LTIF Natural Resources

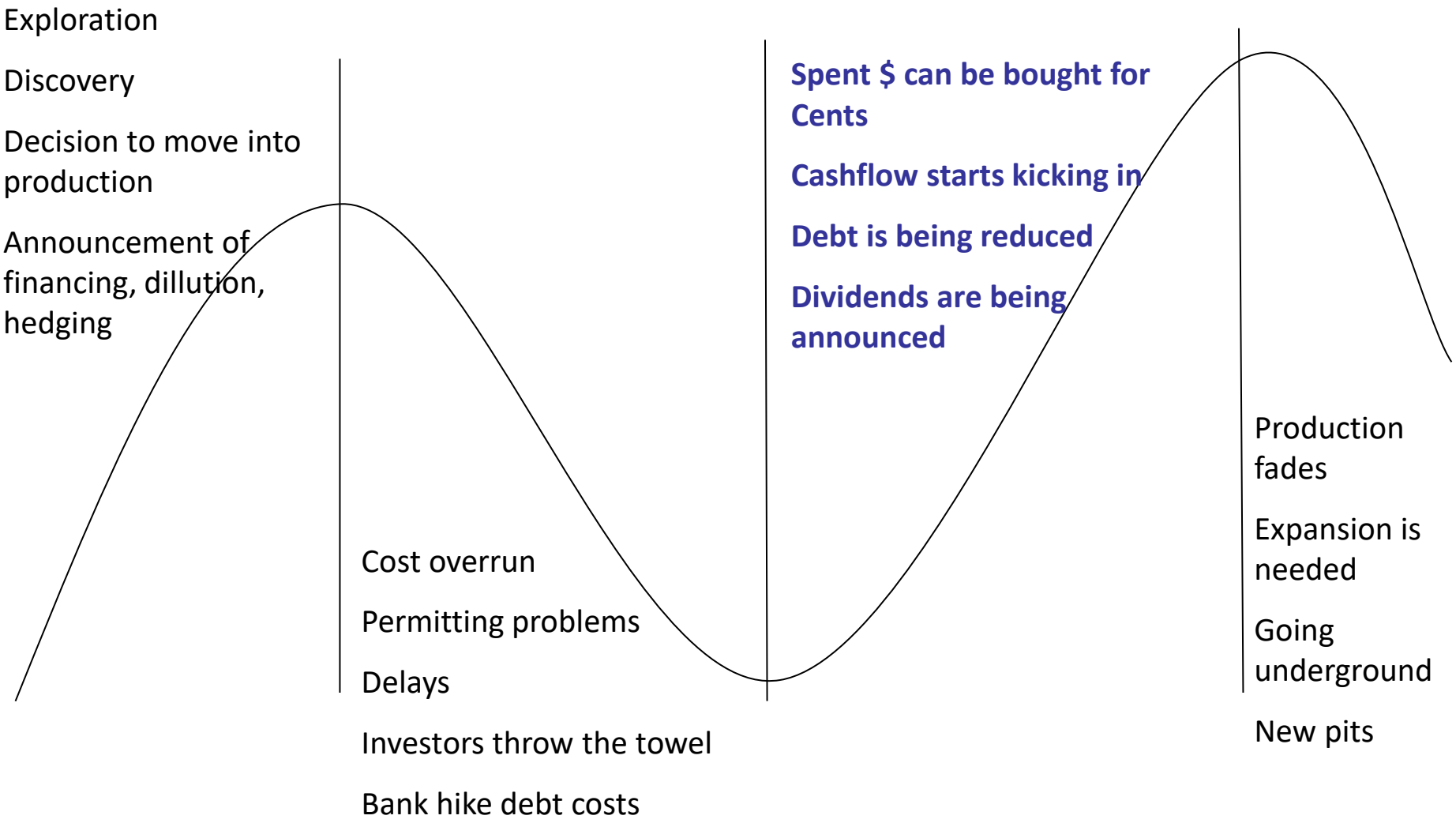
LTIFGEV LX

LU0244072335

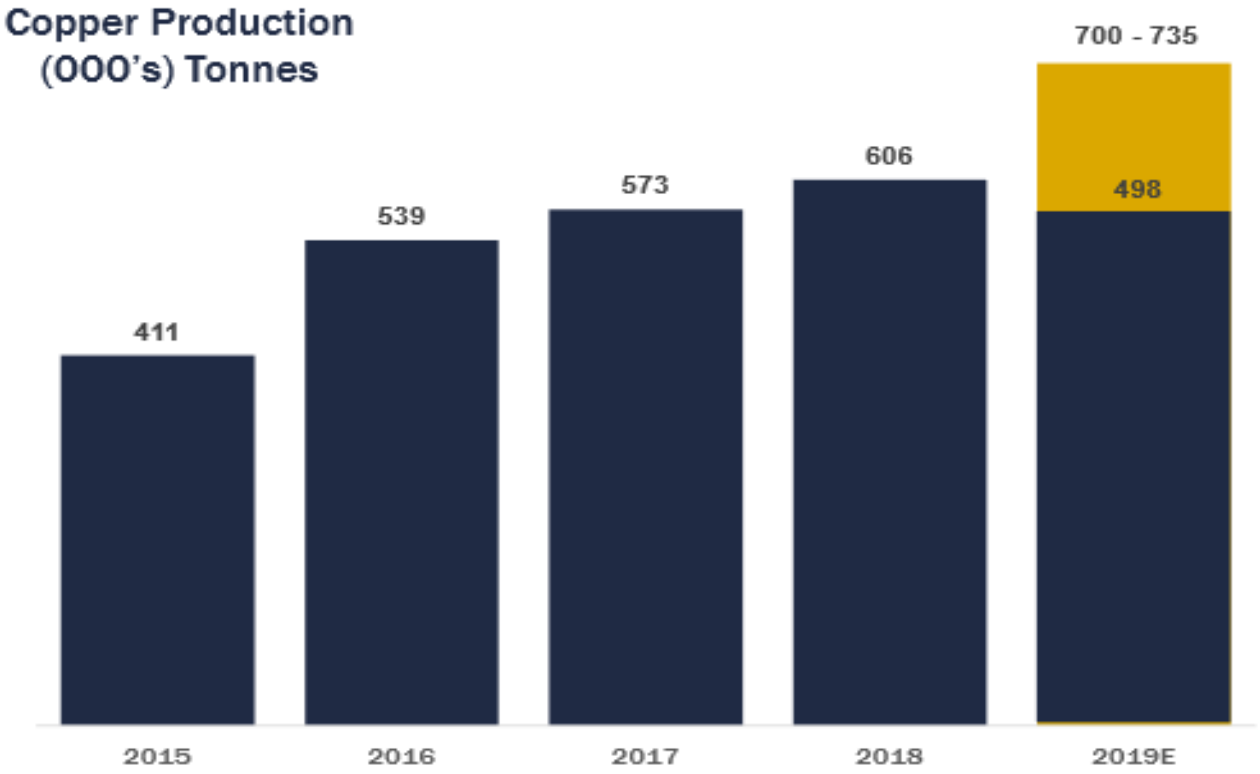
August 2020

LTIF
Long Term Investment Fund

”The SIA value bracket”



