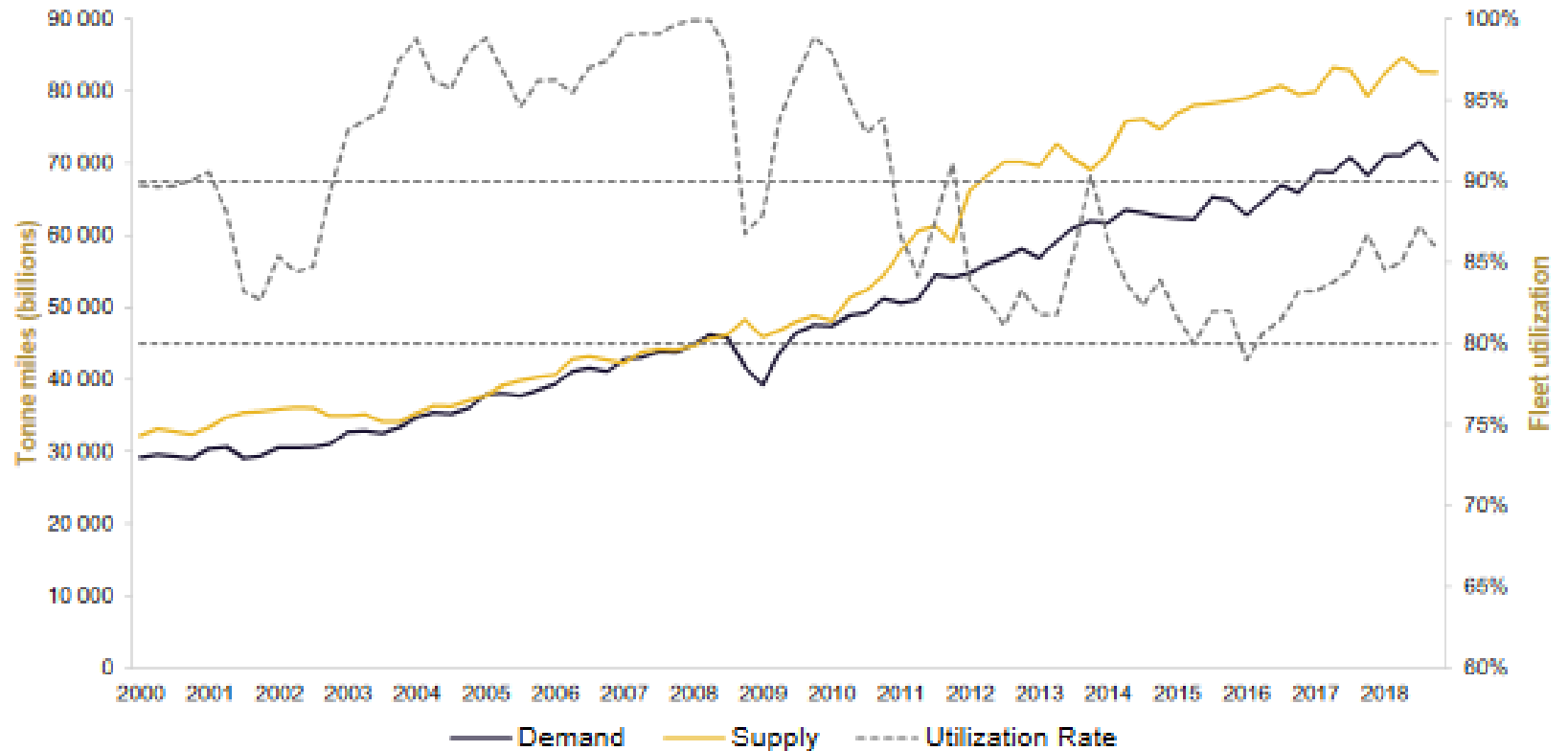


SEABORNE TRADE OF DRY BULK COMMODITIES (MAJOR IMPORTERS)



SOURCE: MARITIME ANALYTICS

SUPPLY, DEMAND AND UTILIZATION RATE - DRY BULK SHIPS 10,000 DWT +



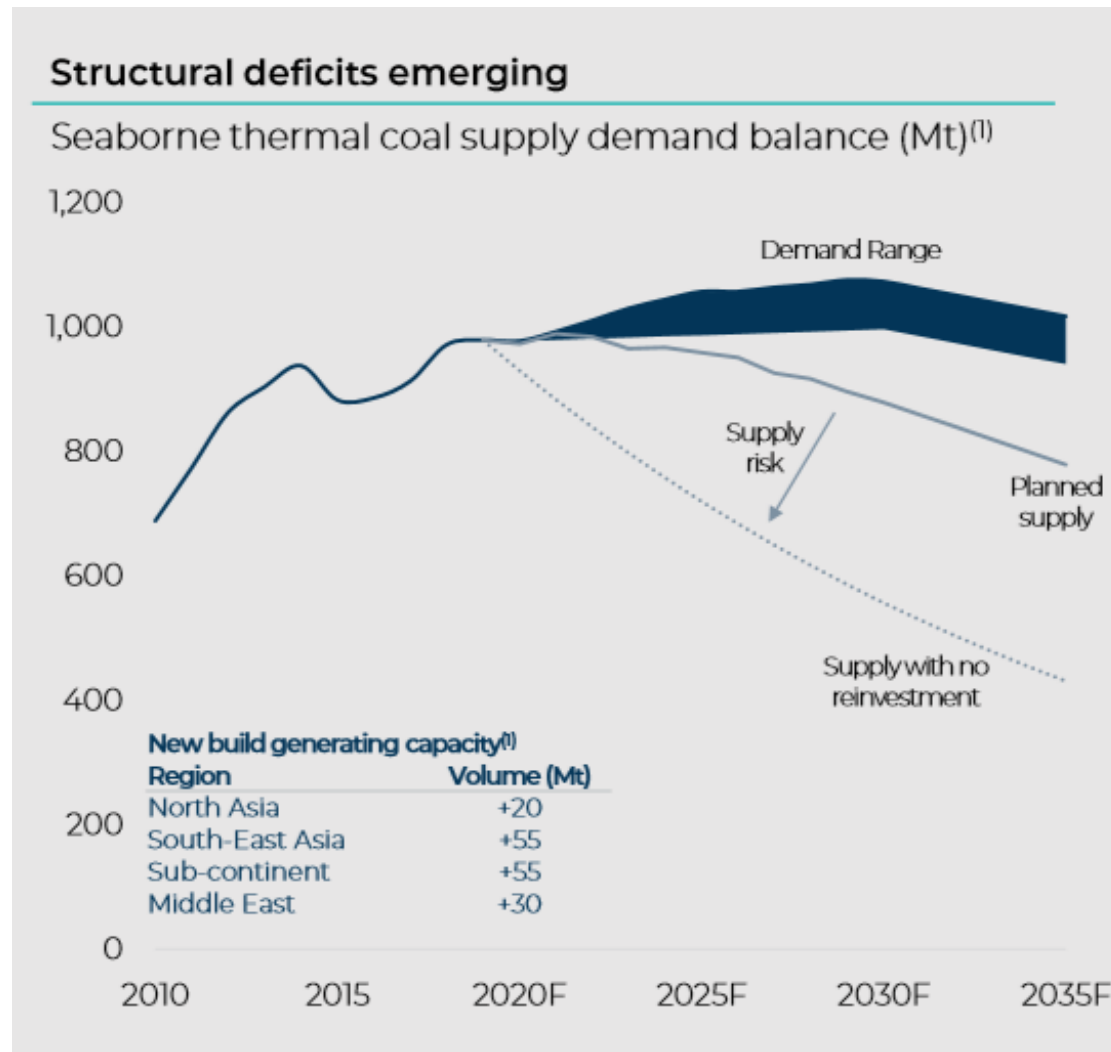
SOURCE: MARITIME ANALYTICS

Pick the low hanging fruits first, it does not get easier!

Copper Ore Grade Decline



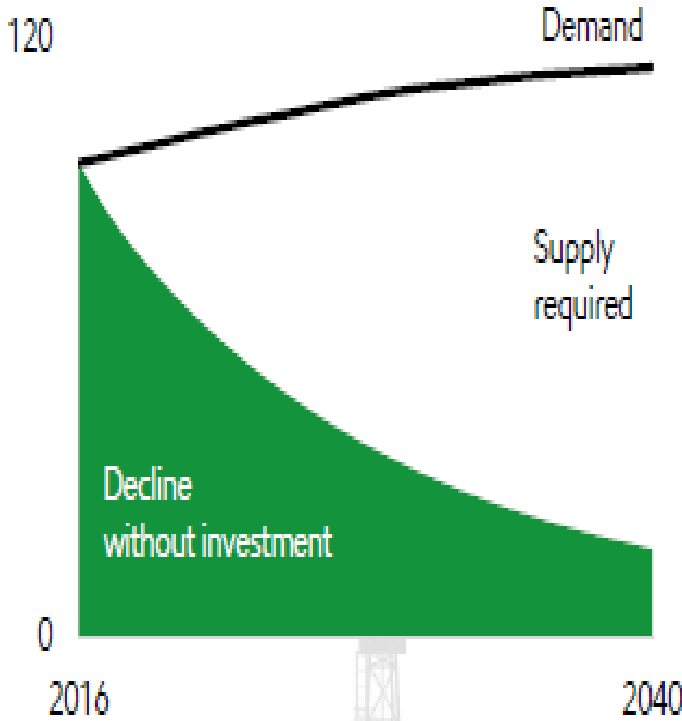
Source: Wood Mackenzie.



⁽¹⁾ Includes new capacity with battery firming, NPS+Carbon Tracker – The Trillion dollar energy windfall

Oil supply & demand

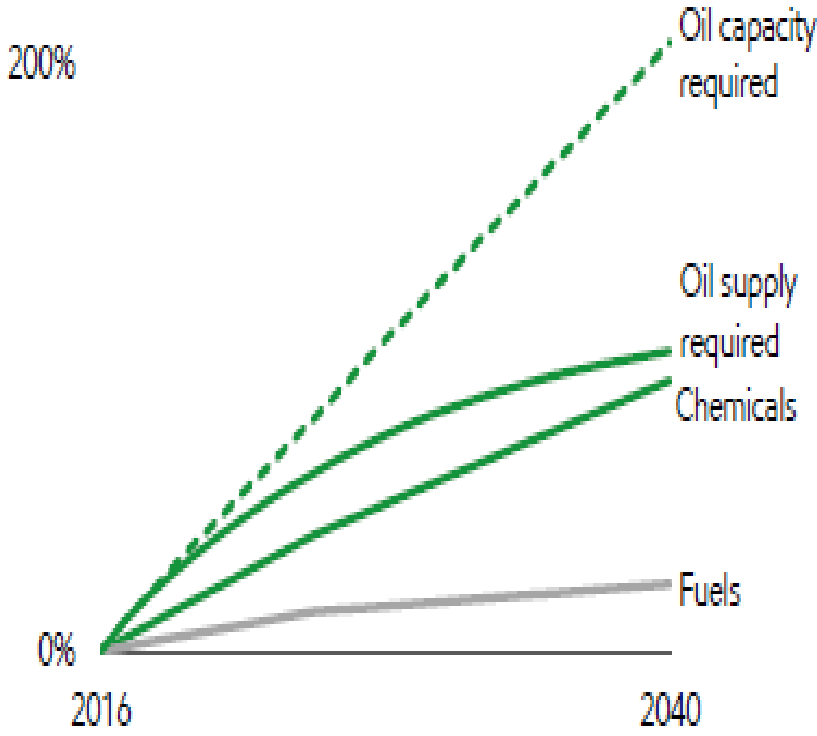
MOEBD



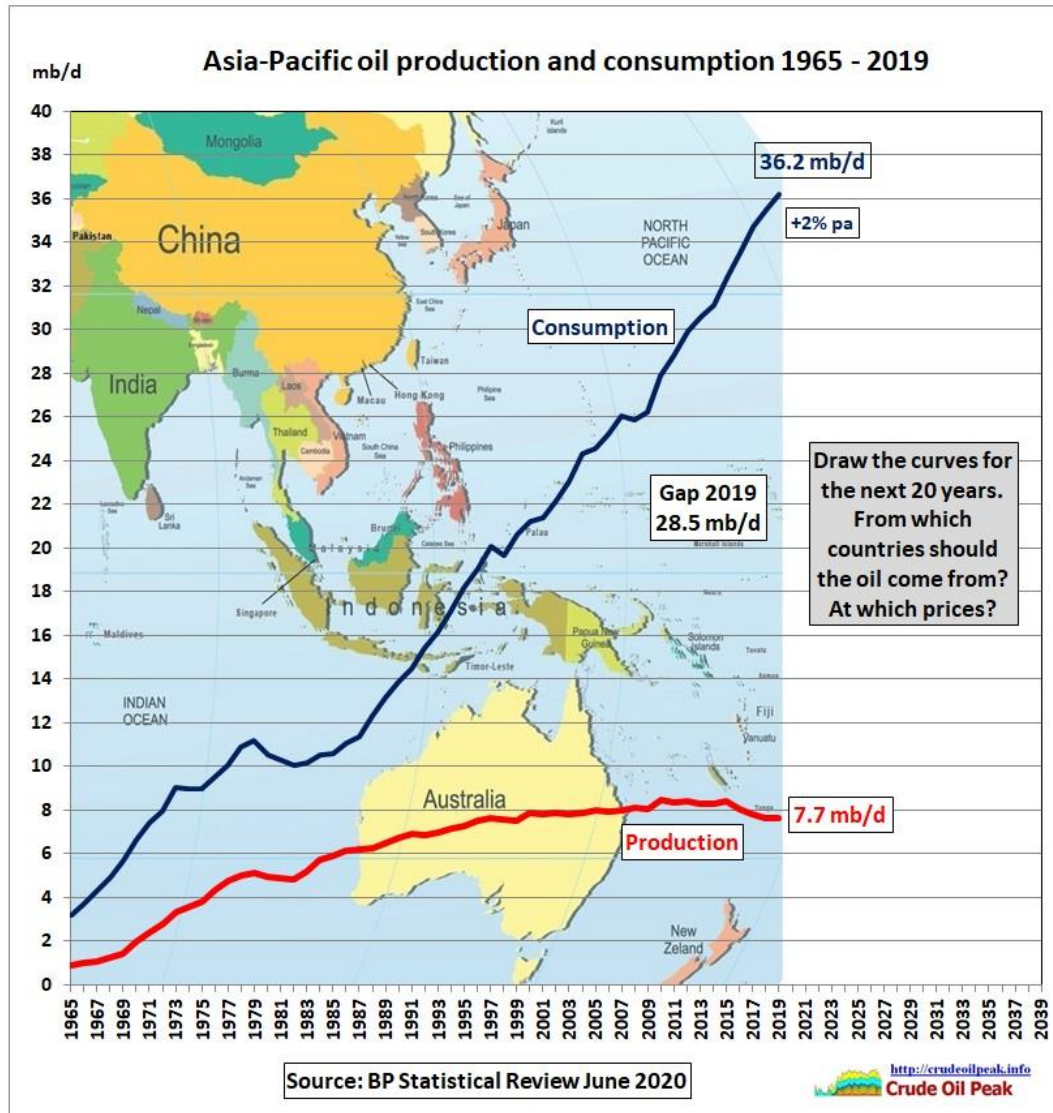
Source: 2018 Energy Outlook

New supply requirement

Indexed to 2016

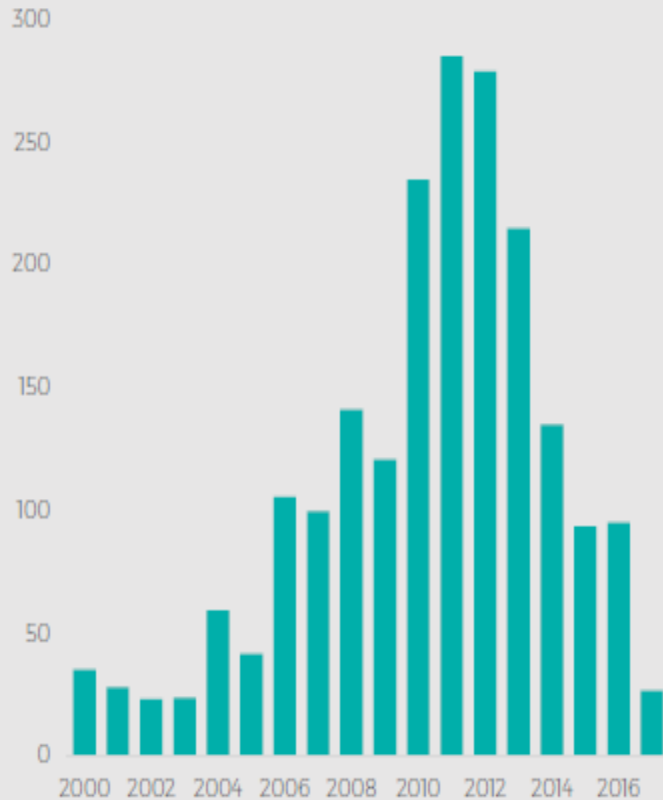


Source: 2018 Energy Outlook



Capex has been slashed ...

Capex announcements (not annual spend)⁽¹⁾ (\$bn)



... underpinning the shift into deficit for commodities

Cumulative change in annual metal balance (kt)⁽²⁾

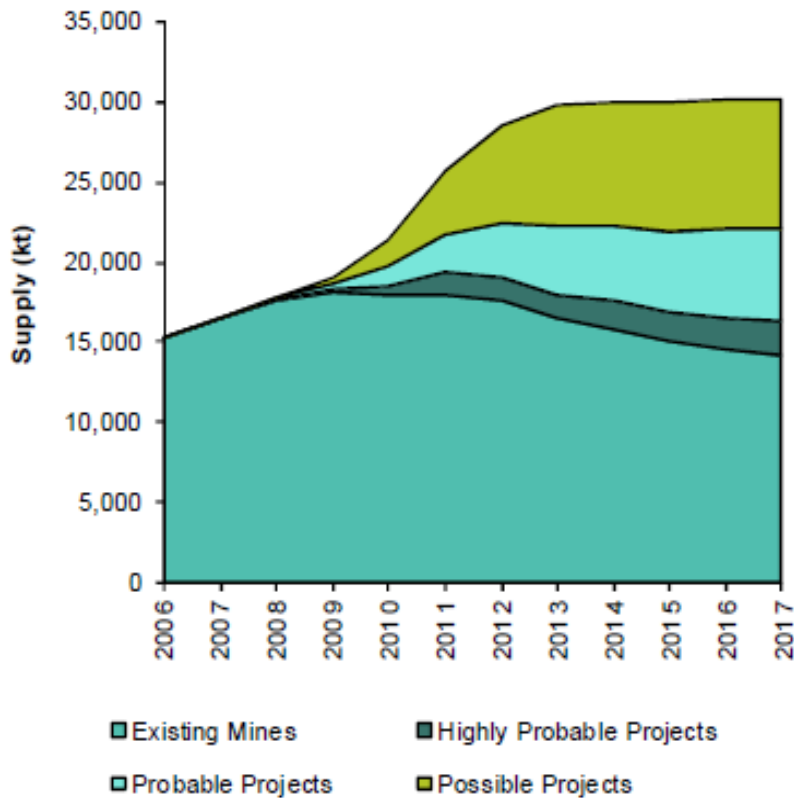


Mediocre supply response in relation to capex

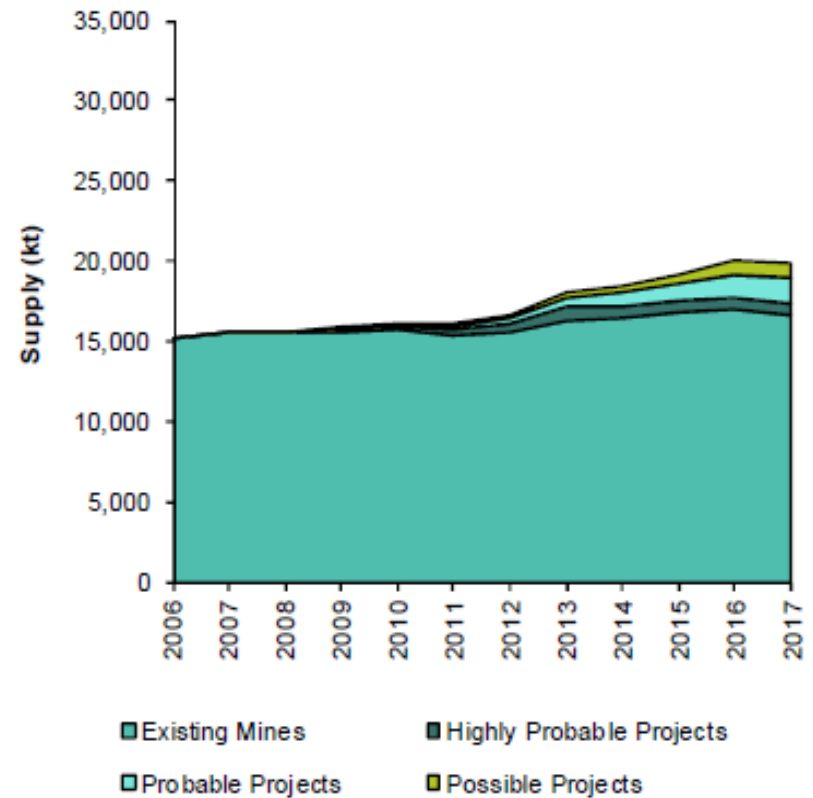
EXHIBIT 4: In 2007, the maximum 2017 run-rate supply was estimated at 30.2Mt, +99% growth (+6.4% CAGR) generating fears about a possible "wall of supply"...

EXHIBIT 5: ... when in reality, despite the copper price hitting US\$10,000/t in 2011, supply actually grew just +31% (+2.5% CAGR).

2006 - 2017 Supply Forecast



2006-2017 Actual Supply

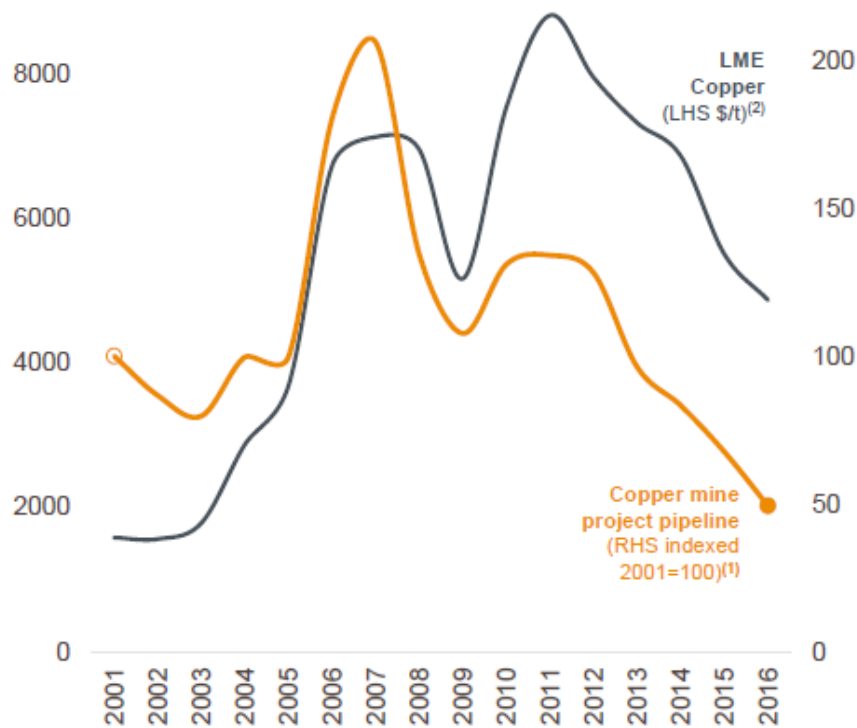


Source: Brook Hunt, Wood Mackenzie, Bernstein analysis

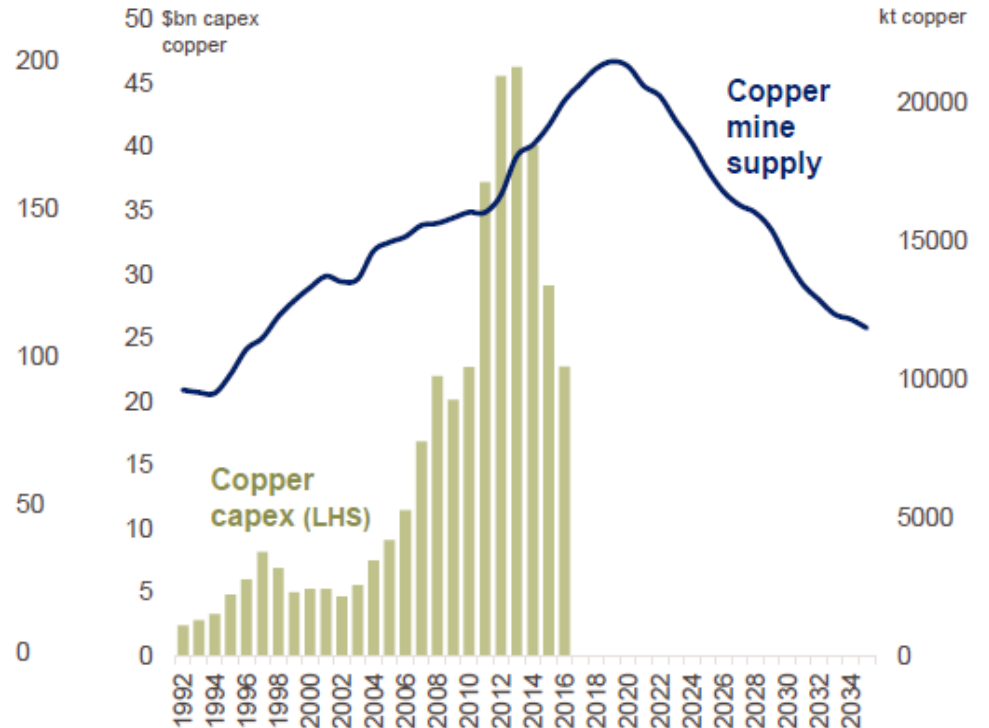
Source: Brook Hunt, Wood Mackenzie, Bernstein analysis

Sustaining copper mine supply is progressively more challenging

Copper mine project pipeline now below pre-supercycle lows

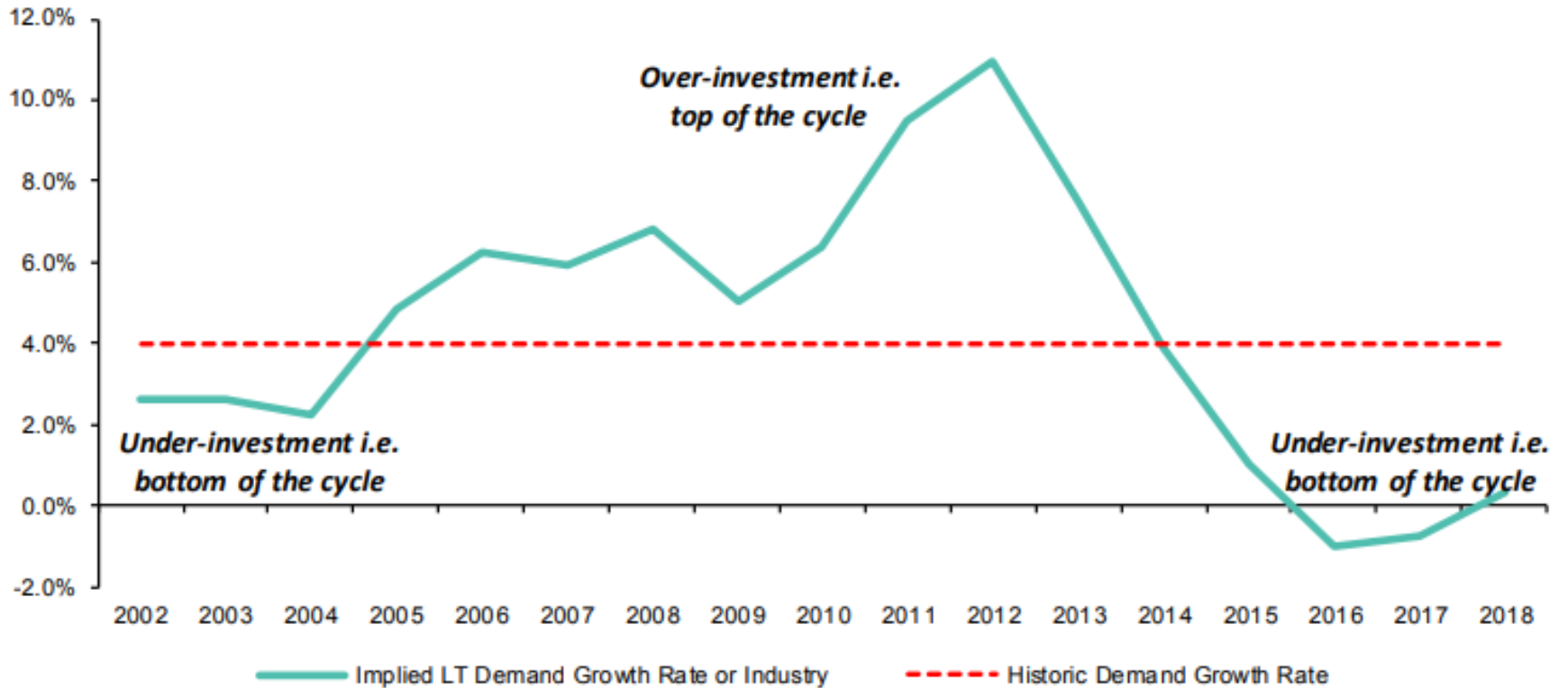


Supply is peaking in 2018 and declines thereafter at 3.5% CAGR with no reinvestment (3)



Source: (1) Copper mine project pipeline comprises the total production volume of projects categorised as highly probable and probable by Wood Mackenzie's Global copper long-term outlooks from 2001 to 2016, indexed change from 2001. (2) Annual average LME cash copper price, source Wood Mackenzie and Bloomberg. (3) Bernstein European Metals and Mining, 8 March 2017, Copper & Gold – Not a production wall ... it's a production cliff

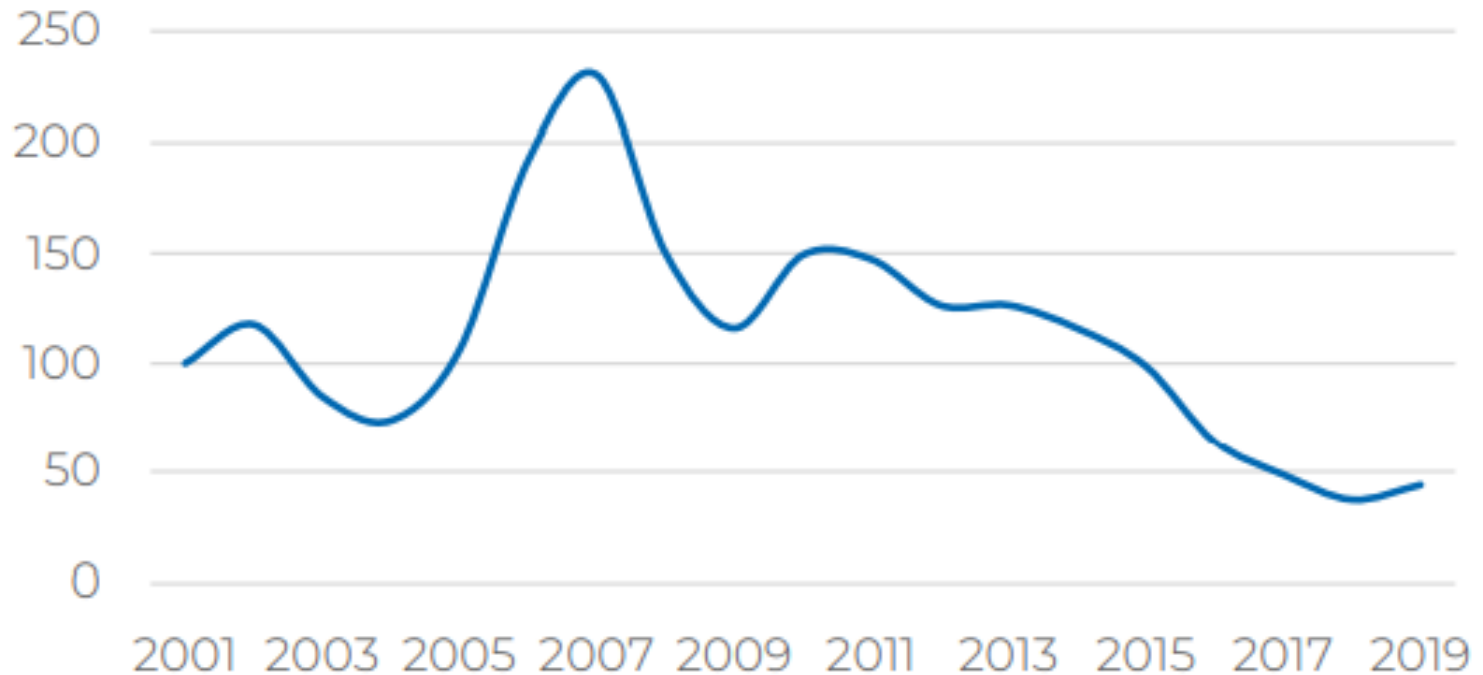
Implied Industry Growth Rate Given Investment Rate



Bernstein analysis

Copper mine project pipeline at pre-supercycle lows⁽²⁾

Indexed, 2001=100

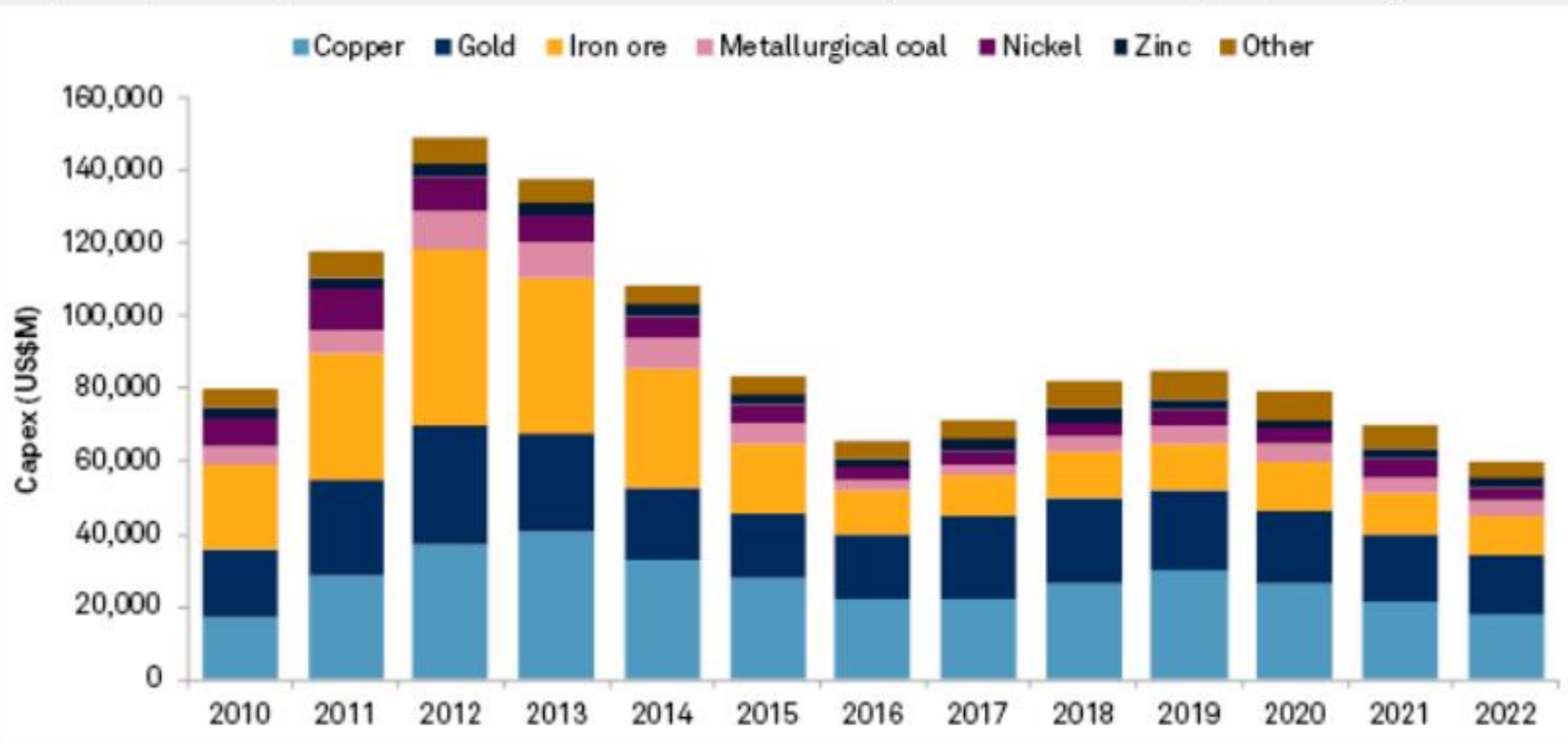


ition. (2) Copper mine project

Glencore 2020 Investor Update

Capex inflation might be big already...