GROWTH IN PRODUCTION



Copper production expected to grow by more than 15% in 2019. Further growth expected in 2020 & 2021

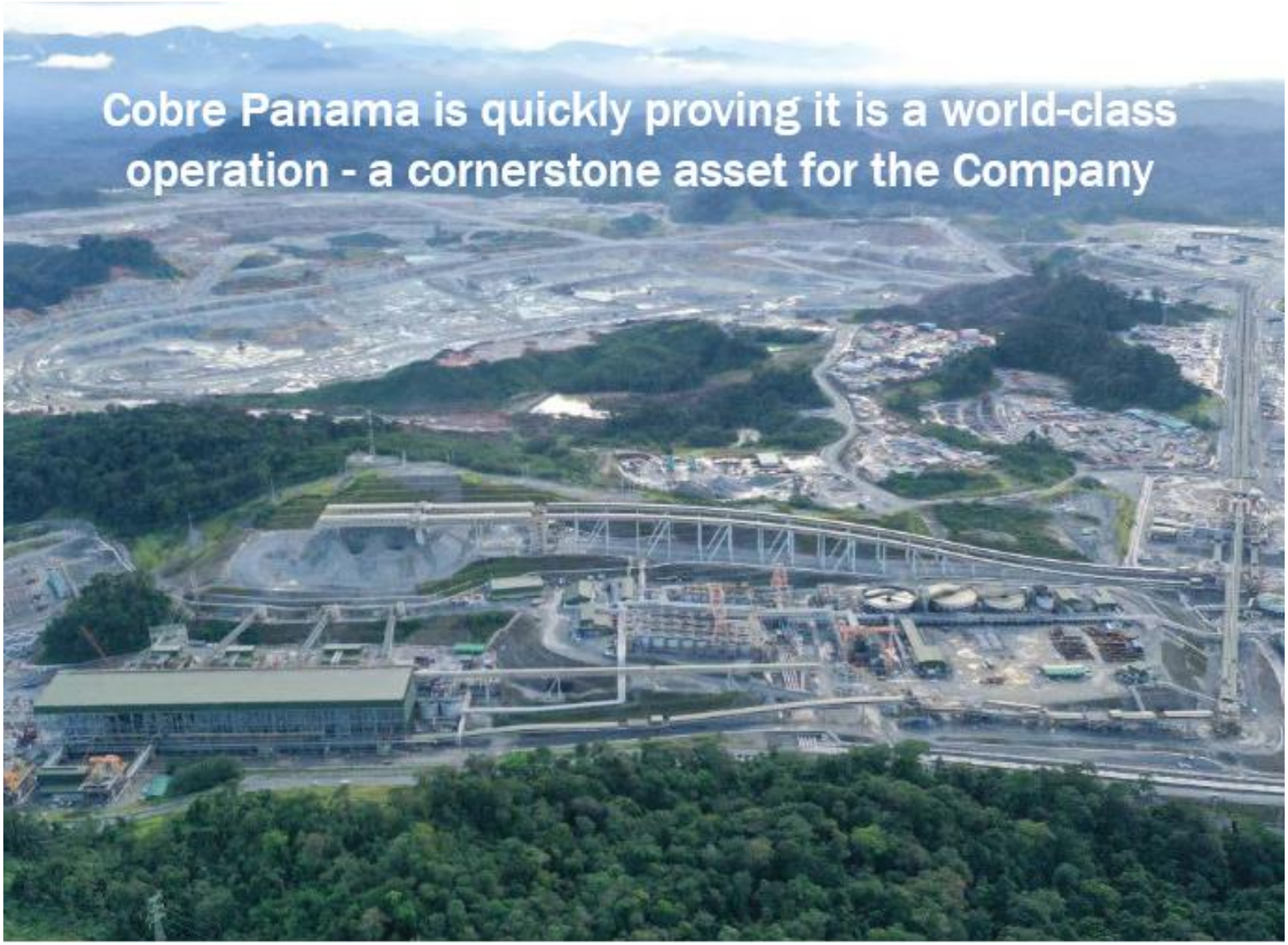
FIRST QUANTUM MINERALS LTD

Gold production* 2019E – 185,000 ozs
*Excludes production form Cobre Panama
Zinc production 2019E – 12,000 tonnes

TSX:FM

6

The price tag is 7 billion USD



Majors are defensive, underperform in bullmarket

RDSA NA € ↓29.09 +0.085 A29.085/29.09A 173x3497
At 10:44 d Vol 999,838 O 29.03A H 29.155A L 29.015A Val 29.084M

RDSA NA Equity | 97) Settings | Comparative Returns

Range 07/02/2002 - 06/29/2007 Period Daily No. of Period 1823 Day(s) Table

	Security	Currency	Price Change	Total Return	Difference	Annual Eq
1)	RDSA NA Equity	EUR	8.99%	34.52%	-467.52%	6.12%
2)	CNQ CN Equity	EUR	479.32%	502.04%	--	43.25%
3)						
4)						
5)						
6)						