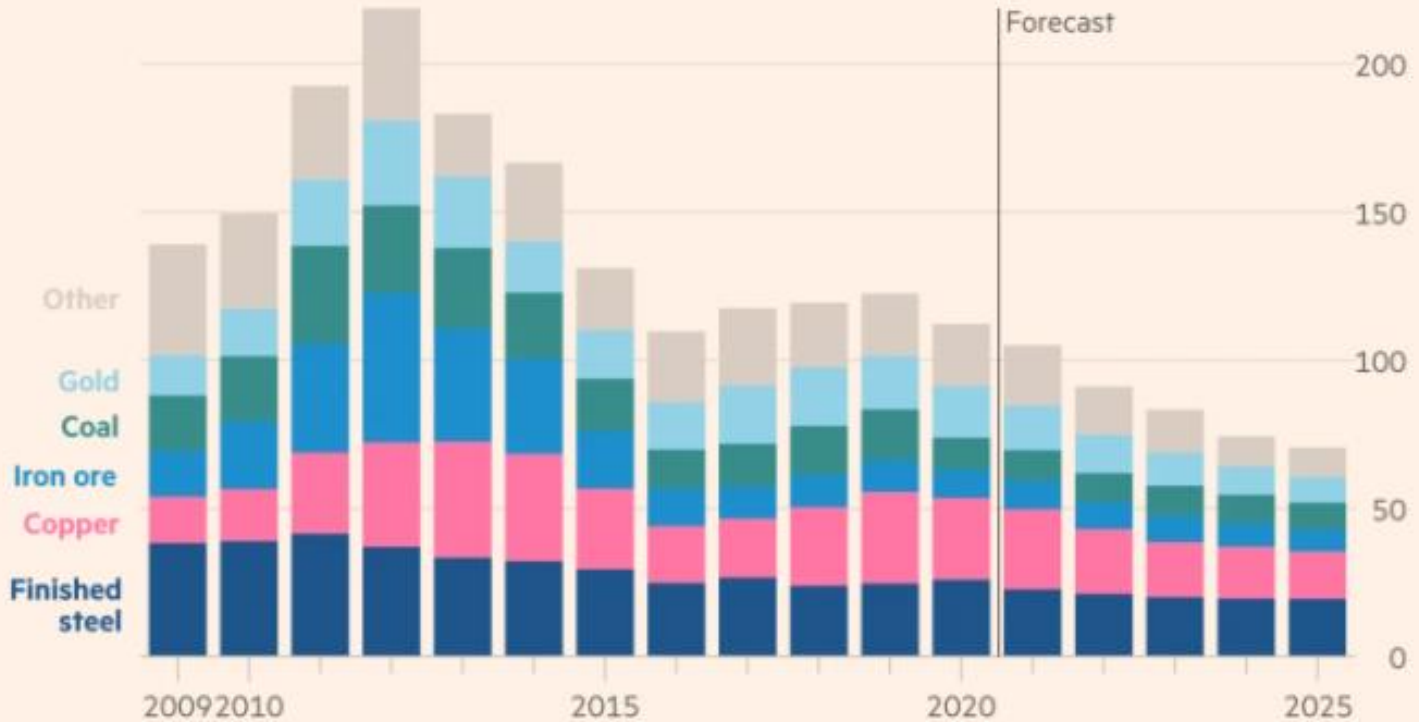
Capex spending to reduce under miners' current plans after hitting 5-year high in 2019



Data as of Nov. 18, 2019.
 Other includes cobalt, lead, lithium, molybdenum, platinum group metals, silver, uranium.
 Metallurgical coal figure is limited to the seaborne market.
 Source: S&P Global Market Intelligence

Capital expenditure on copper sector set to fall

\$bn, mined commodities



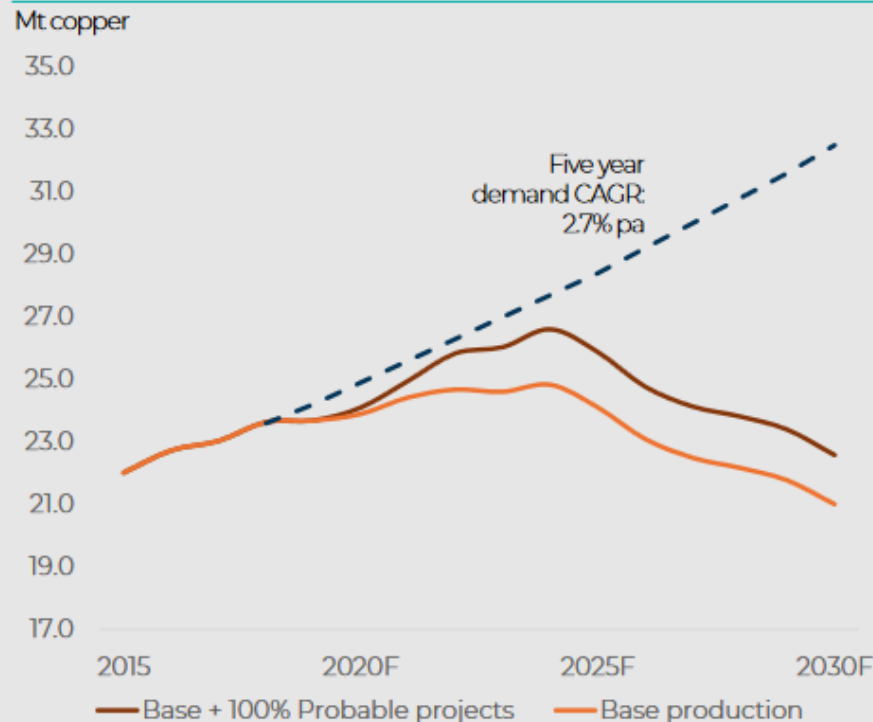
Source: Wood Mackenzie
© FT

And much worse at the very beginning of the value chain...

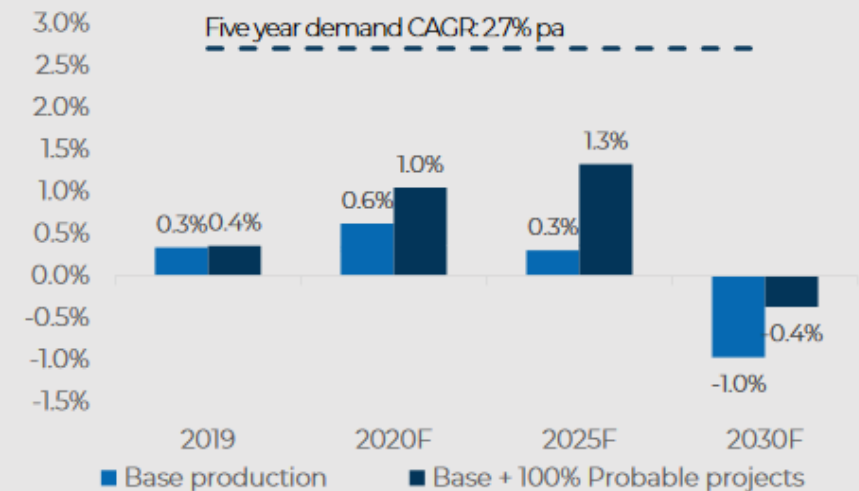


Structural deficits likely even with 100% of probable project pipeline

Historical demand trends imply continued copper deficits⁽¹⁾

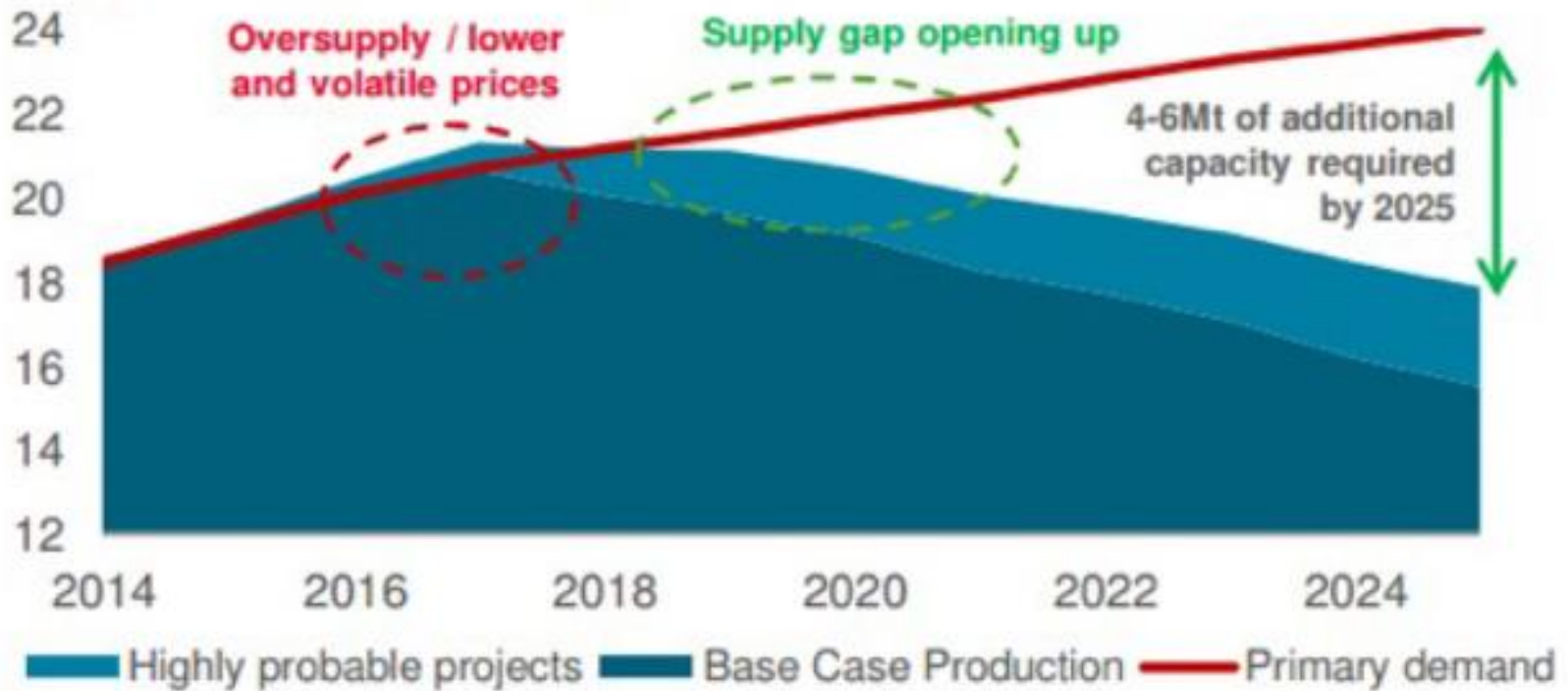


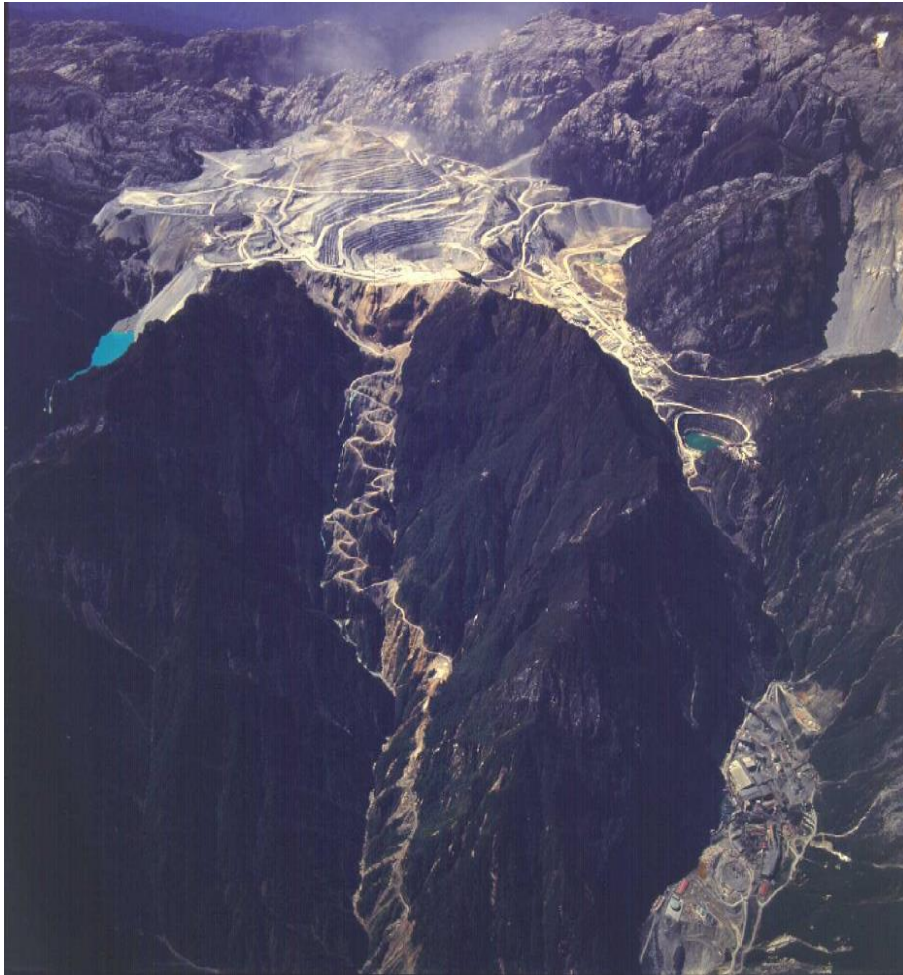
Minimum copper demand needed for inventory draw⁽¹⁾



- In 2025... EV demand is equivalent to half of new supply from all Probable projects (assuming 100% are built)
- By 2030... EV demand is equivalent to almost double total new supply from all Probable projects

Copper supply/demand (million tonnes)

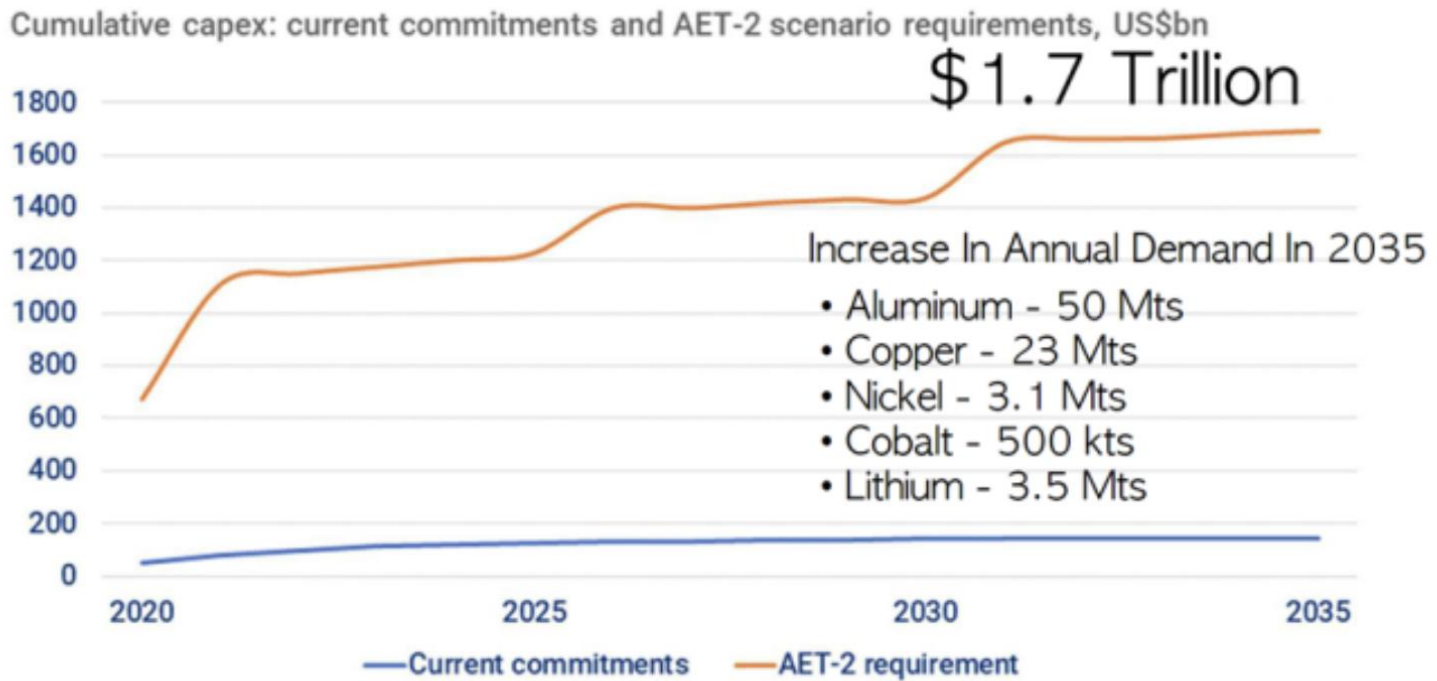




Good luck world, keeping up (grow) availability, replacing these elephants. Without investments???





>\$1trn in key metals capex needed by 2035

Cumulative capex: current commitments and AET-2 scenario requirements, US\$bn



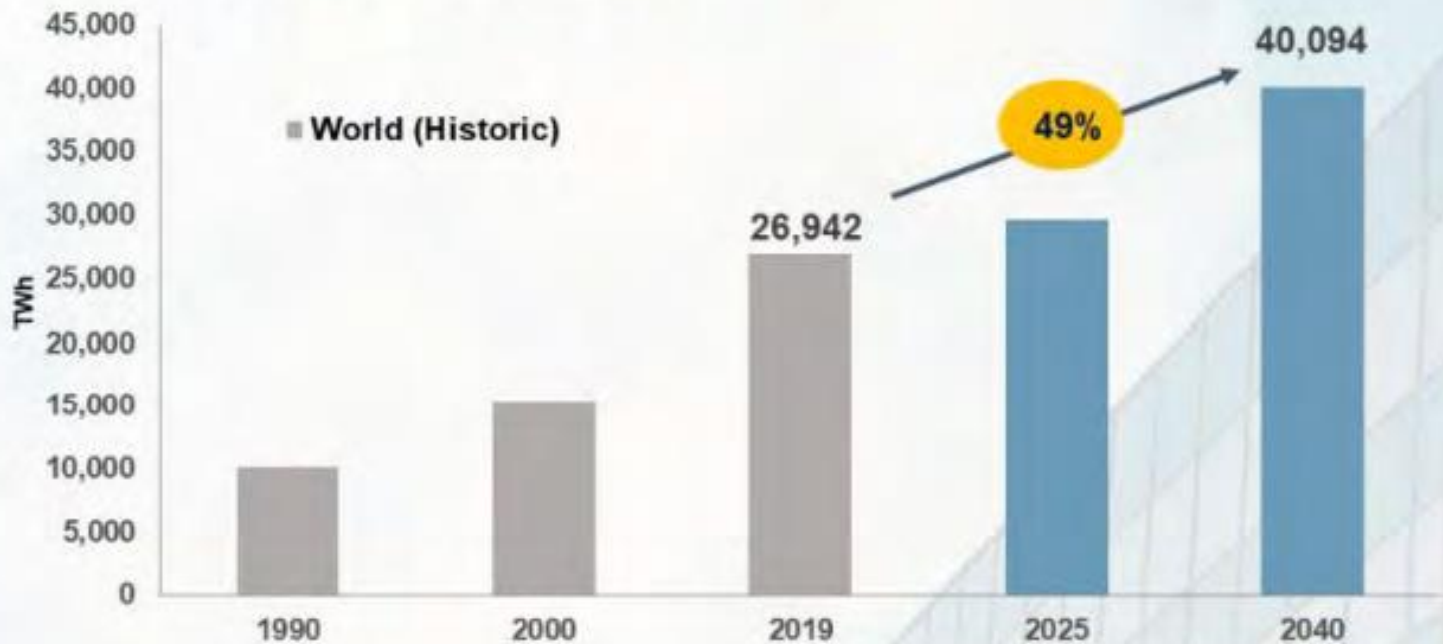
Source: Wood Mackenzie

All, All, All, Everything, Everything is about energy!