1M 3M 6M YTD 1Y 2Y 3Y 5Y 10Y

Surgut at a glance

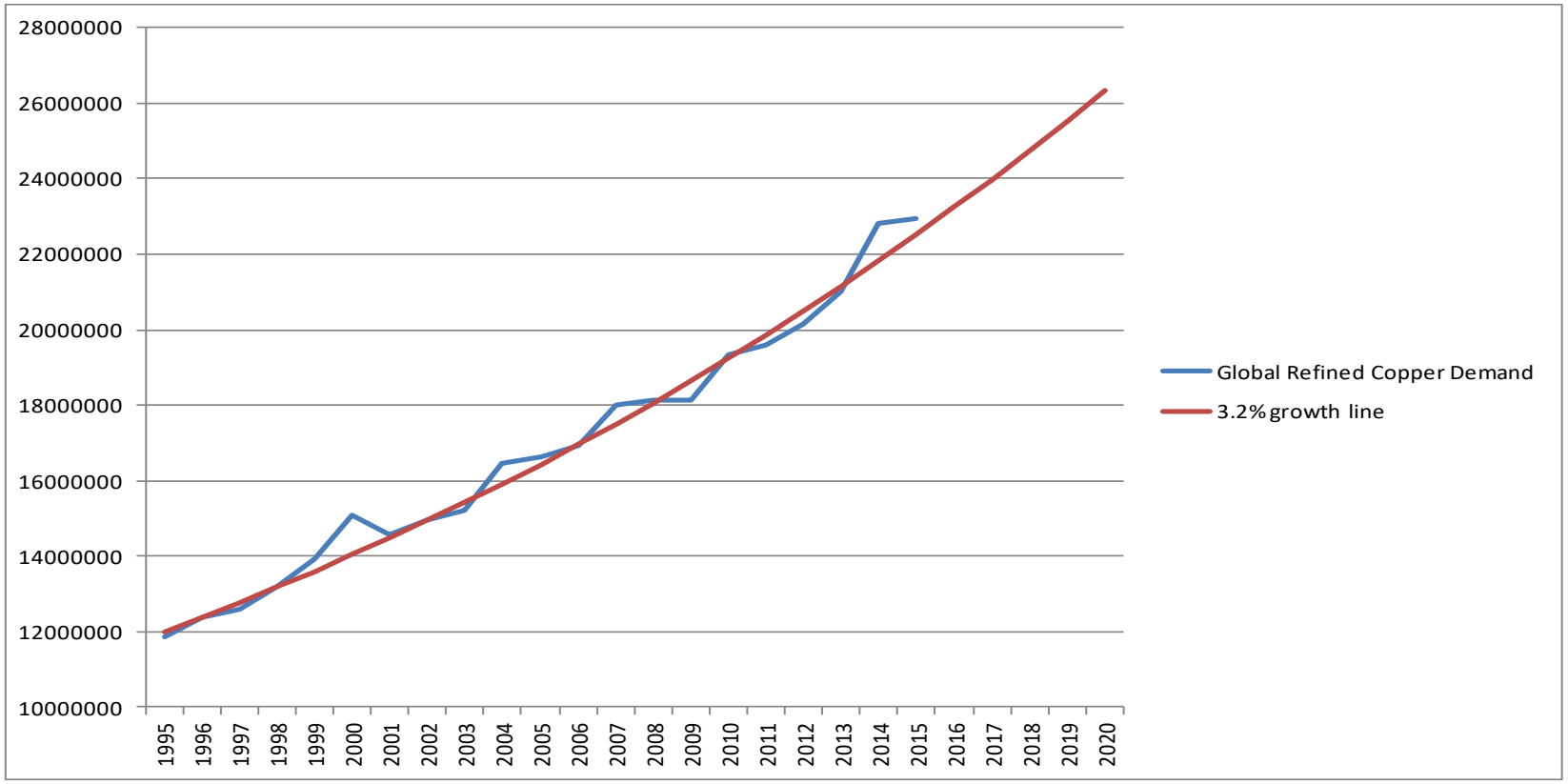
Surgutneftegas Public Joint Stock Company is one of the largest private vertically integrated oil companies in Russia bringing together research and design, exploration, drilling and production unites, oil refining, gas processing and marketing subsidiaries.
It carries out prospecting, exploration and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

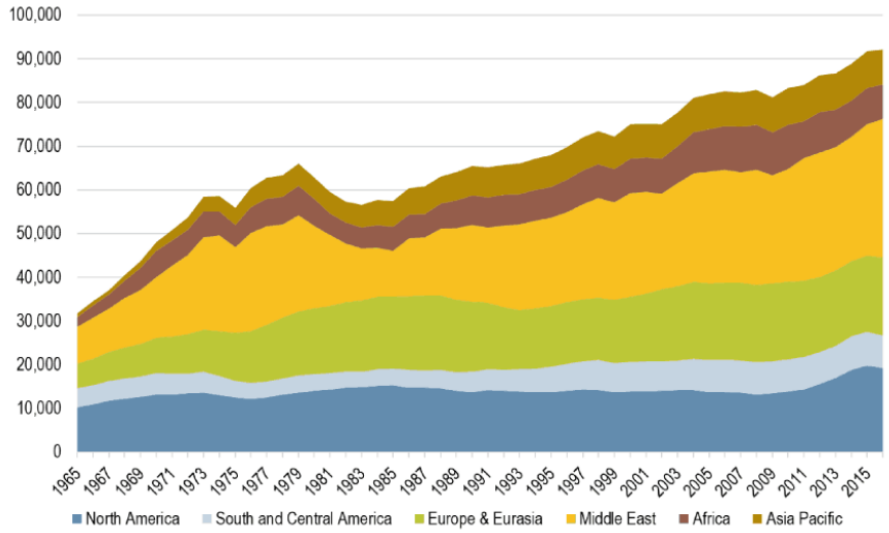
Demand is more stable than perceived

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.