Country/Region	Electricity consumption (kW·h/yr)	Year of Data	Source	Population	As of	energy per capita (kWh per person per year)	power per capita (watts per person)
World	21,776,088,770,300	2014	CIA	7,322,811,468	2016	2,674	309
 China	6,310,000,000,000	2017	NEA ^[3]	1,403,500,365	2017	4,475	510
 United States	3,911,000,000,000	2015 EST.	CIA	323,995,528	2016	12,071	1,377
 India	1,547,000,000,000	2018	CSO ^[4]	1,352,642,280	2018	1,181	140
 Russia	1,065,000,000,000	2014 EST.	CIA	142,355,415	2016	7,481	854
 Japan	934,000,000,000	2014 EST.	CIA	126,702,133	2016	7,371	841
 Germany	533,000,000,000	2014 EST.	CIA	80,722,792	2016	6,602	753
 Canada	528,000,000,000	2014 EST.	CIA	35,362,905	2016	14,930	1,704
 Brazil	518,000,000,000	2014 EST.	CIA	205,823,665	2016	2,516	287
 Korea, South	495,000,000,000	2014 EST.	CIA	50,924,172	2016	9,720	1,109
 France	431,000,000,000	2014 EST.	CIA	66,836,154	2016	6,448	736
 United Kingdom	309,000,000,000	2014 EST.	CIA	64,430,428	2016	4,795	547

Growing electricity generation

By 2040, global demand is expected to increase by 49% from 2019 levels

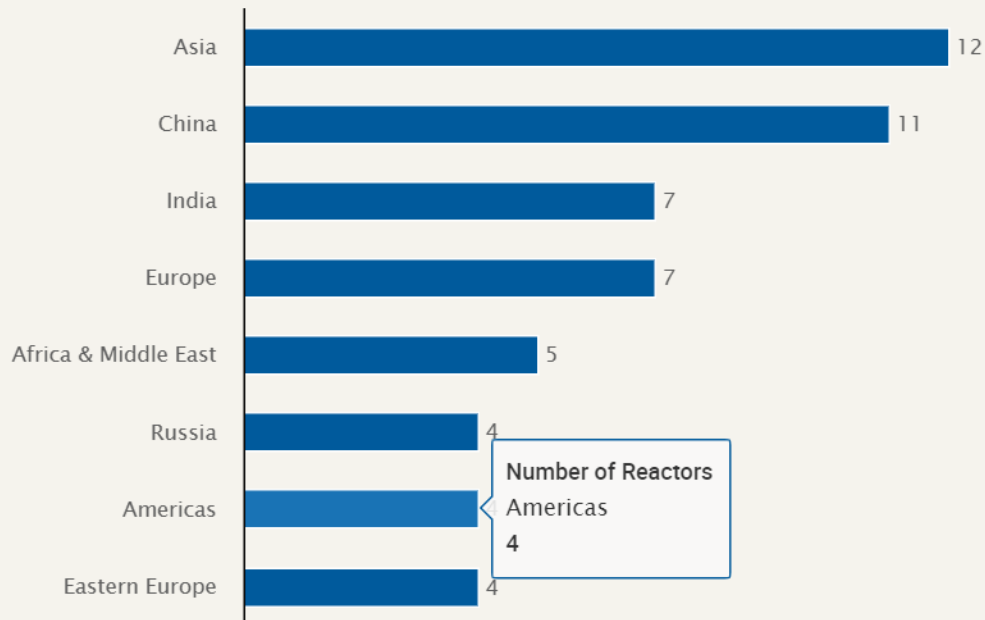


Source: IEA World Energy Outlook 2020 Stated Policies

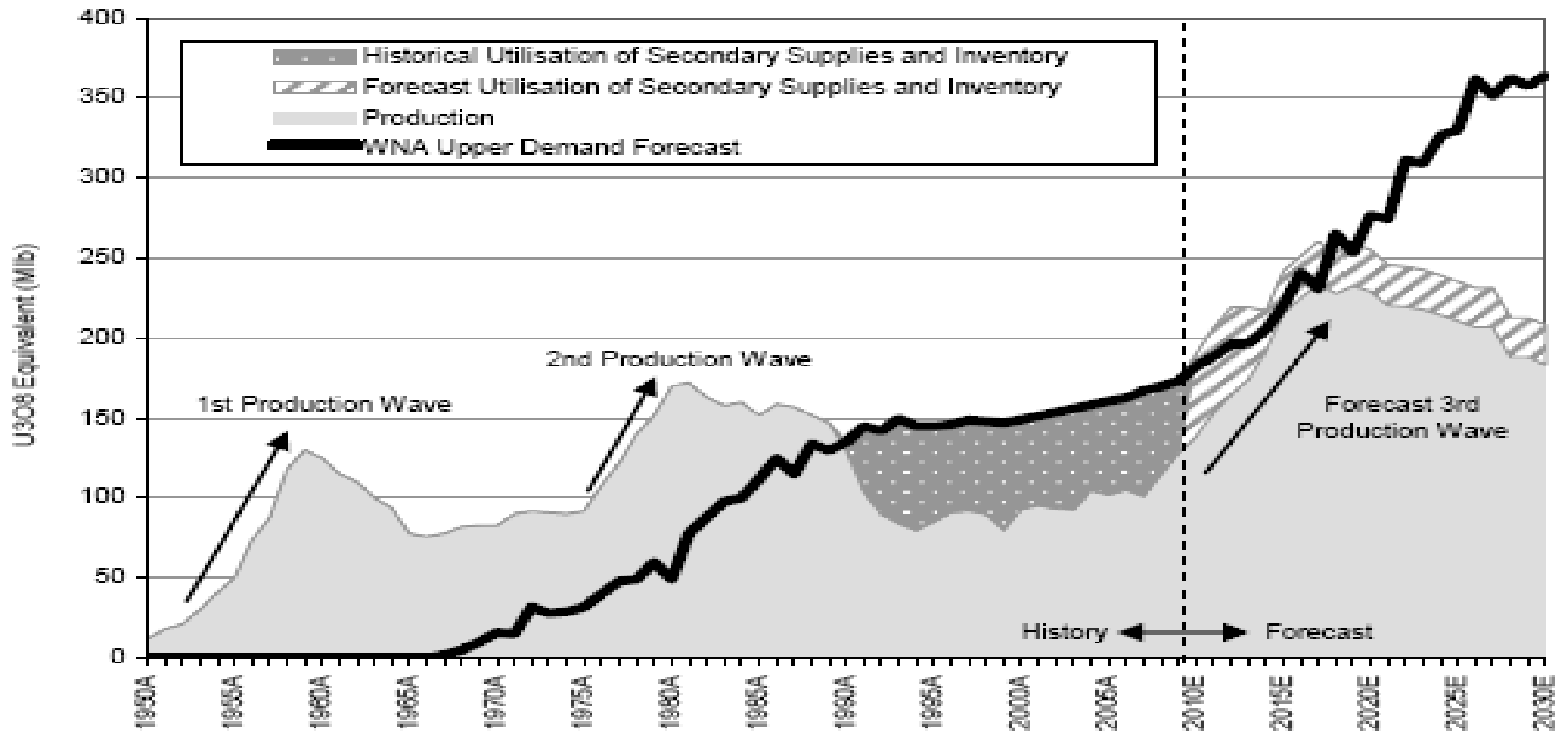
Demand gap filled

The demand gap left by forced and premature nuclear reactor shutdowns since March of 2011 has been filled. According to the International Atomic Energy Agency there are currently 440 reactors operating globally and 54 reactors under construction. This growth is largely occurring in Asia and the Middle East.

Currently Under Construction

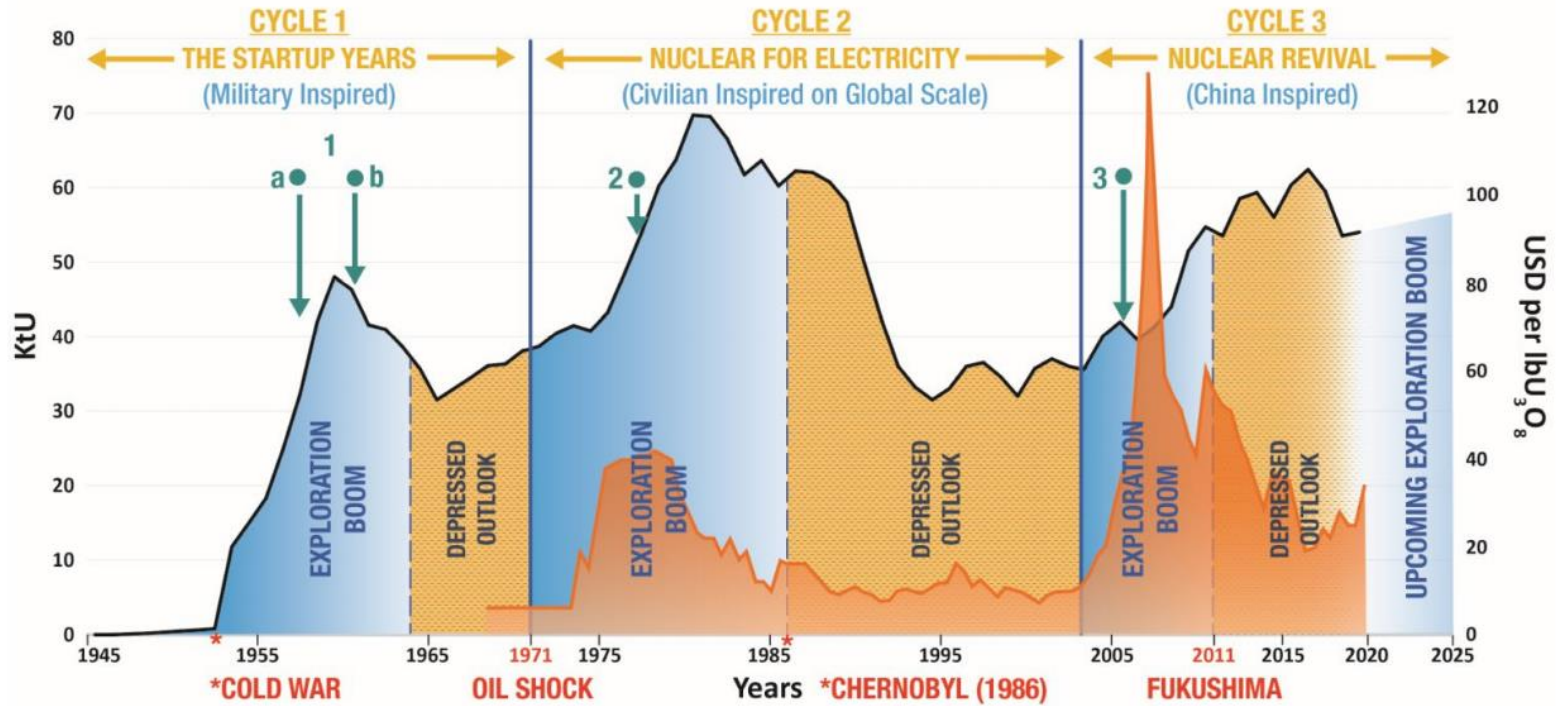


Diminishing secondary sources will lead to supply gap



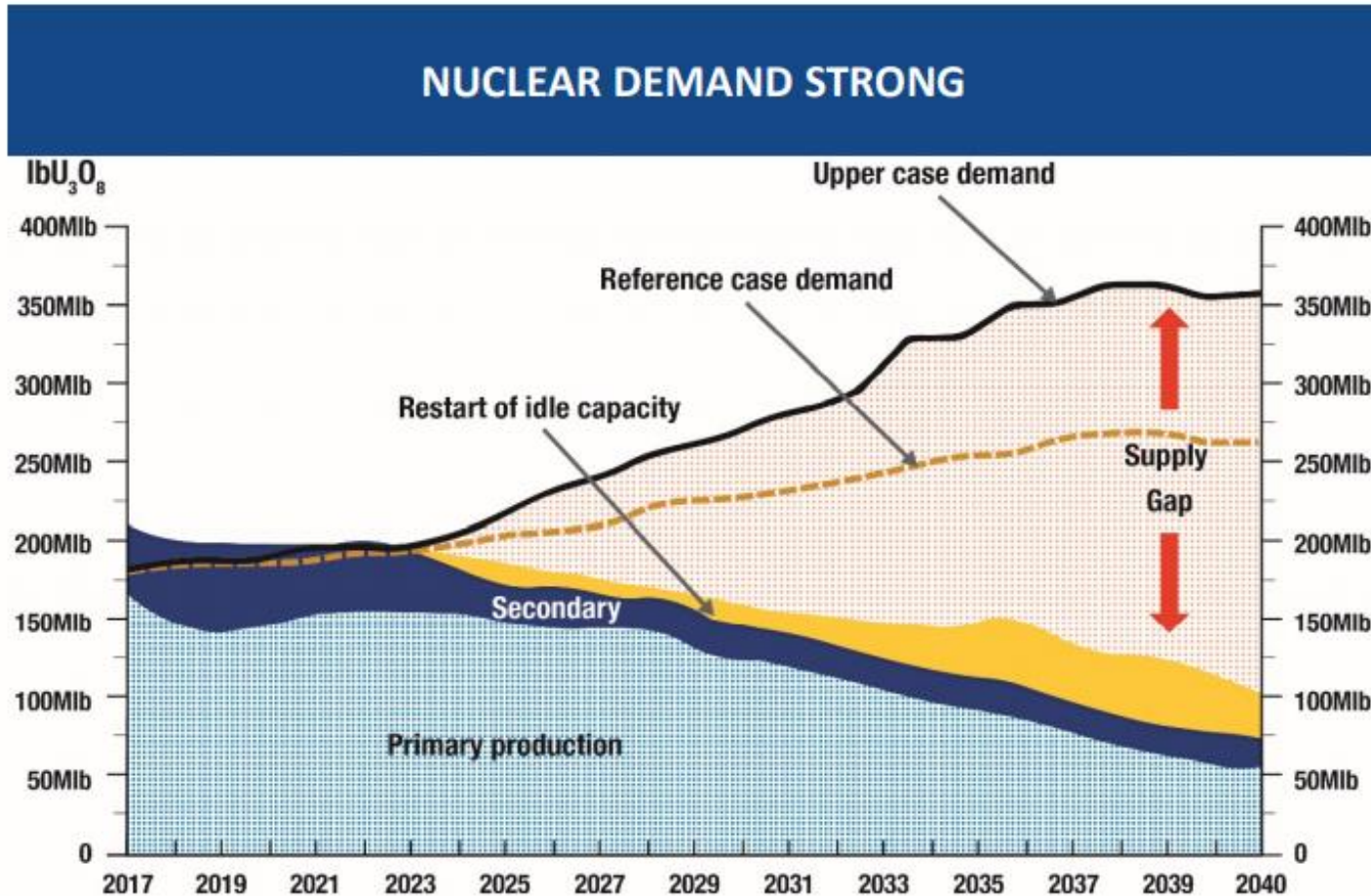
Source: BMO Capital Markets, WNA, UxC

Major Nuclear Cycles 1945 to 2020 – *with strong outlook*



The only Juniors that went into production in 75 years outside US

- (1) a Denison Mines (Canada)
b United Uranium (Australia)
- (2) Queensland Mines (Australia)
- (3) Paladin (Africa)

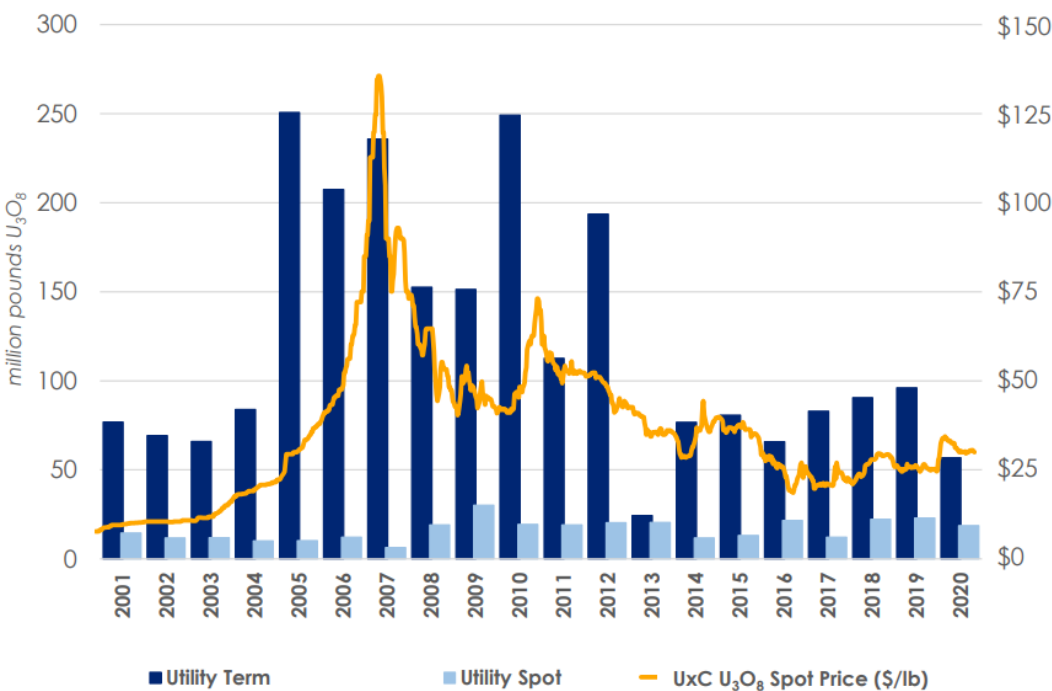


Source: WNA Sept 2019



Historic Demand – A Long-term market

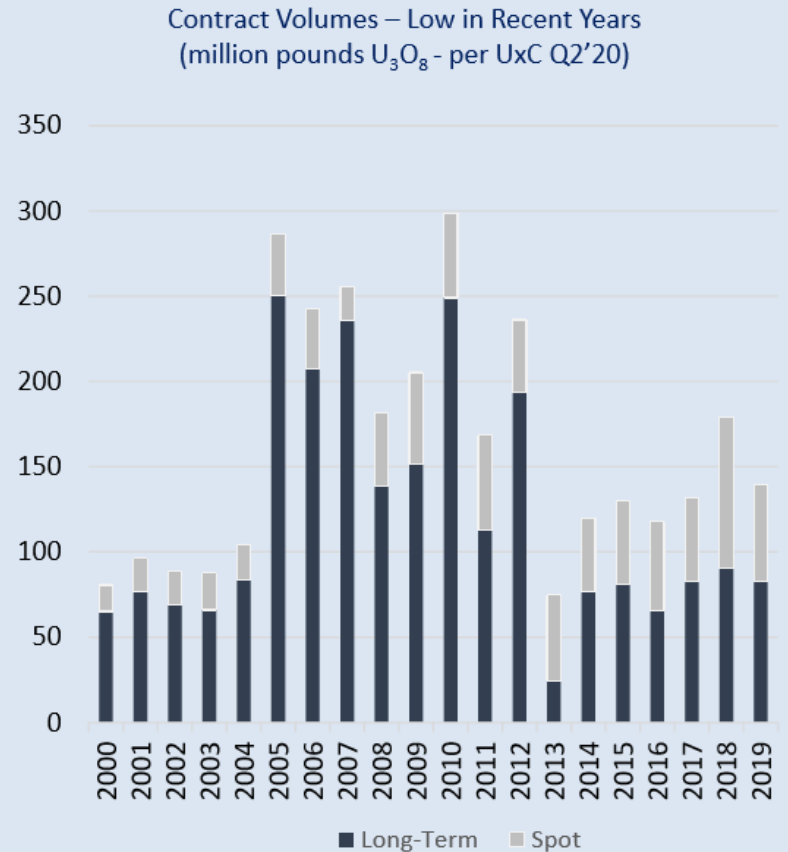
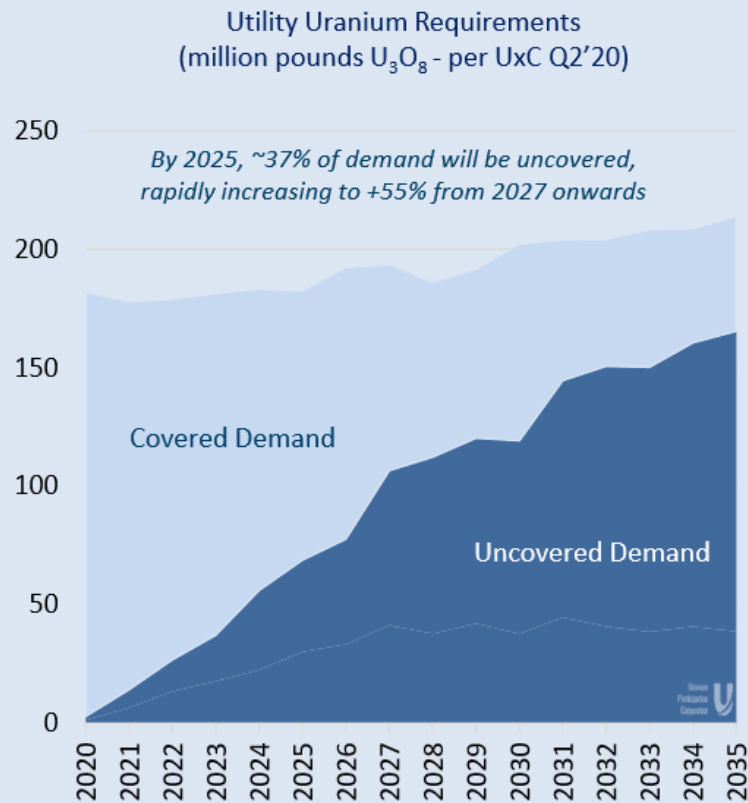
Historical annual spot and term trading volumes



- **2005-2012** – significant long-term contracting, rolling off in early 2020s
- **2012-2017** – oversupplied market resulting in falling prices
- **2018-2019** – market balanced following significant production cuts
- **2020** – limited utility contracting due to COVID-19 pandemic
- **2021-2030** – forecast uncovered demand of ~700¹ million pounds U₃O₈, utilities expected to return to the market

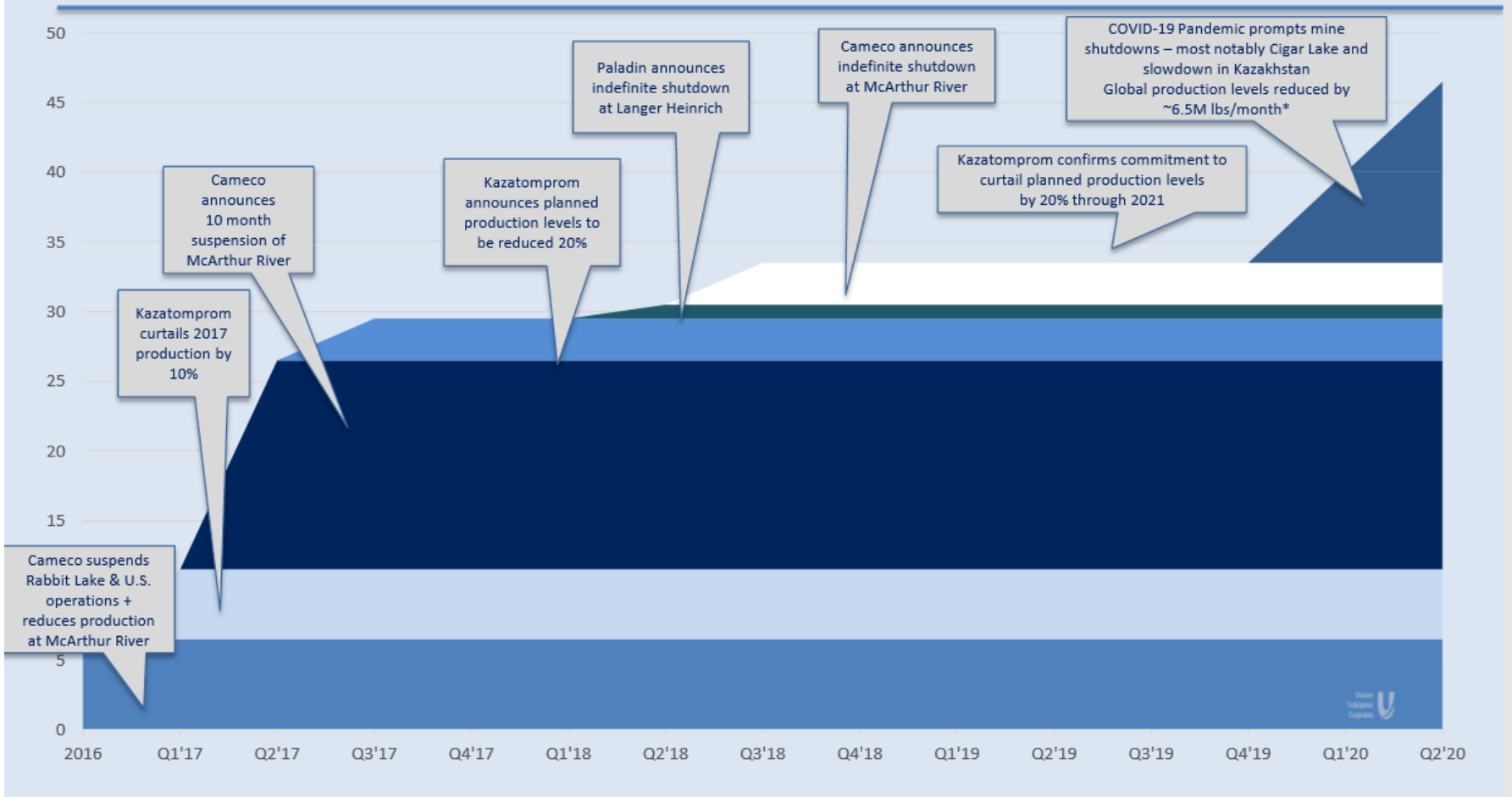
¹ Source: UxC, with permission.

**Long-term Contract Coverage
+1.5B lbs U₃O₈ remain Uncovered Between 2020 to 2035**



Source: UxC Uranium Market Outlook Q2 2020

Production Curtailments
Close to 50M lbs U₃O₈ Per Annum Removed from Market



McArthur River Reserves
(As of December 31, 2020)

6.89% U_3O_8
Average Grade

Proven & probable reserves
273.6m
lbs U_3O_8
(Cameco's share)

Cigar Lake

Production
(As of December 31, 2020)

15.92% U_3O_8
Average Grade

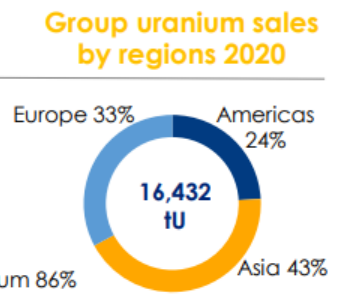
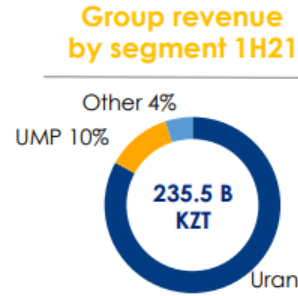
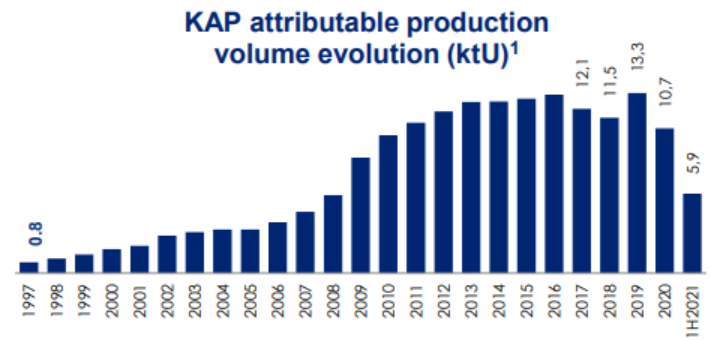
Proven & probable reserves
82.8m
lbs U_3O_8
(Cameco's share)

Kazatomprom at-a-Glance

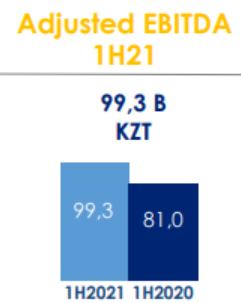
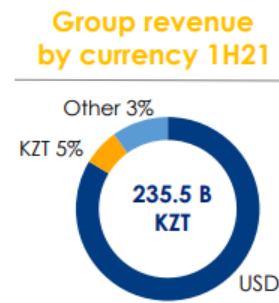


Largest producer of natural uranium with priority access to one of the world's largest reserve bases

No 1
In URANIUM
Production & Sales



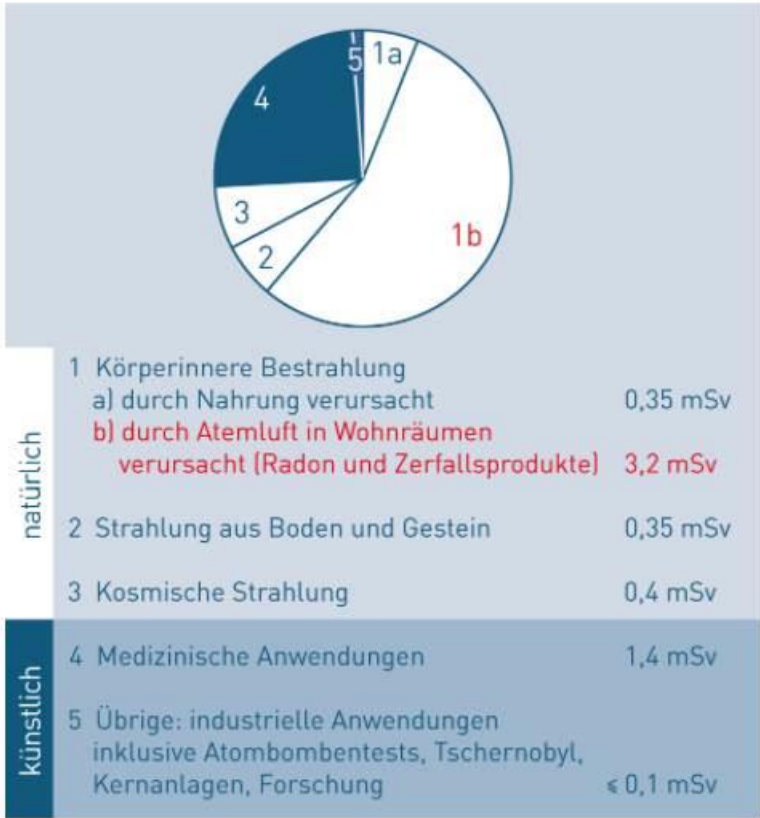
- 14 mining units
- 2 exploration projects
- 1st quartile cost of production
- 10 producing JVs with world-class partners
- 23% share of global production in 2020
- 281 tU in attributable reserves
- 100% reserve base amenable to In-Situ Recovery ("ISR") mining method
- Significant uranium processing and fuel pellets production capabilities at UMP



Source: Company information, third-party sources
¹ Production volumes of U₃O₈ (attributable basis) is not equal to the volumes purchased by Company and THK
² Based on the 1H2021 consolidated financial statements as at 30 June 2021
³ At average USD:KZT exchange rates for the relevant periods, i.e. 424.2 average for 1H2021
⁴ Based on consolidated 1H2021 U₃O₈ Segment Sales
⁵ Adjusted EBITDA is calculated by excluding from EBITDA items not related to the main business and having a one-time effect

ALLE SIND DER STRAHLUNG AUSGESETZT

Die mittlere jährliche Strahlendosis für eine Person in der Schweiz beträgt gemäss Bundesamt für Gesundheit rund 5,8 Millisievert. Mit 4,3 Millisievert ist ein Grossteil davon natürliche Strahlung.



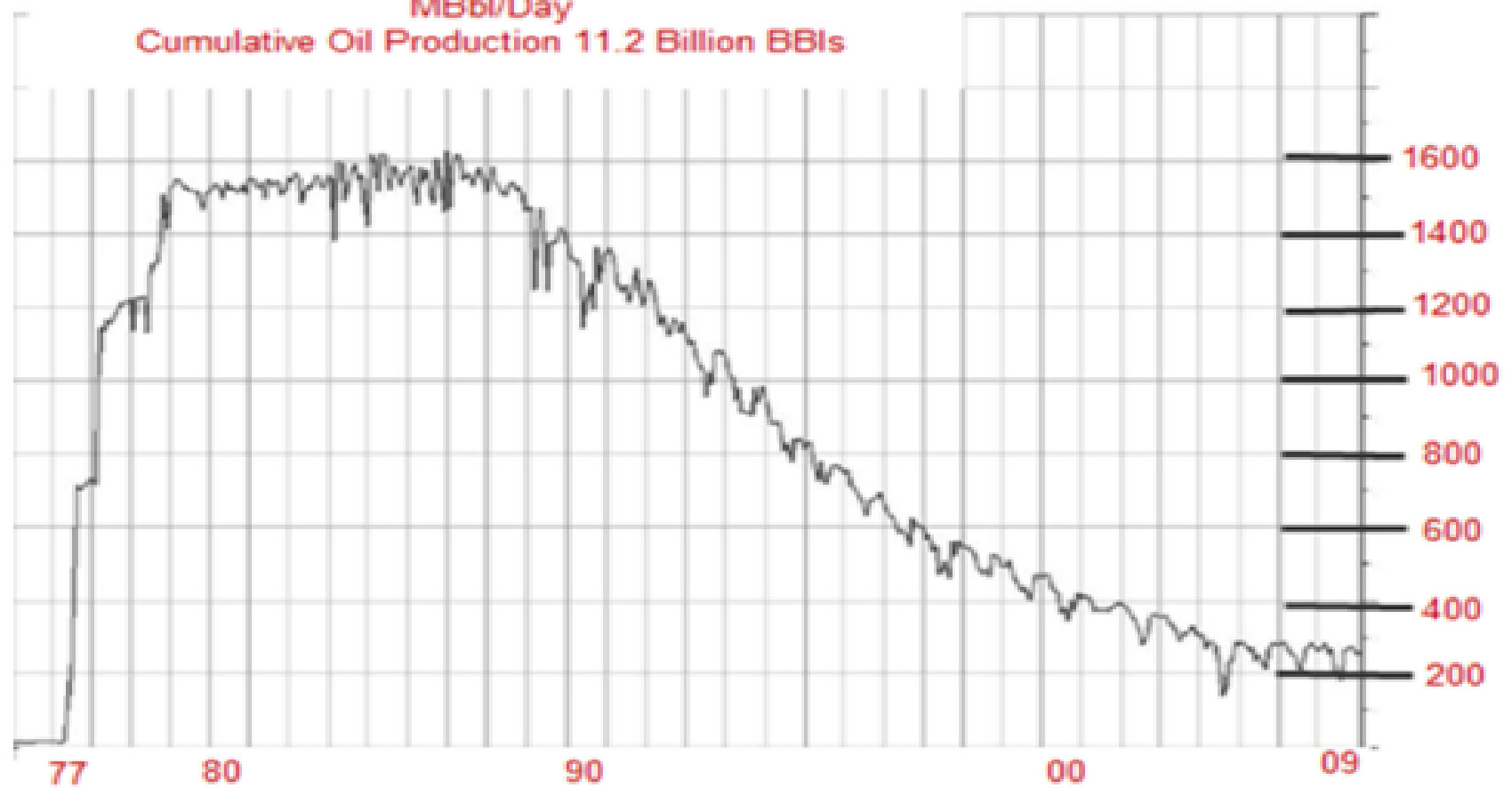
Deep storage dangerous? But since 50 years in a shed? Harm?

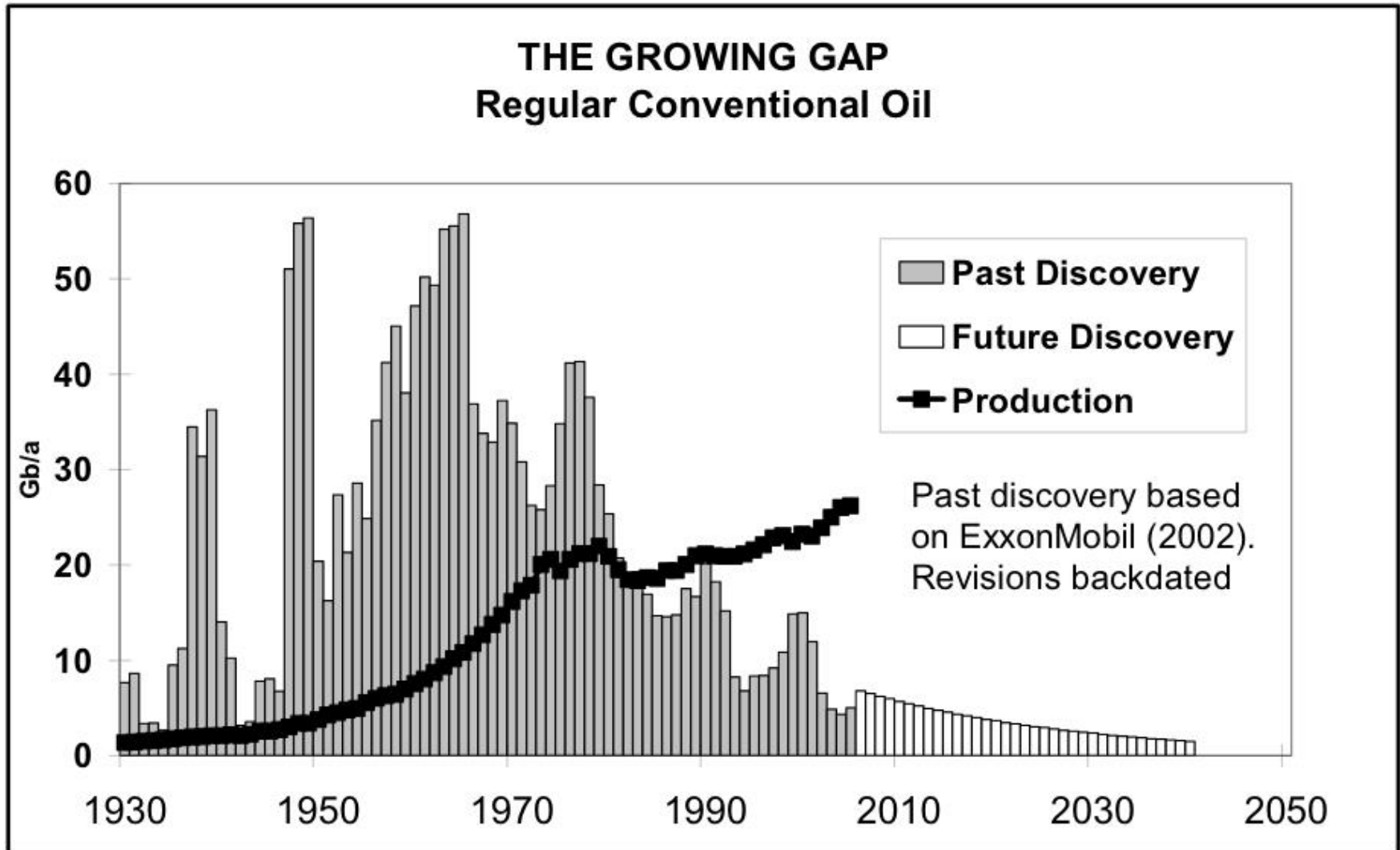


Verpackt in Lager- und Transportbehälter: Im zentralen Zwischenlager bei Würenlingen lagern die meisten hochradioaktiven Abfälle der Schweiz. Und zwar so lange, bis das geologische Tiefenlager als Endlager gebaut ist.

It is not about the end of oil etc. It is the study of the production profile (bell curve) of a conventional oil field. Technology rather changes the ramp-up than the decline.

Prudhoe Bay Production 1977-2009
MBbl/Day
Cumulative Oil Production 11.2 Billion BBls