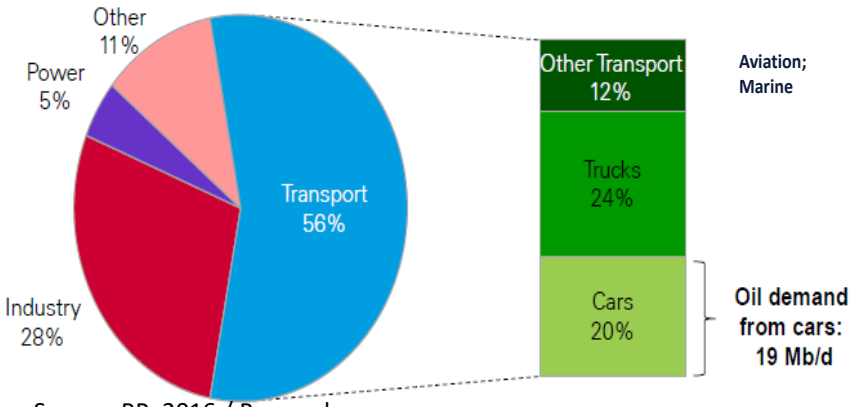
Oil demand is pretty sticky

World Crude Oil Production and Consumption, 1965-2016



Source: United States Energy Information Administration

Because most of its uses are very stable



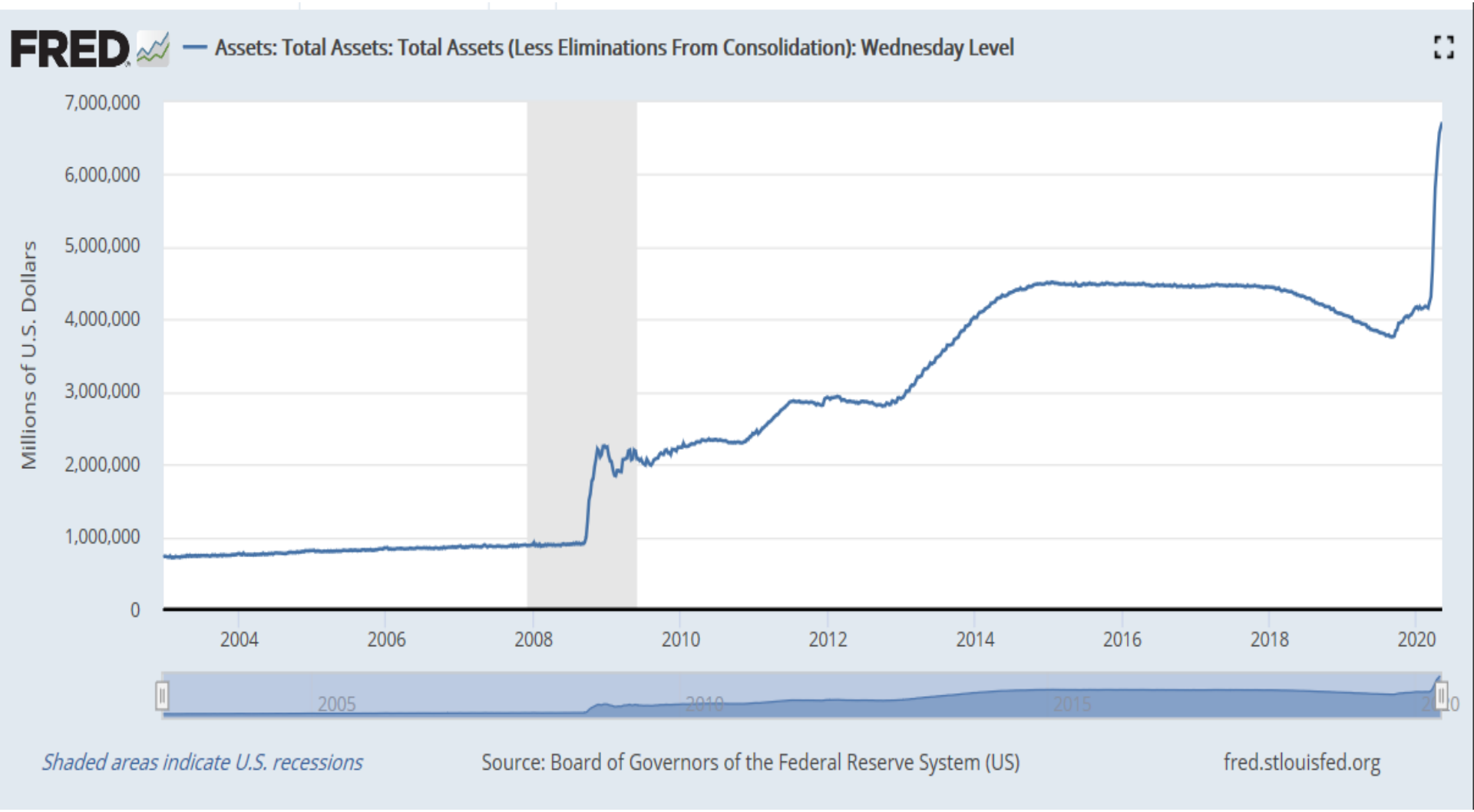
Source: BP, 2016 / Burggraben

And the strongest source of additional demand is depletion

G20 Global Infrastructure Outlook

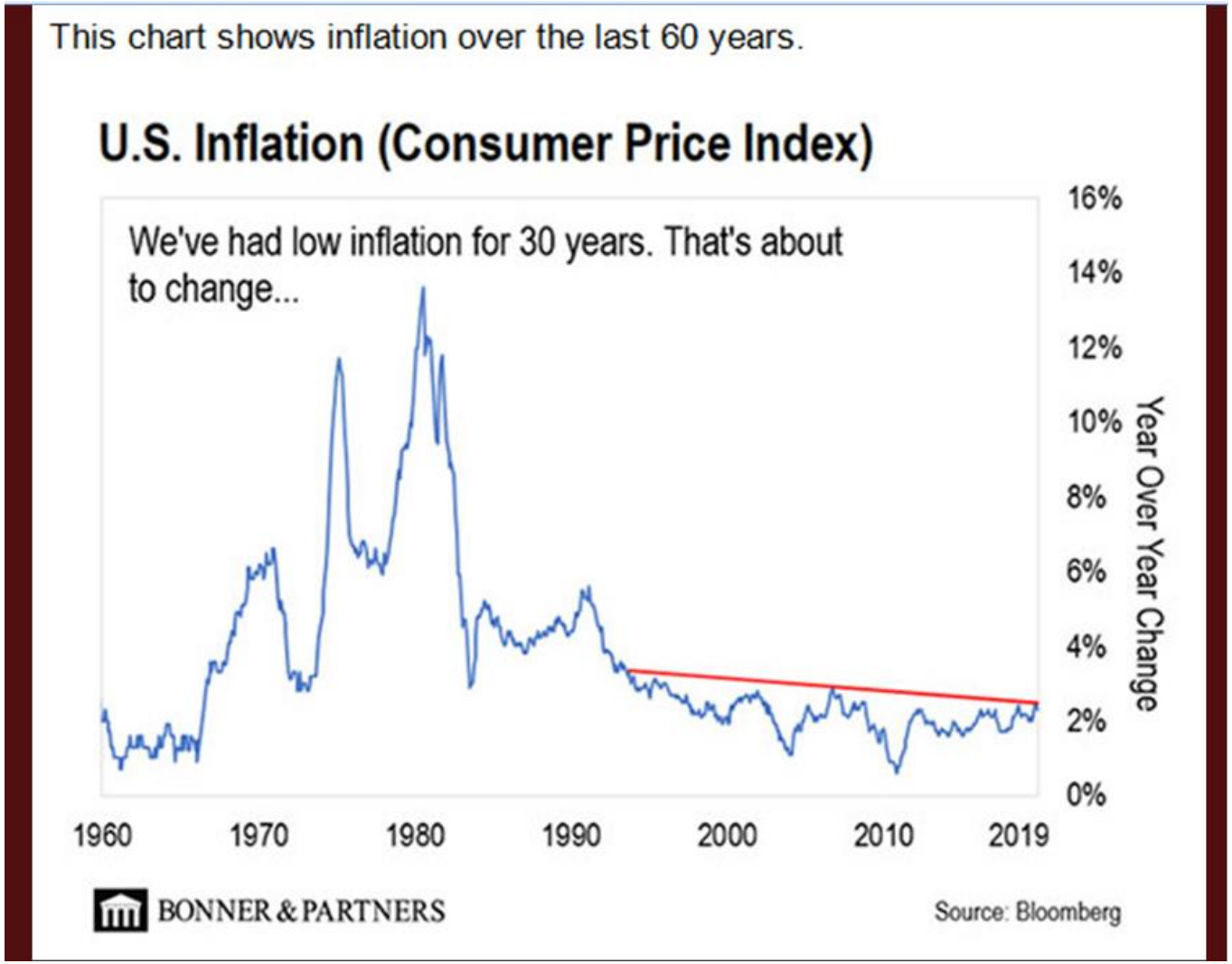
https://outlook.gihub.org/

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



Source: https://fred.stlouisfed.org/search?st=total+assets

Inflation coming back?



GSCI/S&P500 Ratio: As cheap as it can get?