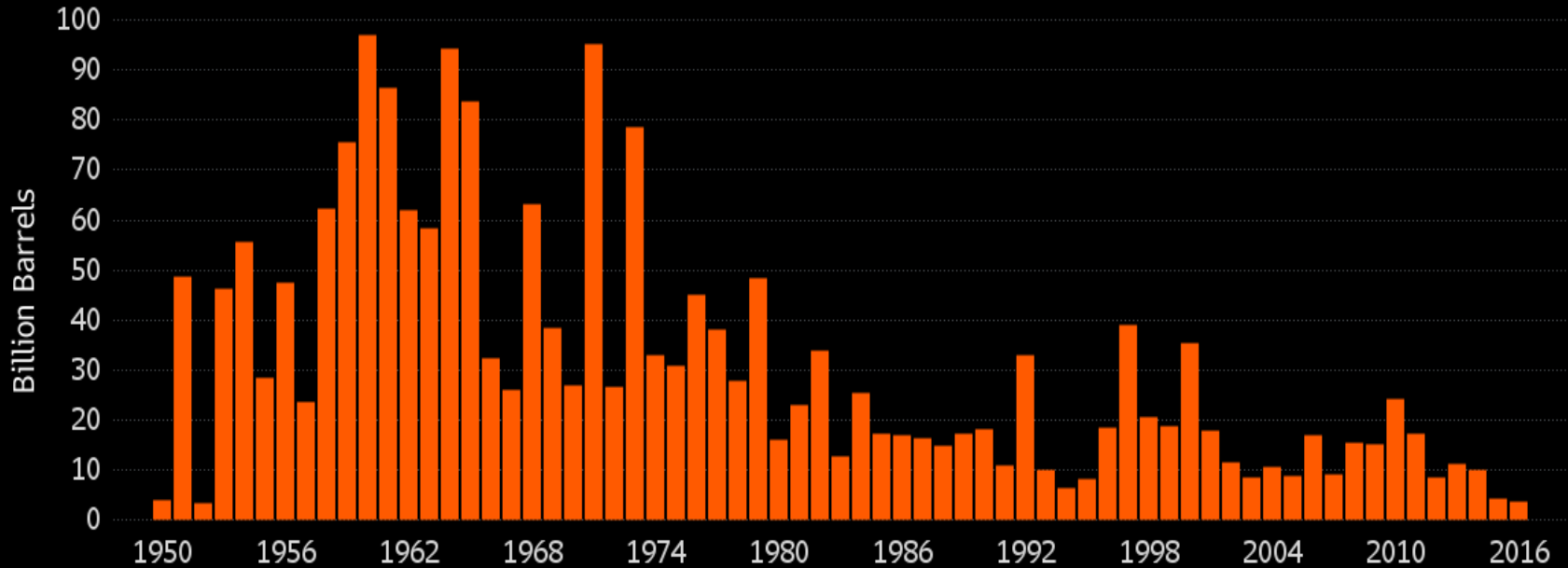




Oil Finds at Lowest Since 1952

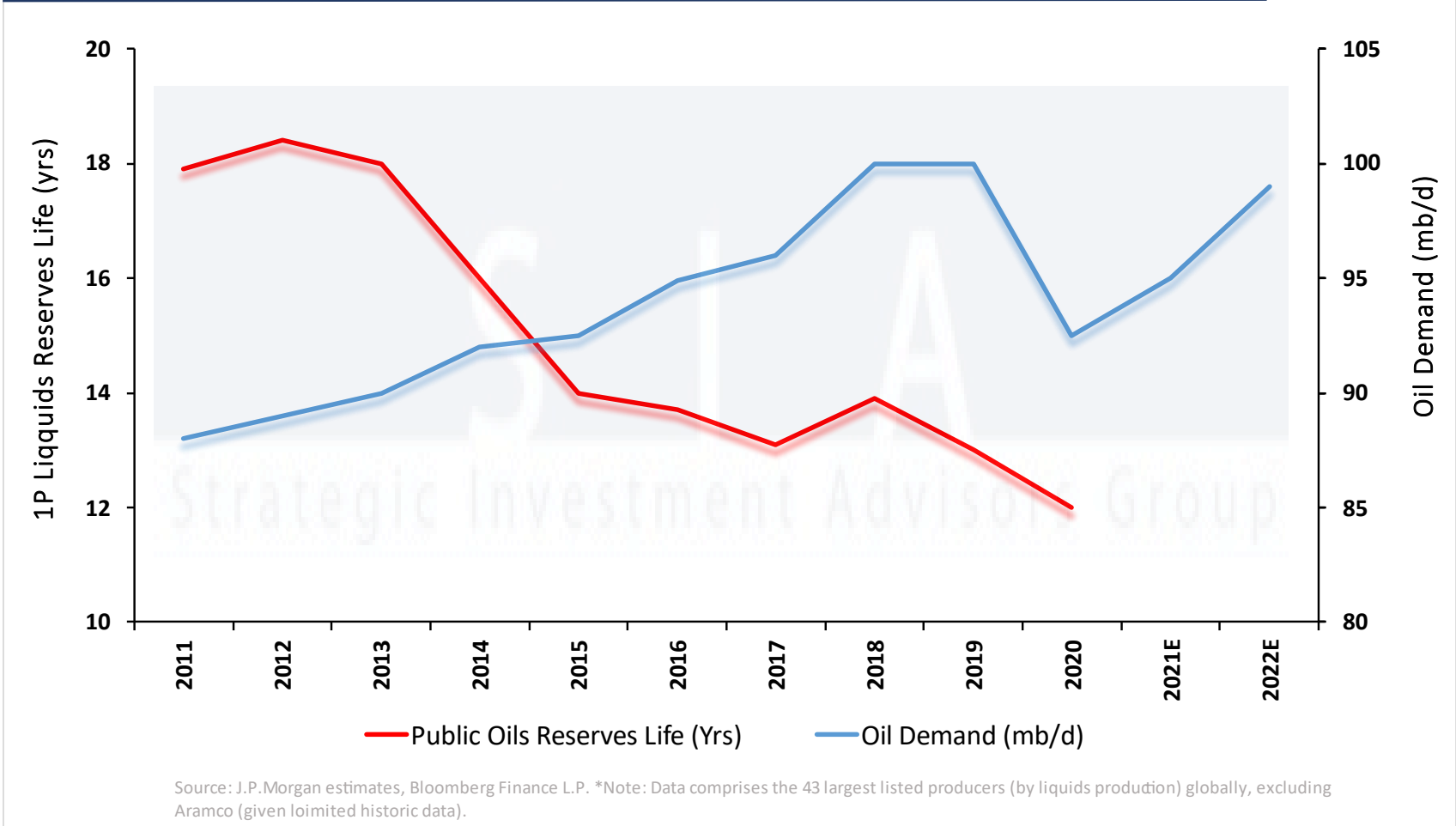
Exploration hit rock bottom amid unprecedented spending curbs

Conventional Oil Discovered

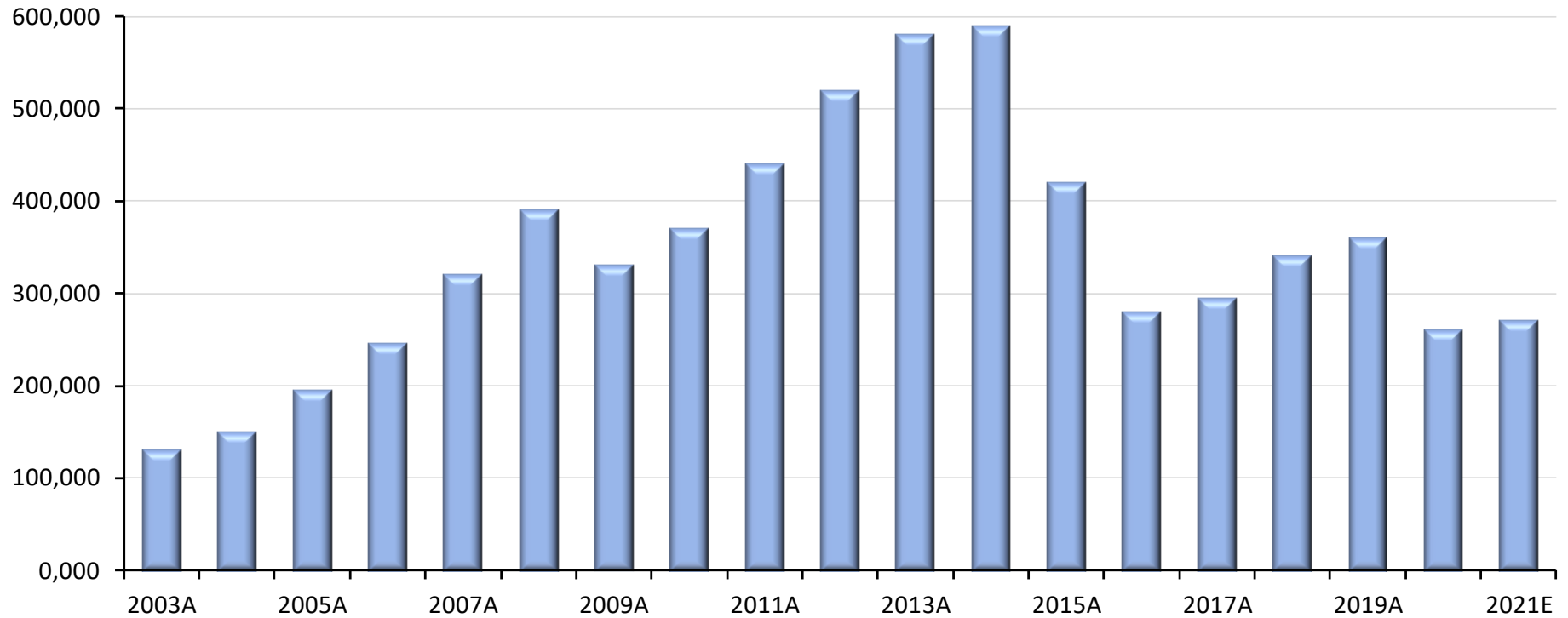


Source: Wood Mackenzie
Note: 2016 figure is preliminary

2020 the worst year in two decades...



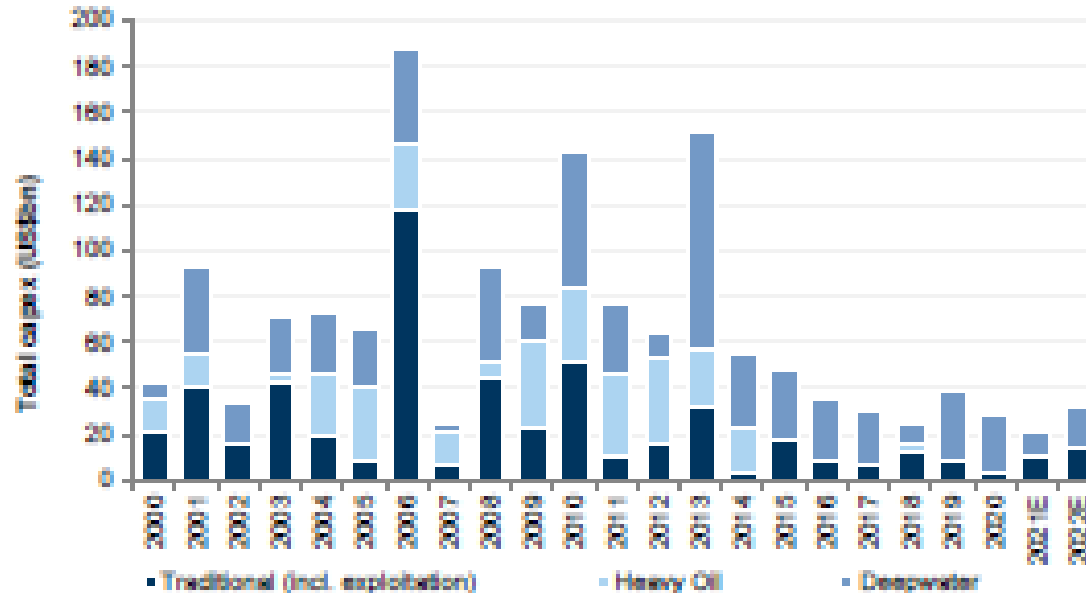
Total Upstream E&P Capex by investors



Source: J.P. Morgan estimates, Company data.

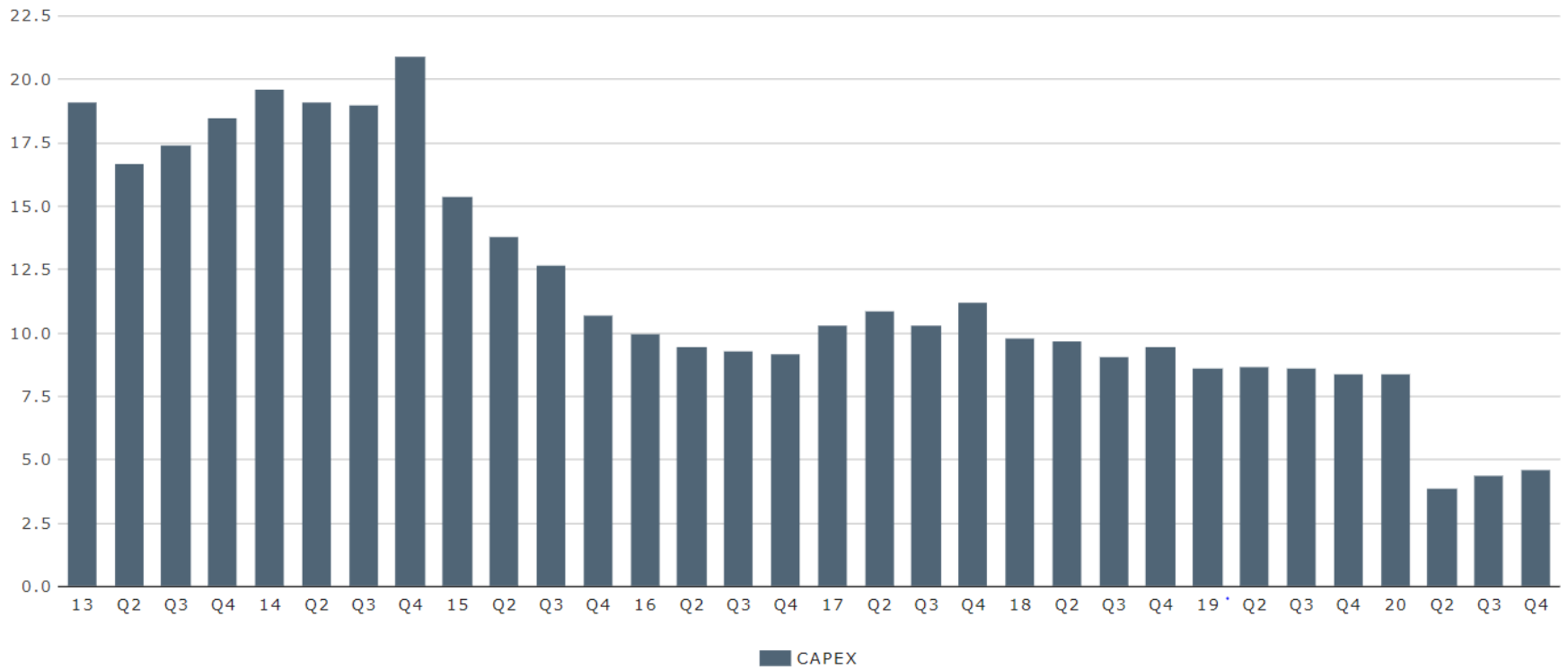
Exhibit 3: Capital commitment to new oil projects has reached a new trough...

Top Projects capex sanctioned in oil by year of sanction, split by winzone

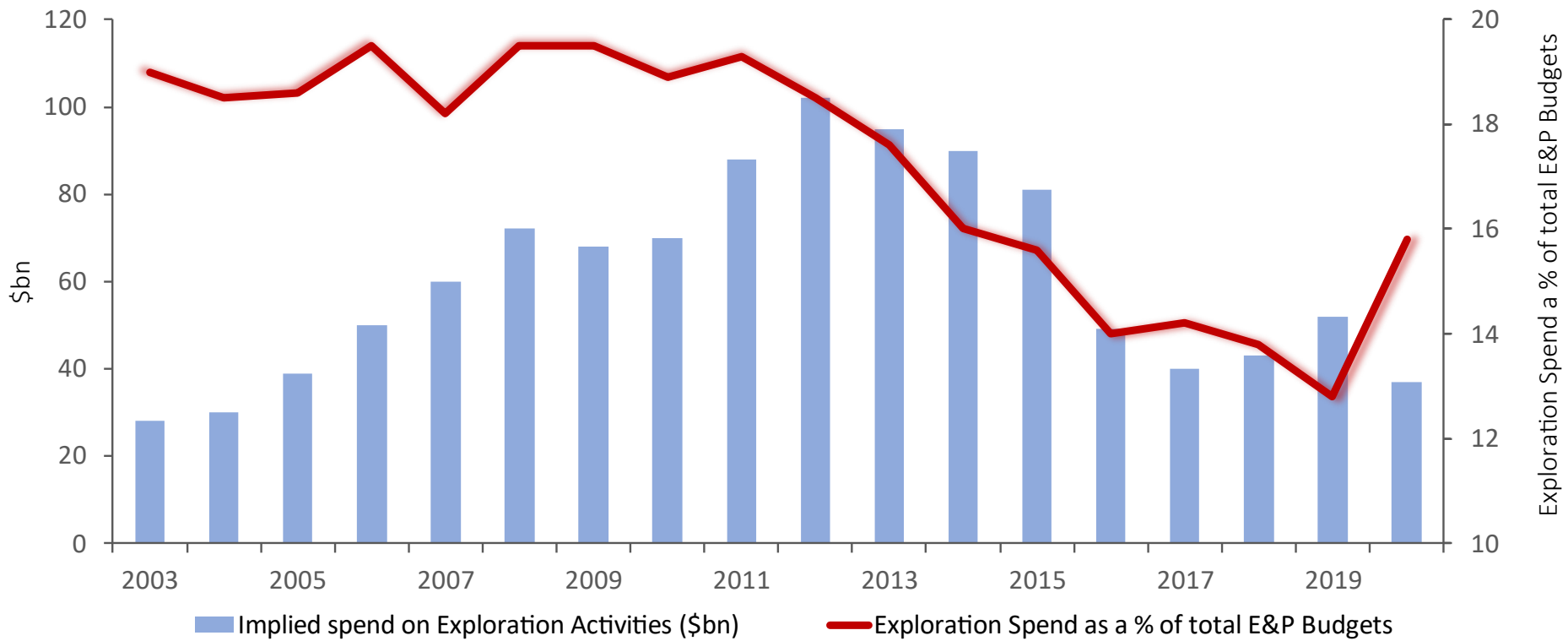


Source: Goldman Sachs Global Investment Research

CANADIAN OIL AND GAS CAPITAL EXPENDITURES
billion CAD • data by StatsCan



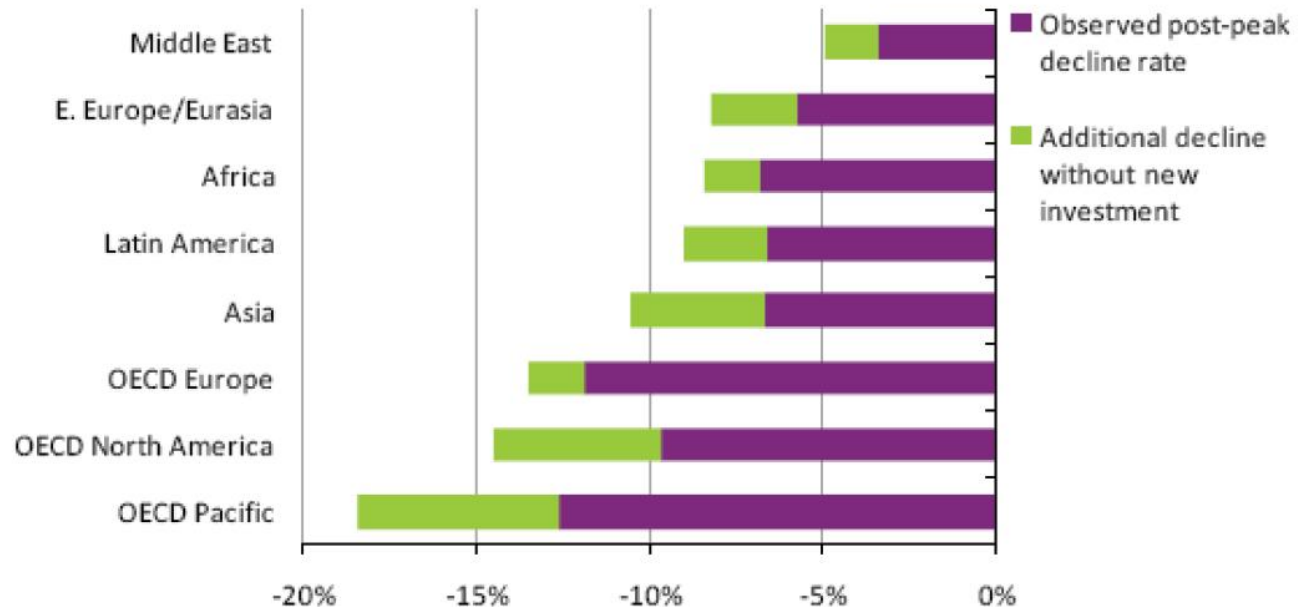
Global Exploration Spend



Source: J.P. Morgan estimates, Company data.

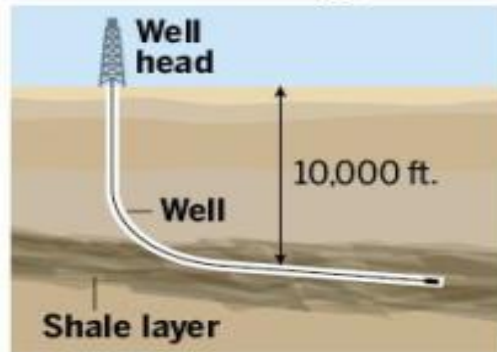
- The supply of oil from existing fields declines on an average of 5-7% per year
- The largest onshore oil fields decline at a slower rate
- Deepwater offshore fields decline 2+ times faster than onshore fields
- The latest onshore tight oil fields in North America show annual decline rates greater than 30, 40, 50% in the first years before the rate asymptotes to a more traditional decline rate
- Going forward, the mix of high decline fields will grow much faster than production from lower decline onshore conventional fields
- Not the actual commodity price will define capex spending but the expectation of it
- Market will be bear market minded for years. CEOs, investors, debt-holders, banks, analysts will prefer cash-flow distribution to investment/production growth

- **Global depletion is around 3-4% per year** and IEA forecasts increased depletion for the next years
- Global depletion is accelerating due to reduced capex globally and tight formations
- **Shale oil depletion is much higher**



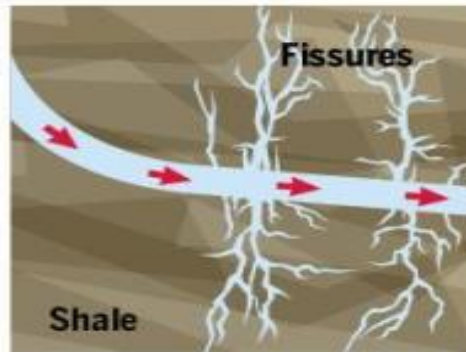
Notes: The observed decline rate is the cumulative average annual rate of change in observed production over the life of each field since its production peaked, weighted by cumulative production. The natural decline rate is the notional rate of decline in production had there been no investment beyond that associated with the initial development of the field. Source: IEA (2008a).

How fracking works

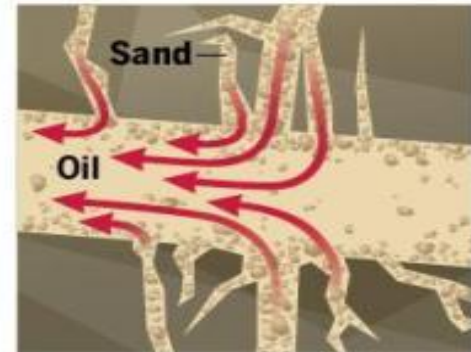


1 Wells are bored using directional drilling, a method that allows drilling in vertical and horizontal directions to depths of over 10,000 feet.

Sources: USC, Los AngelesTimes



2 Large amounts of water, sand and chemicals are injected into the well at high pressure, causing fissures in the shale.



3 Sand flows into the fissures, keeping them open so that the oil from the shale can flow up and out of the well.

McCLATCHY-TRIBUNE

- **Light oil.** API above 30 (density)
- **Low Capex per well.** Drilling and completion can cost \$5-10m vs billions for off shore
- **Rapid decline.** 60% in year 1, down to 20/25% in year 3
- **20,000 wells drilled per year**

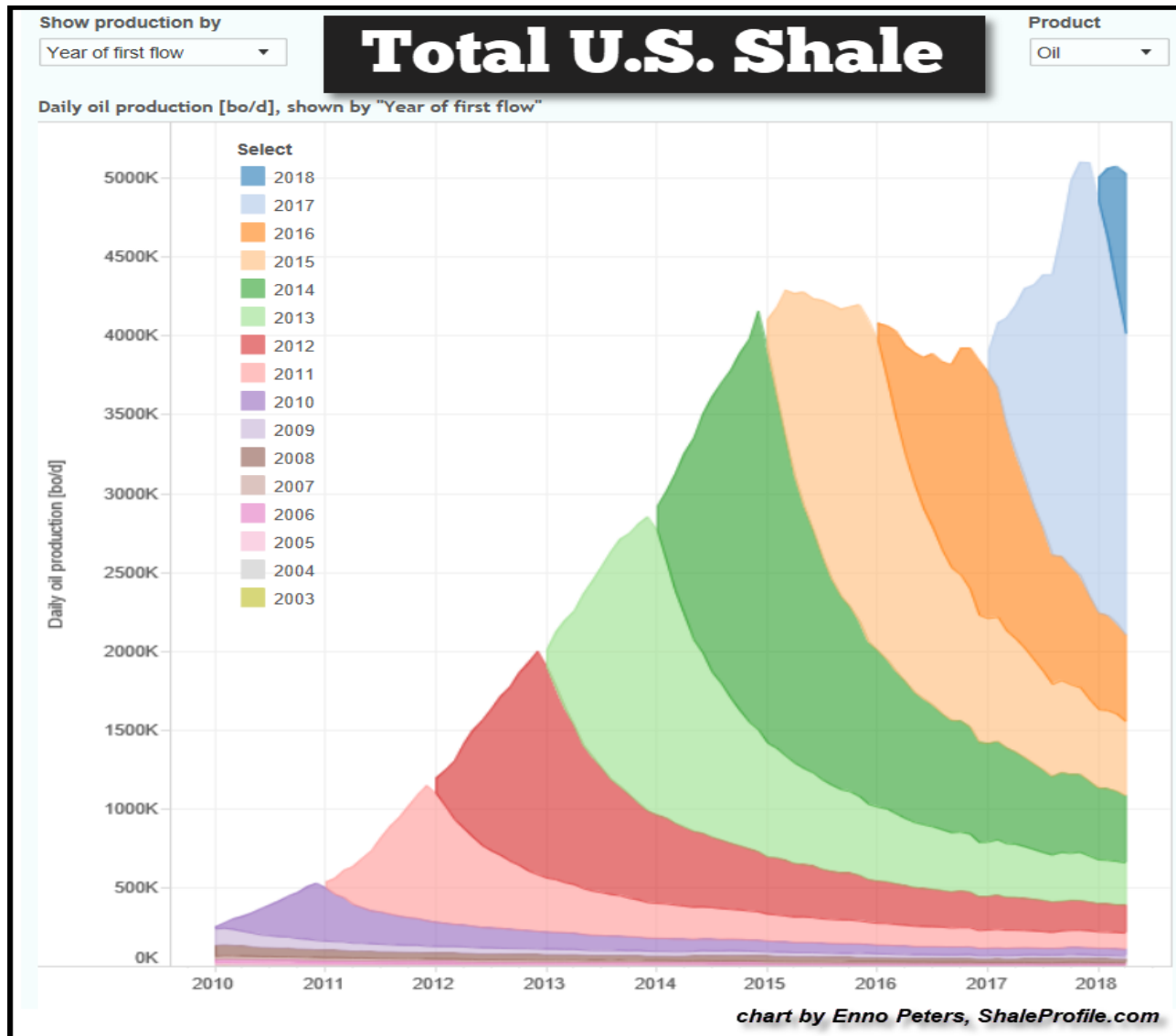
- US shale depletion is 65% year 1, 50% year 2 and 30% year 3. How do we make numbers when your facilities must be 66% amortized by year 3? Nobody cares
- Global depletion is accelerating due to reduced capex globally and tight formations
- We encourage you to take a look at an excellent presentation made by Mr. David Einhorn from Greenlight Capital “The Motherfrackers” where you will find accurate calculations on real IRRs on shale. Shale has never made money due to depletion and growth ambitions

Exhibit 26 Tight Oil Decline Rates by Age of Producing Well

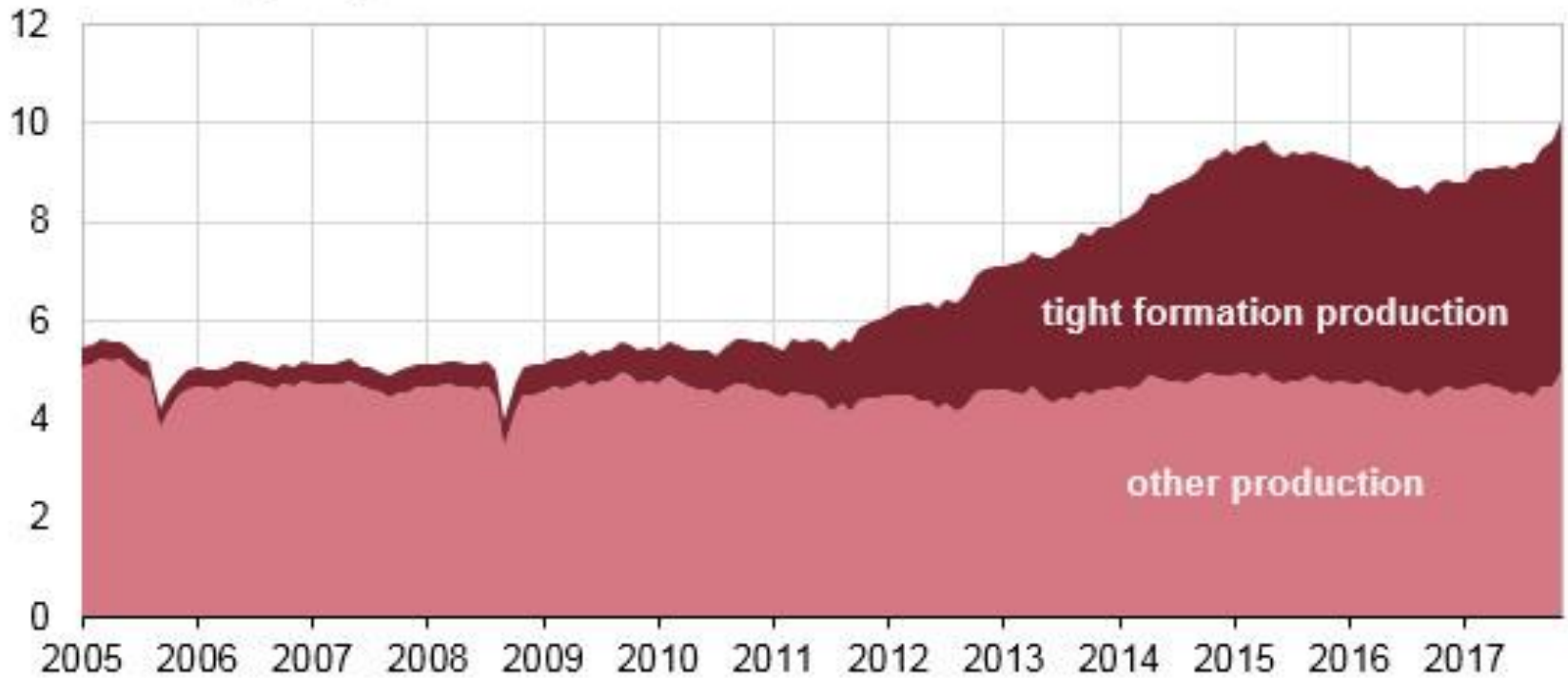
Annual Decline Rate (%)	Bakken	Eagle Ford	Niobrara	Permian
Year 1	62%	67%	64%	61%
Year 2	44%	51%	44%	45%
Year 3	26%	31%	26%	27%
Year 4	19%	23%	19%	20%
Year 5	15%	18%	15%	15%
Year 6	12%	15%	12%	13%
Year 7	10%	13%	10%	11%

Source: Morningstar

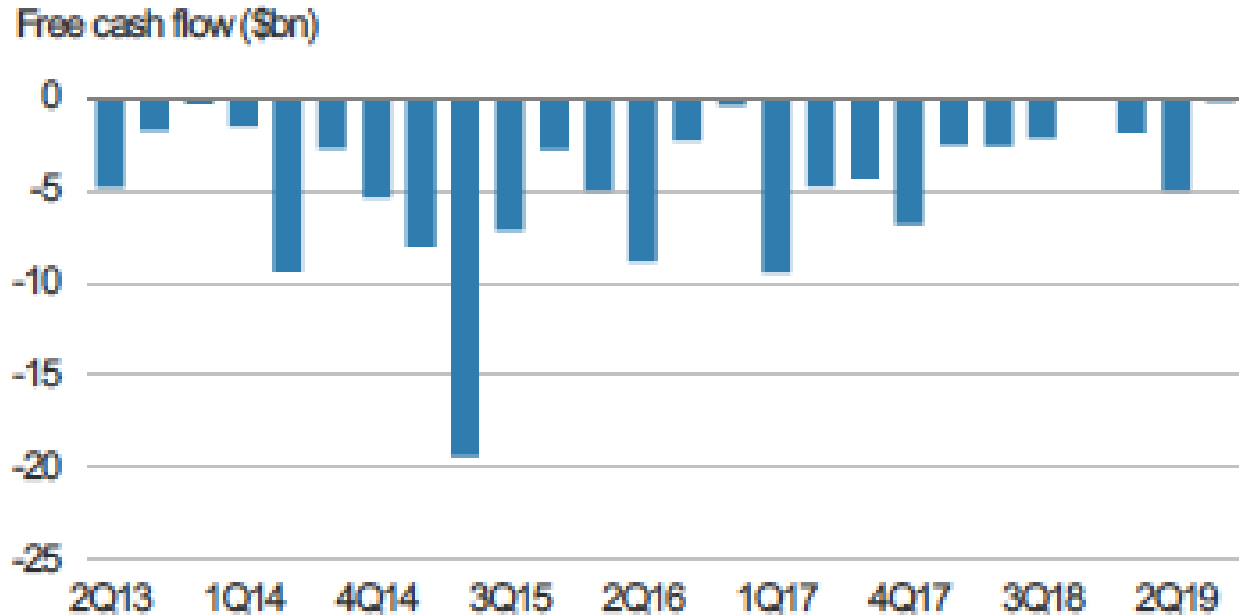
Growth stories; is patience/pockets of financiers endless?