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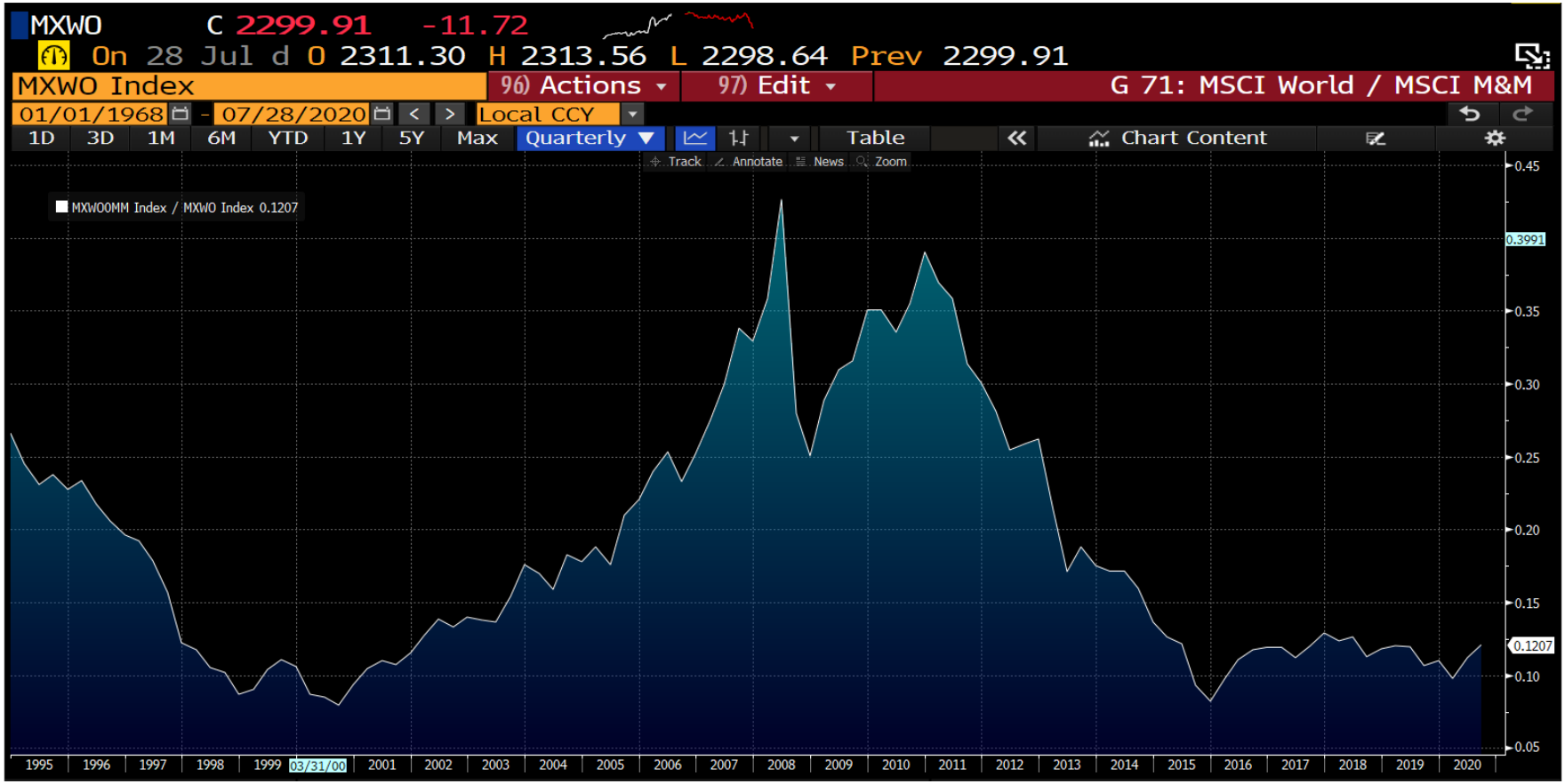
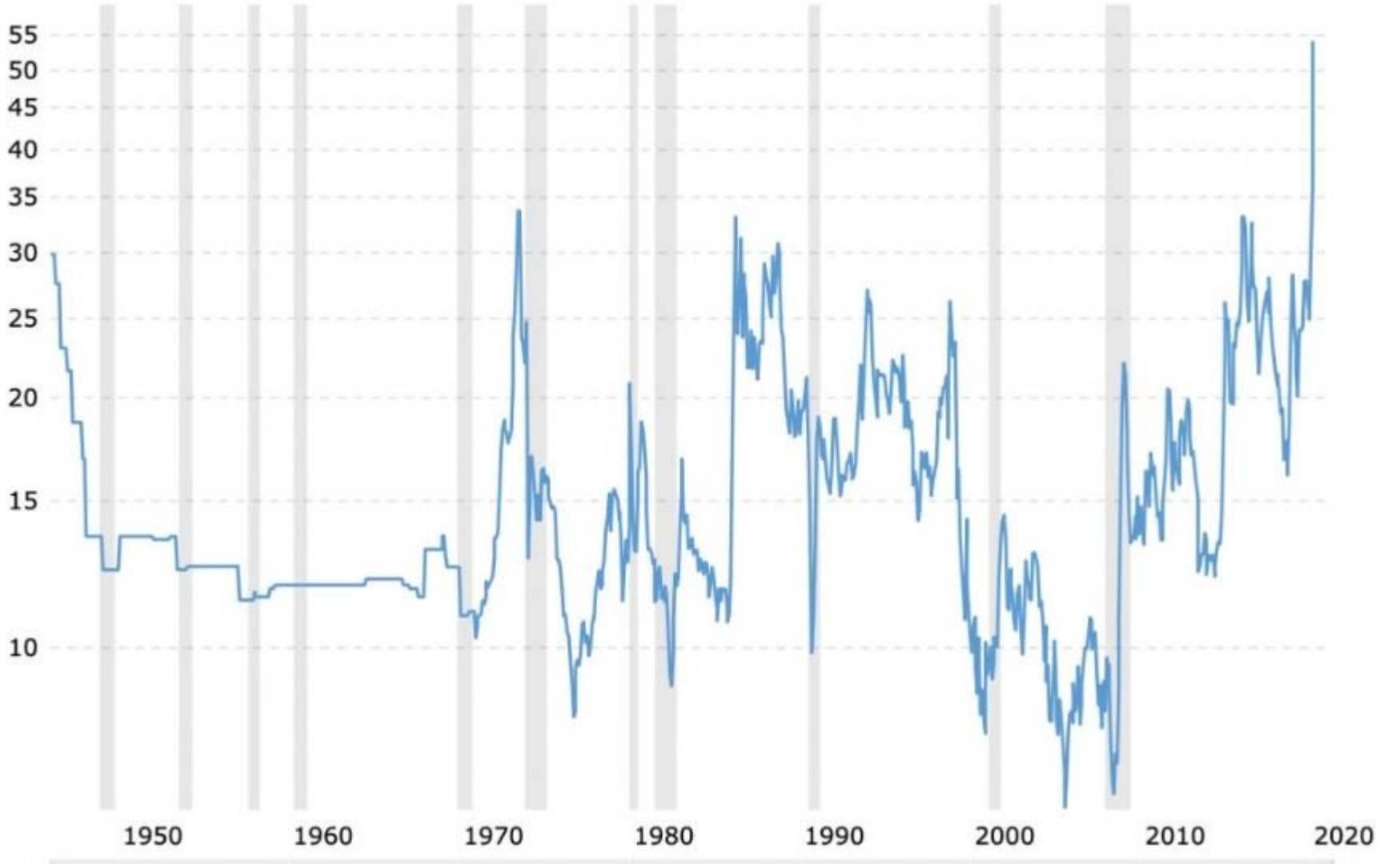
MSCI World /MSCI Mining, long trends are turning....



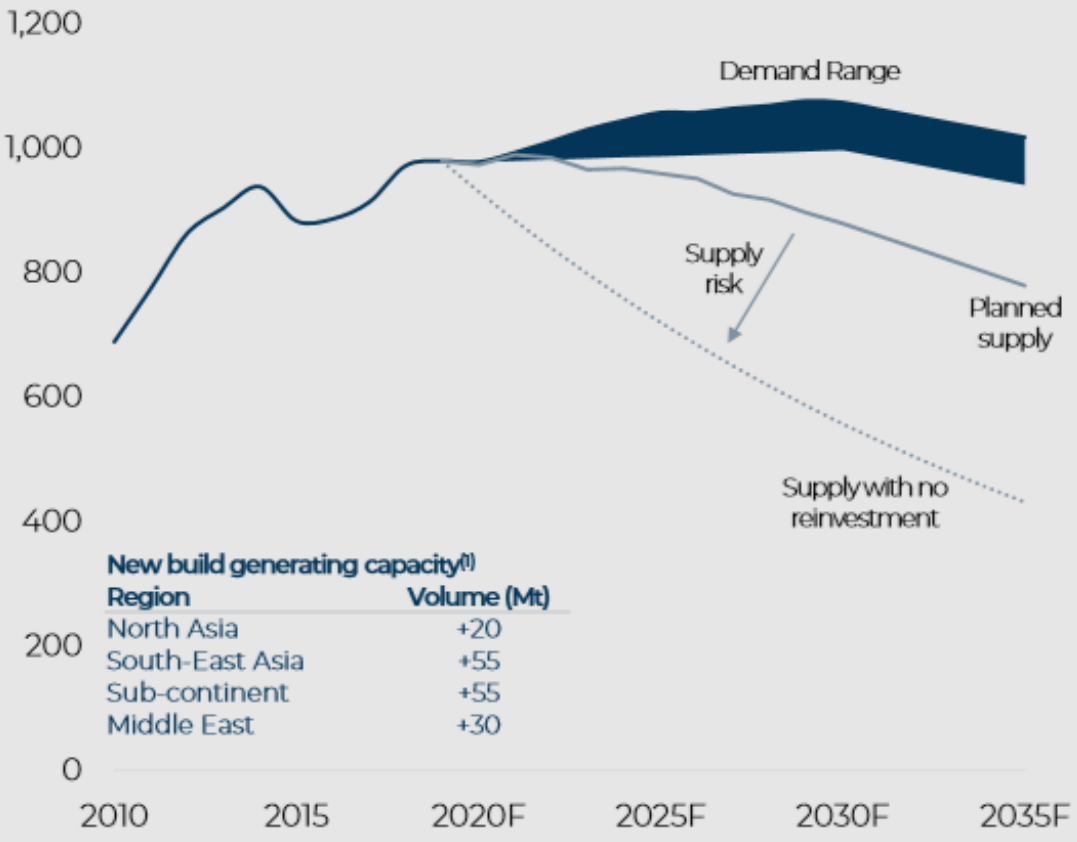
Gold/Oil ratio, opportunity of a century?



A biz with negative intrinsic growth, depletion

Structural deficits emerging

Seaborne thermal coal supply demand balance (Mt)[1]



New build generating capacity[1]

Region	Volume (Mt)
North Asia	+20
South-East Asia	+55
Sub-continent	+55
Middle East	+30

les with battery firming, NPS+Carbon Tracker – The Trillion dollar energy windfall

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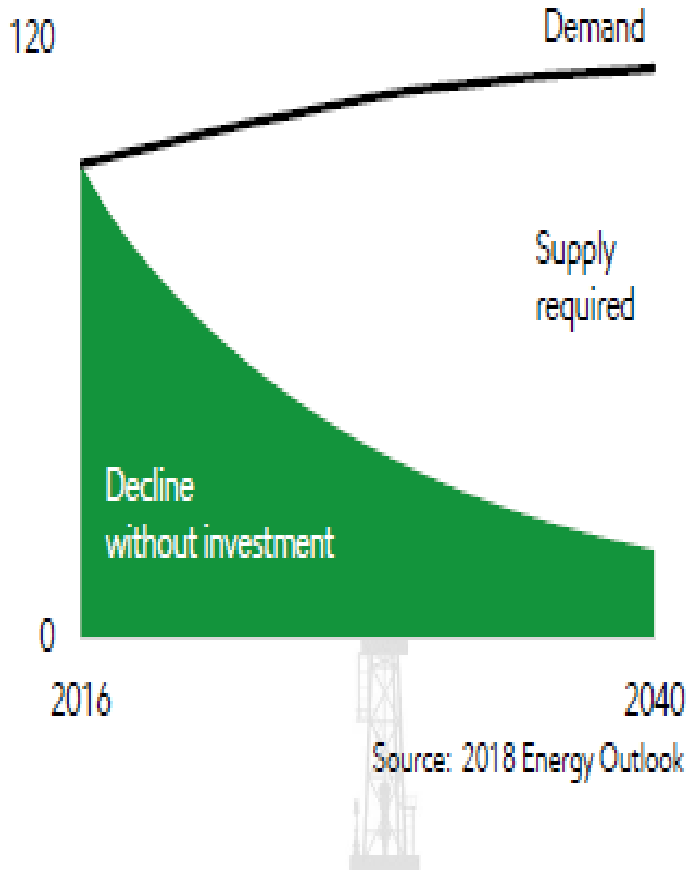
One should better start to invest…