U.S. crude oil production (Jan 2005-Nov 2017)
million barrels per day

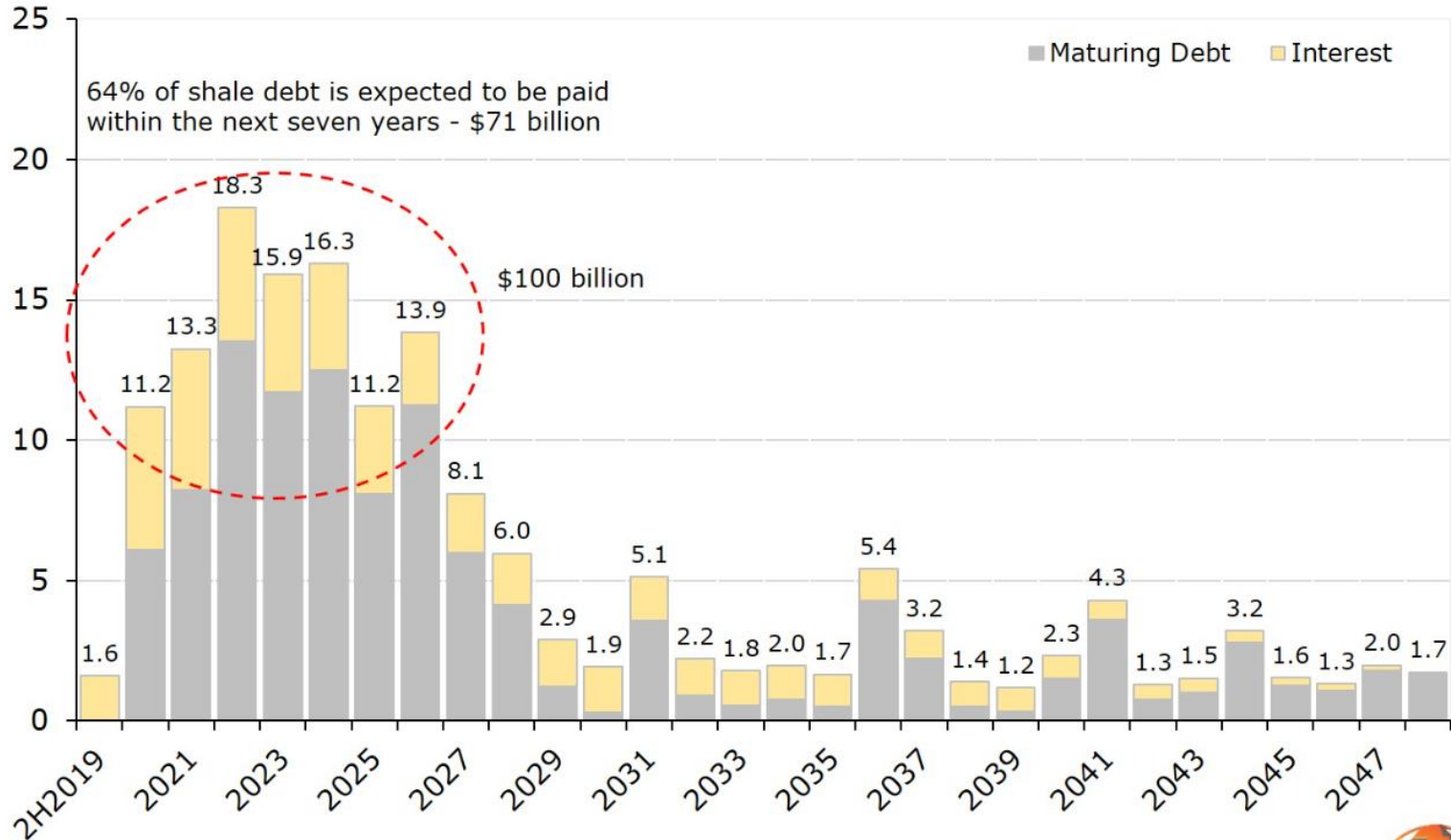


Frackers are neither generating FCF nor returns



Note: chart aggregates financials of 25 US shale focused E&Ps
 Source: Bloomberg

Obligations schedule for 40 US shale oil producers
Billion USD



Source: Rystad Energy research and analytics



Exploration

Discovery

Decision to move into production

Announcement of financing, dilution, hedging

Spent \$ can be bought for Cents

Cashflow starts kicking in

Debt is being reduced

Dividends are being announced

Production fades

Expansion is needed

Going underground

New pits

Cost overrun

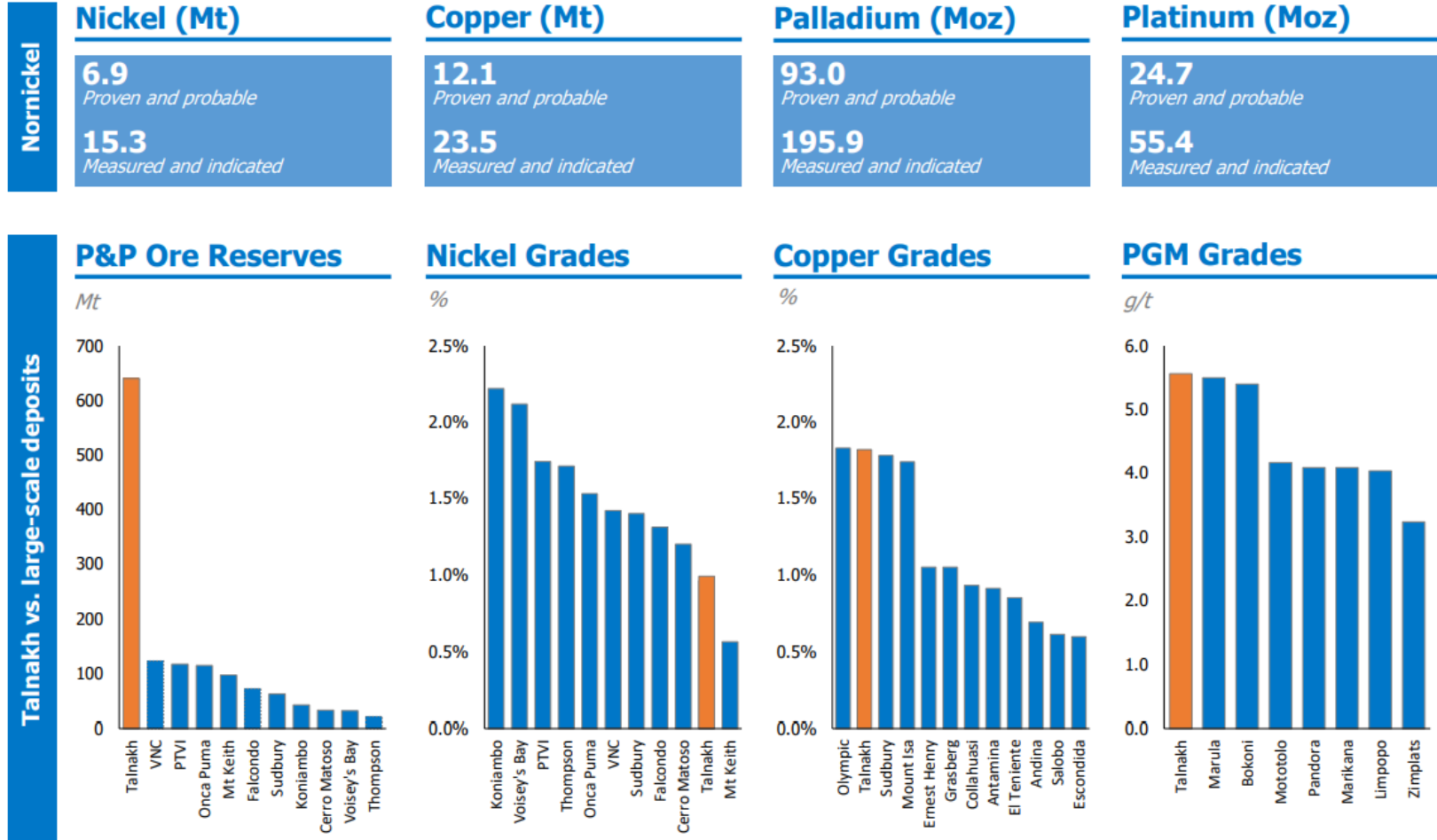
Permitting problems

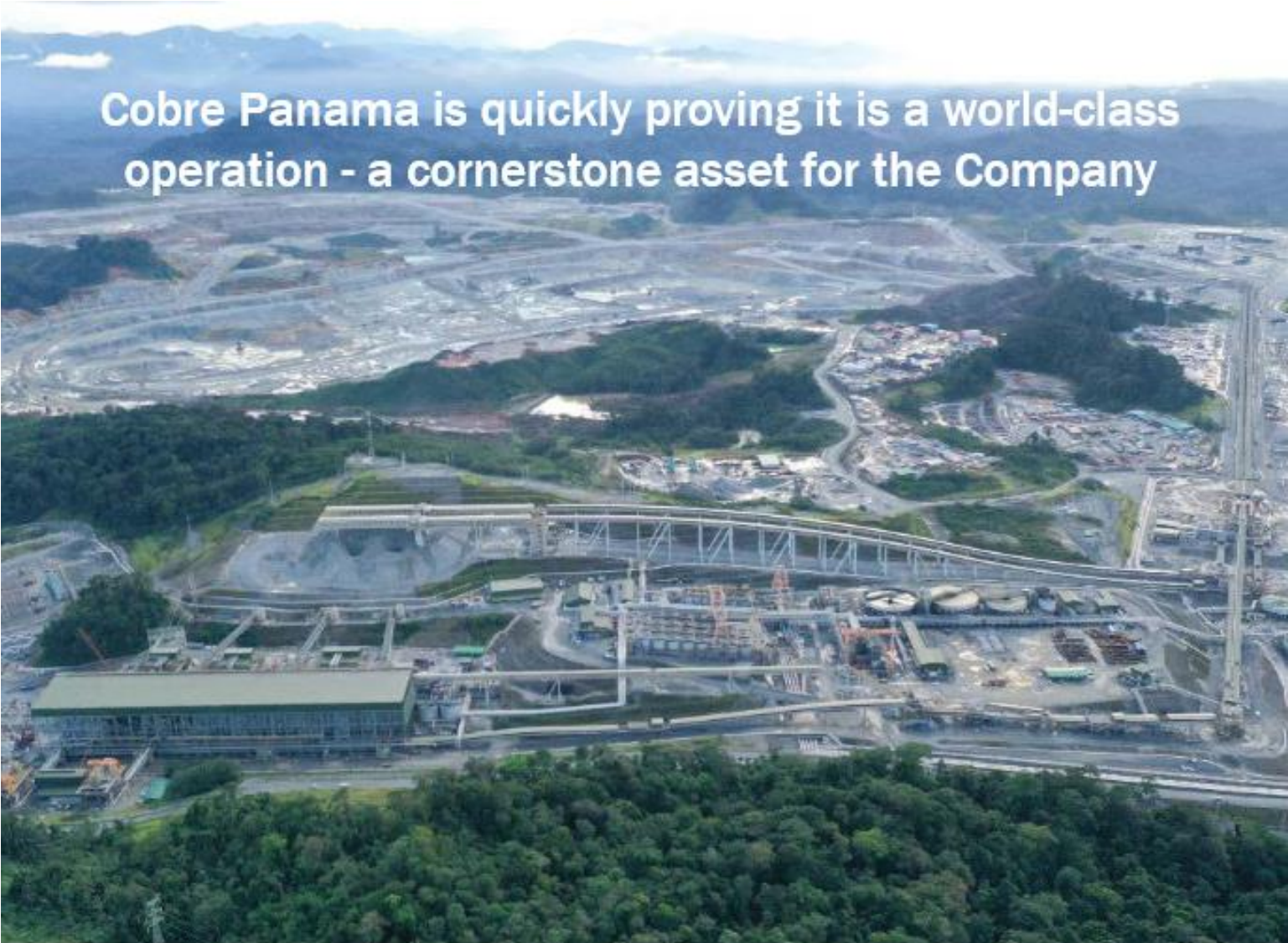
Delays

Investors throw the towel

Bank hike debt costs

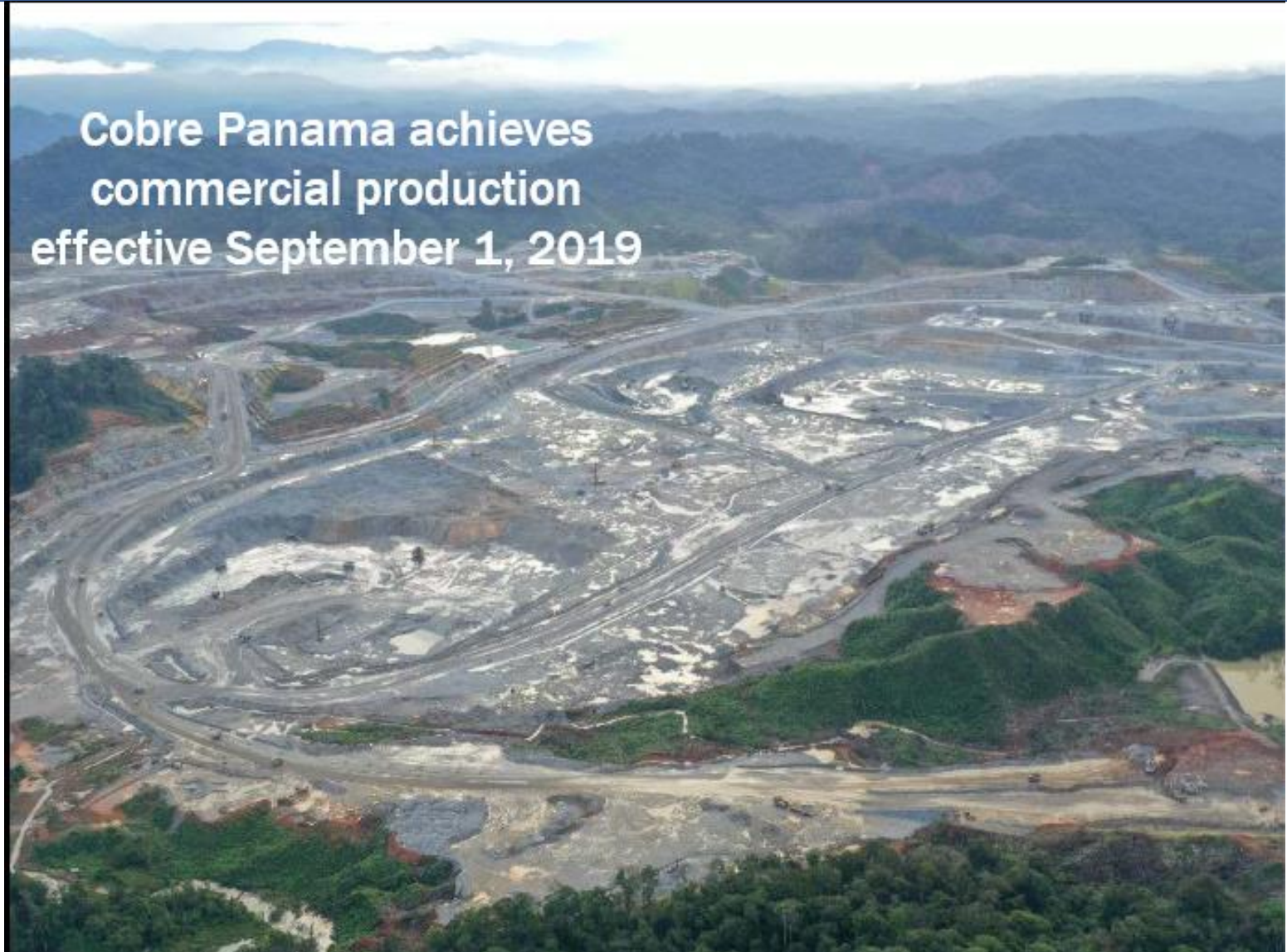
The Worlds' Best Tier-1 Mining Assets





Cobre Panama is quickly proving it is a world-class operation - a cornerstone asset for the Company

**Cobre Panama achieves
commercial production
effective September 1, 2019**





Expertise and learning from other projects applied to enable a successful build and ramp-up of Cobre Panama

72 mtpa expected by 2019 year end,
increasing to 85 mtpa with the addition
of an eighth ball mill



3 new Bingham Canyon and co needed every year...



Biggest movement of material done by men...





“Brick companies” are miles ahead...



(Same for ESG) Syncrude Mildred Lake before reclamation

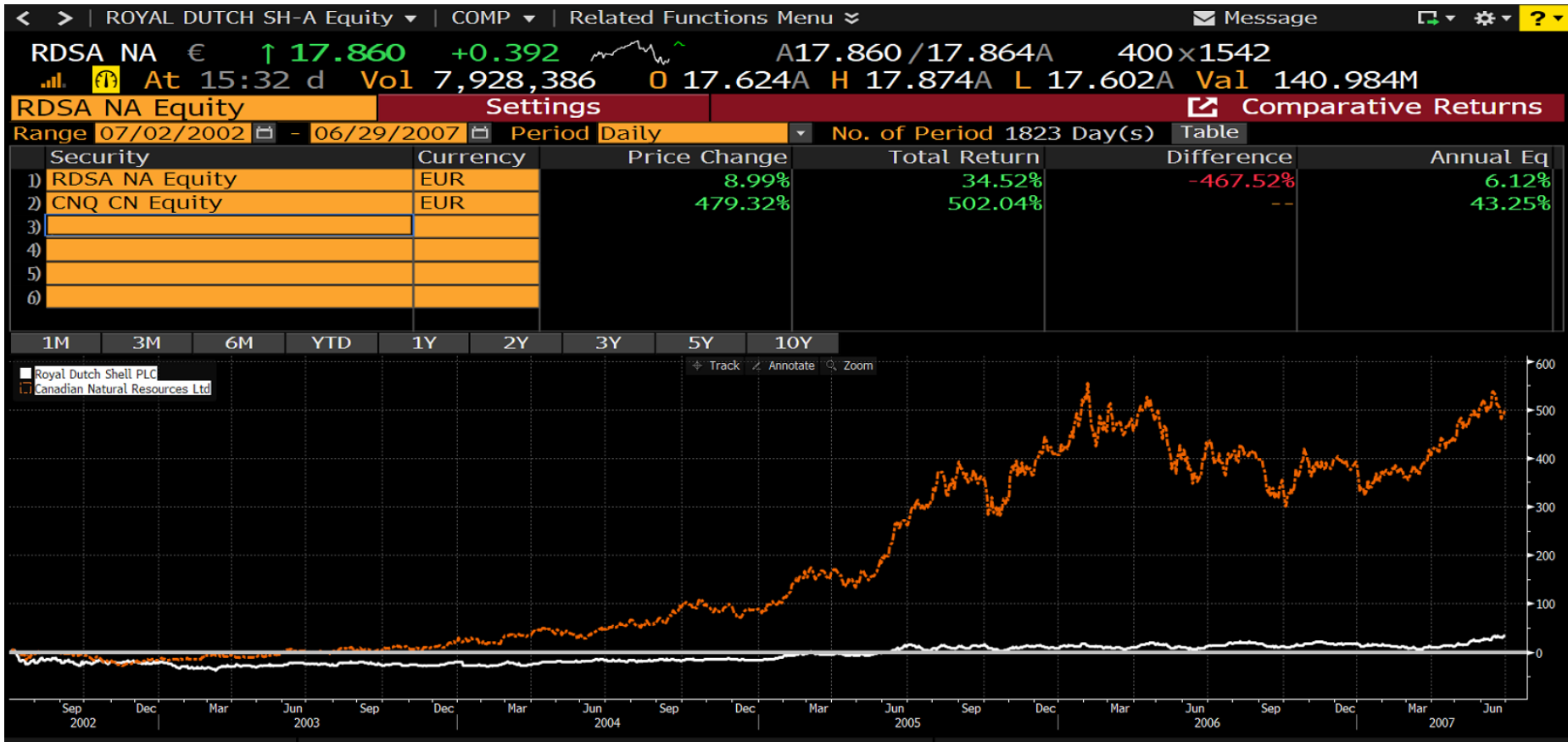


Syncrude Mildred Lake after reclamation





Majors are defensive, underperform in bull market

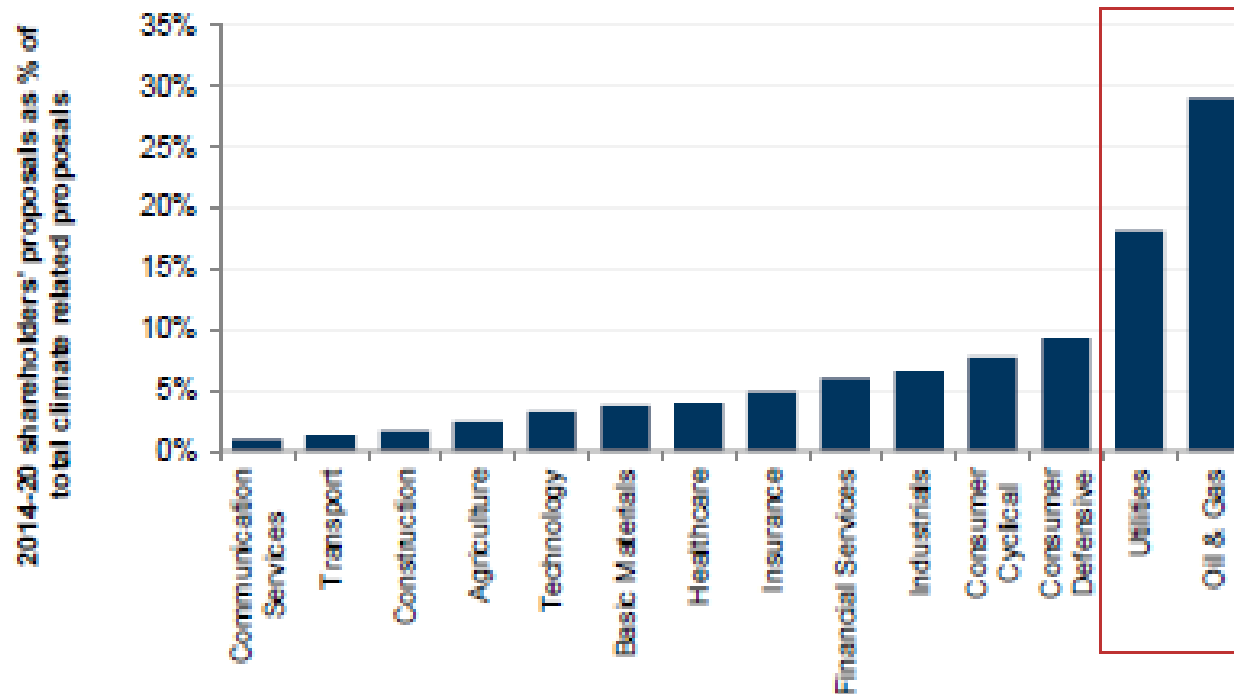


Look Who's Talking About Zero Emissions

In an interview, Shell CEO Ben van Beurden insists he doesn't run an oil company any more.

Exhibit 28: ...with the climate-related shareholder proposals having a very targeted focus on the energy industry

% of climate-related shareholder proposals split by industry, 2014-20



Source: ProxyInsight, Goldman Sachs Global Investment Research

Surgutneftegas Public Joint Stock Company is one of the largest private vertically integrated oil companies in Russia bringing together research and design, exploration, drilling and production units, oil refining, gas processing and marketing subsidiaries.

It carries out prospecting, exploration and production in three Russian oil and gas provinces, Western Siberia, Eastern Siberia and Timan-Pechora. The production units are fitted with advanced equipment and technologies, adjusted to local geological and climatic conditions and allow the company to do the full range of necessary work independently.

Surgut is responsible for 11% of oil production in Russia (3rd after Rosneft and Lukoil).

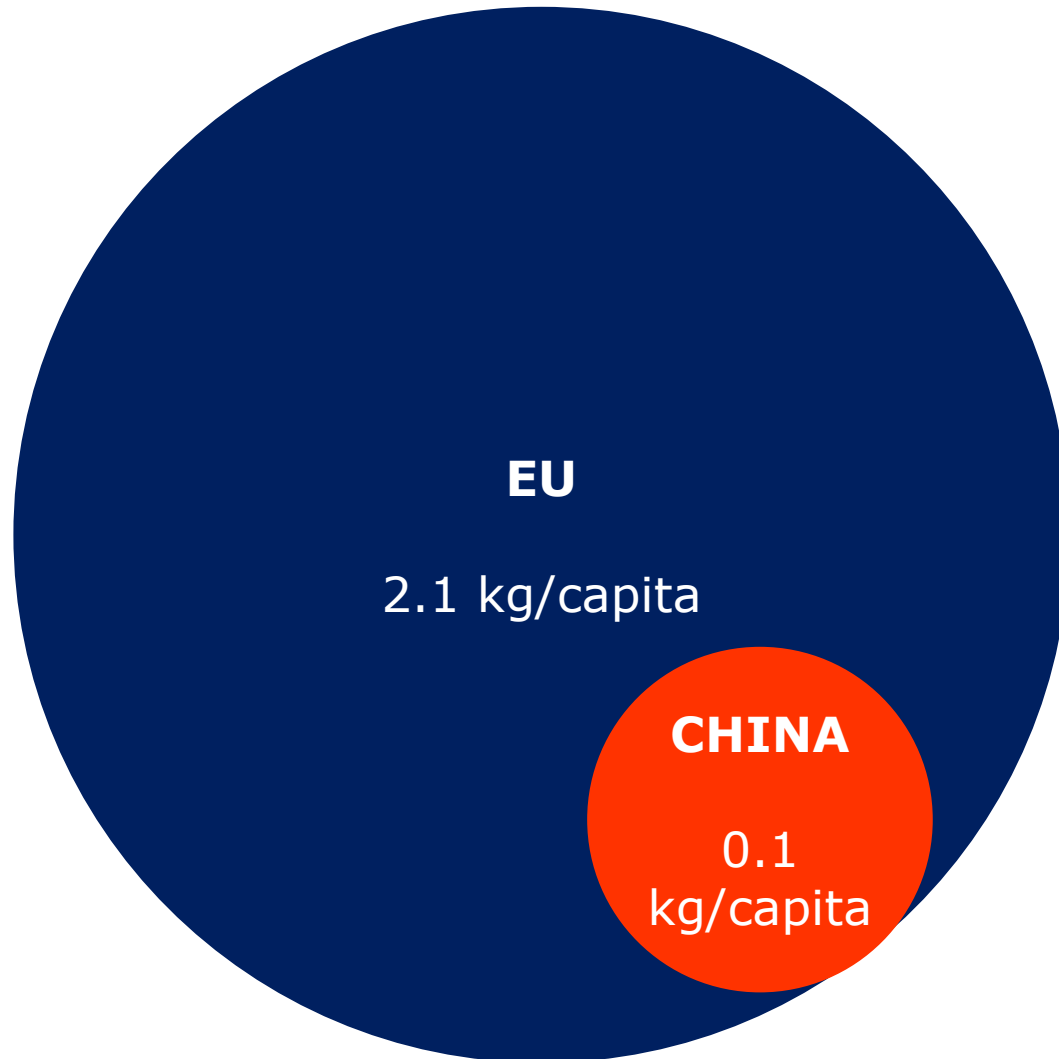
22% of exploratory drilling in Russia

7% of domestic refining

17% of development drilling in Russia

101'000 employees / 22.5 billion USD market cap

50 billion USD Cash / debt free / 22 billion USD revenues / 5-8 billion USD profits



Salmon farming needs protected fjords





Only few geographical locations are suitable: only Norway and Chile with size

Long Term Investment Fund

- 15, avenue J.F. Kennedy
- L-1855 Luxembourg
- Grand Duchy of Luxembourg

SIA Funds AG

- Alpenblickstrasse 25
- 8853 Lachen
- Switzerland

- Tel: +41 55 617 28 70
- Fax: +41 55 617 28 71

- website: www.s-i-a.ch
- e-mail: info@s-i-a.ch

LTIF (SIA) Classic and Natural Resources

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