Oil supply & demand

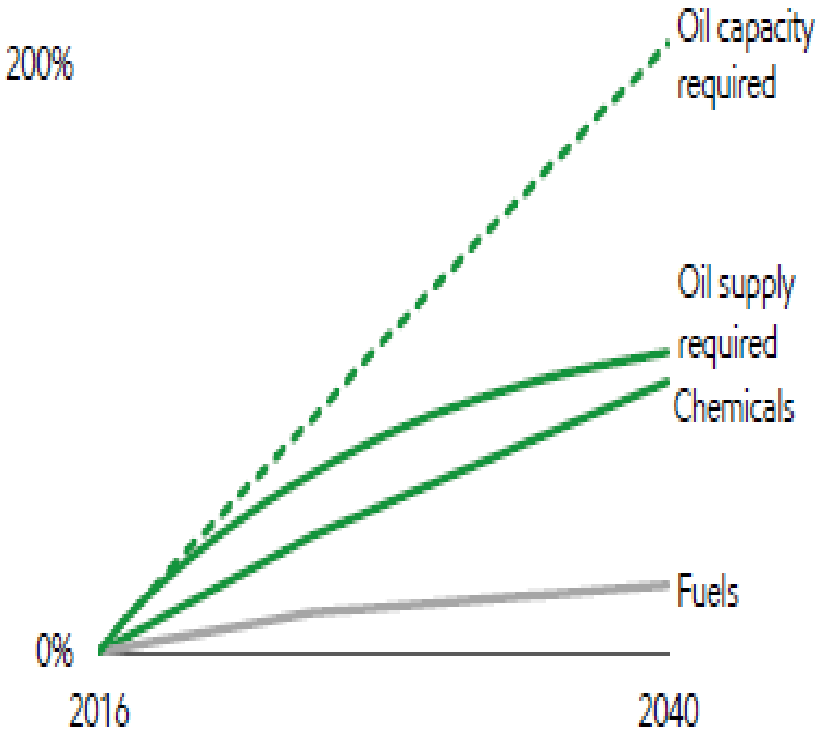
MOEBD



Source: 2018 Energy Outlook

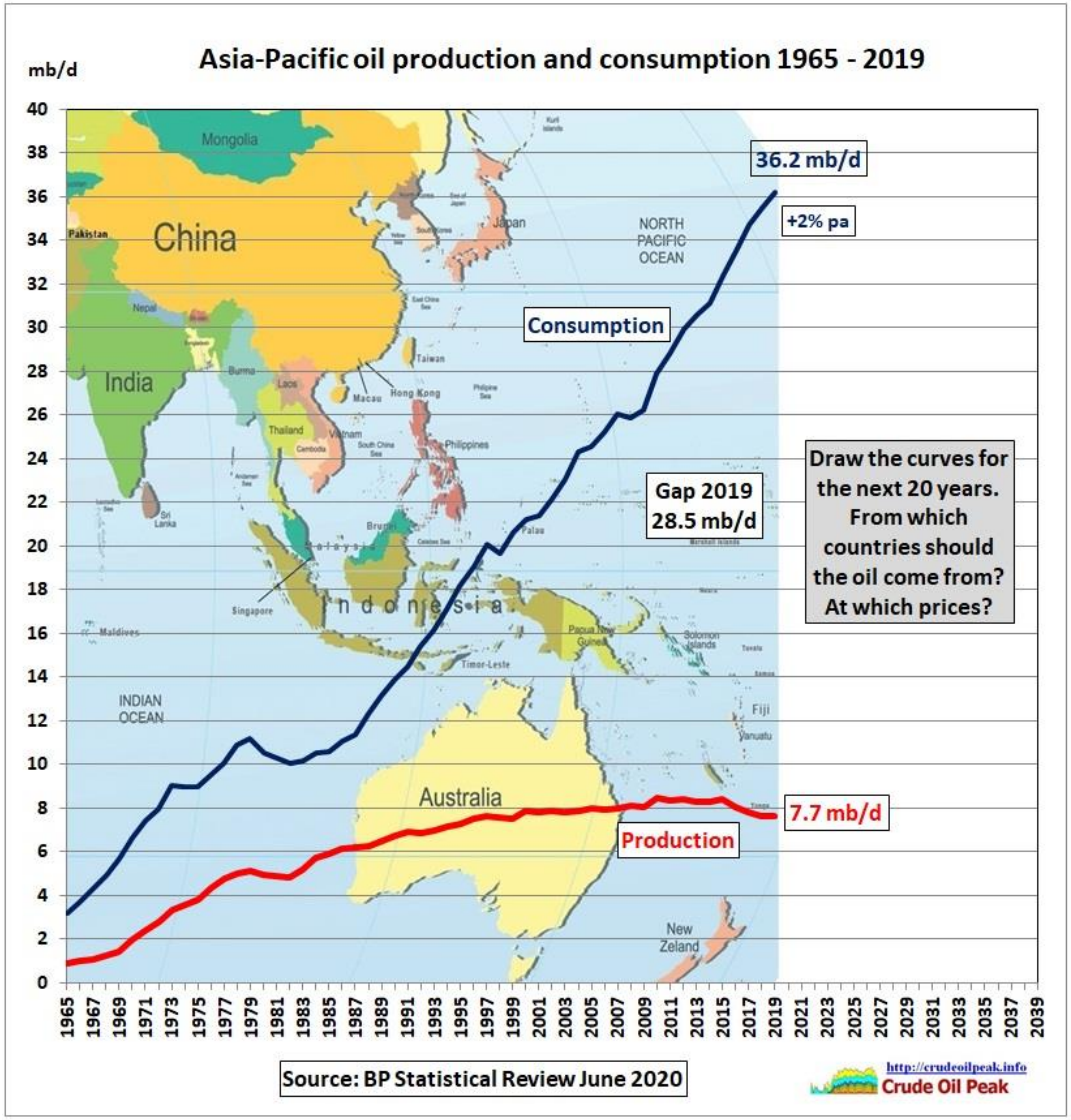
New supply requirement

Indexed to 2016



Source: 2018 Energy Outlook

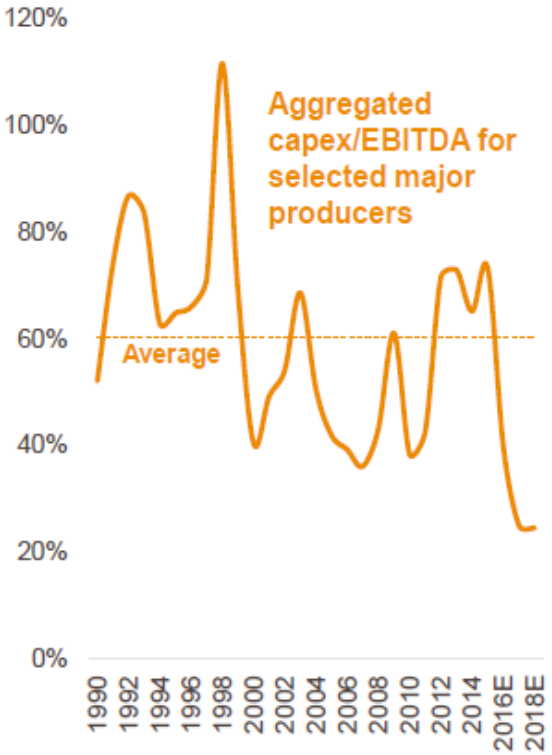
Who is gonna export???



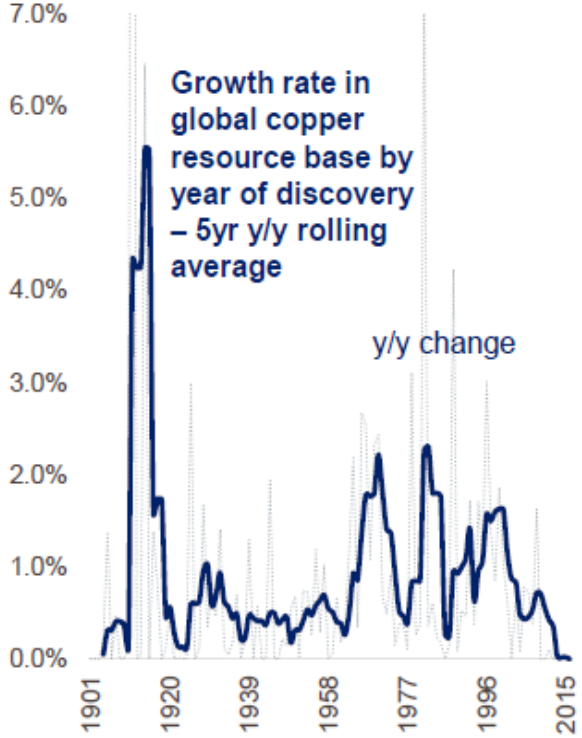
Sustaining copper mine supply is progressively more challenging

Mined copper grades continue to decline[1] …

Sector reinvestment has collapsed [1,2] …



Exploration has been increasingly unsuccessful [1] …



Source: (1) Bernstein European Metals and Mining, 8 March 2017, Copper & Gold – Not a production wall … It's a production cliff! (2) Selected producers includes Rio Tinto, BHP Billiton, Anglo American, Glencore, Vale, First Quantum, South 32, Antofagasta. Estimates for 2016-2018 based on company guidance and approved projects only.

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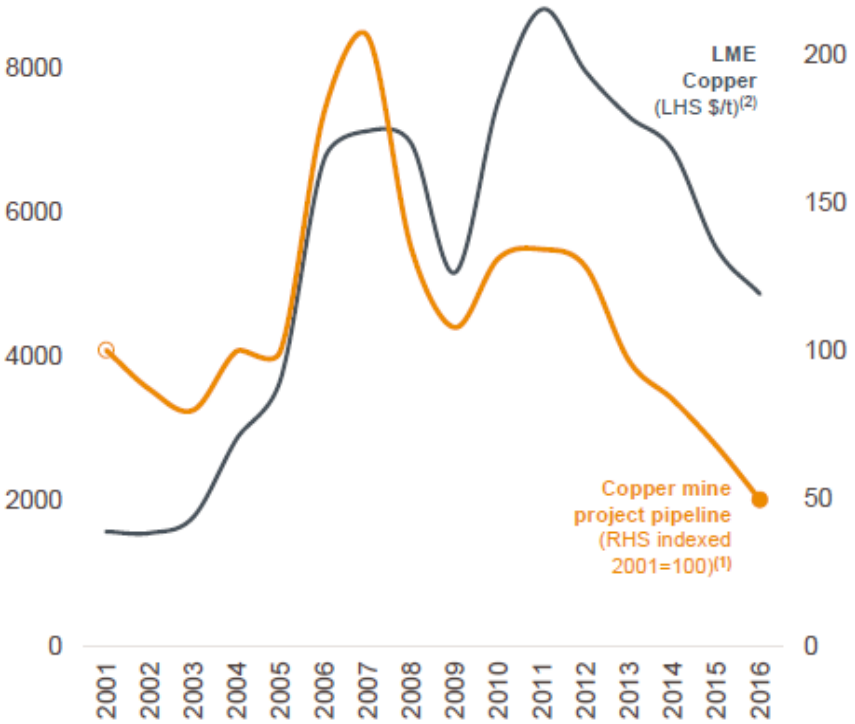
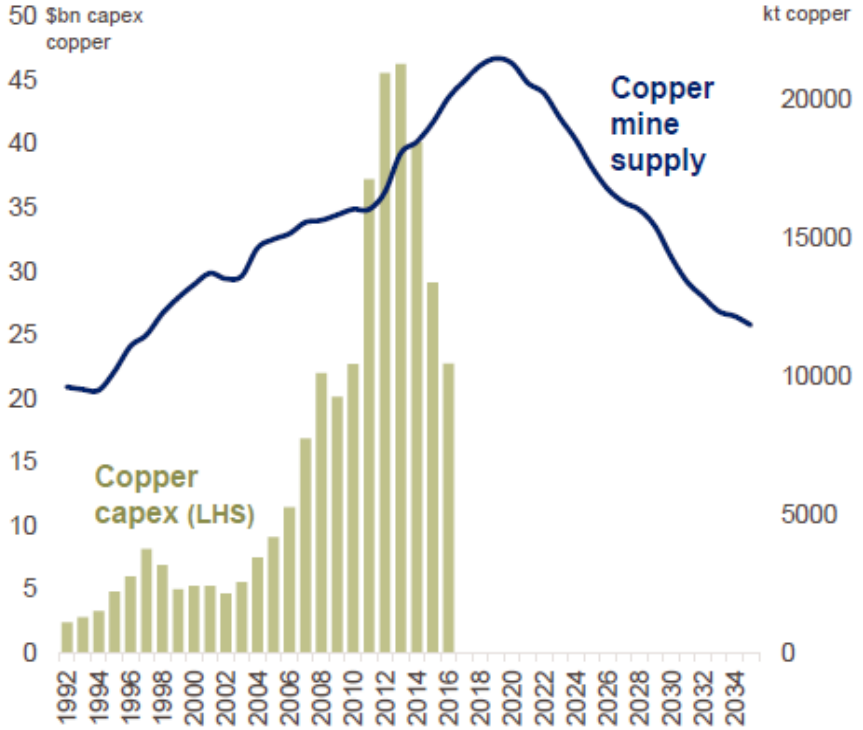
Project pipeline below pre-supercycle lows!

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!

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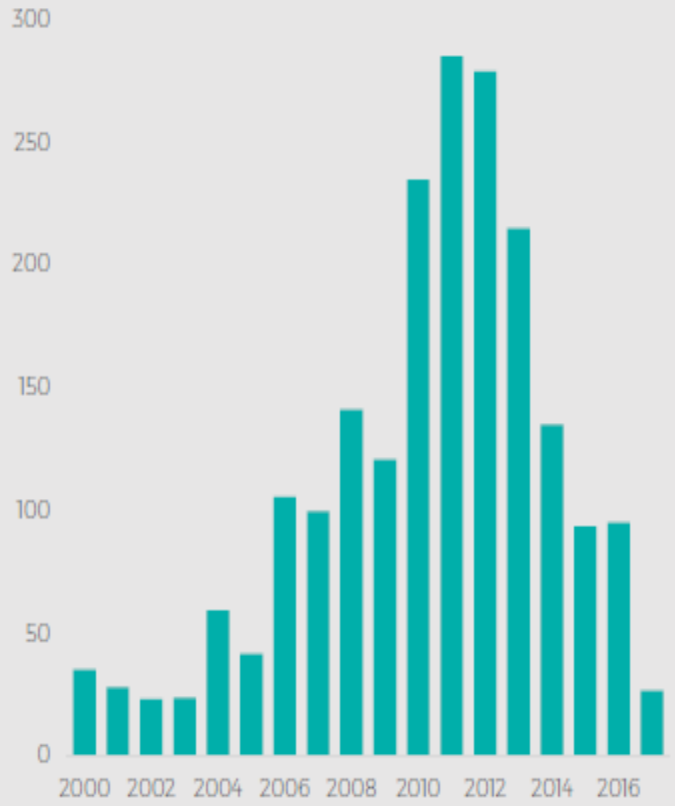
Most stuff already in deficit

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]

Bank of America Merrill Lynch
2018 Global Metals, Mining & Steel Conference

Notes: (1) Source: Citi Research (2) Wood Mackenzie: copper, zinc. Glencore estimates nickel

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It will take a lot of time and a lot of money...

Sector capex plans have risen beyond trough levels but still remain low, reflecting:

- Modest capex inflation
- Remaining spend on legacy projects
- Catch-up spending
- Mine-life extensions for current operations

Volume growth challenges - large increases in capex unlikely

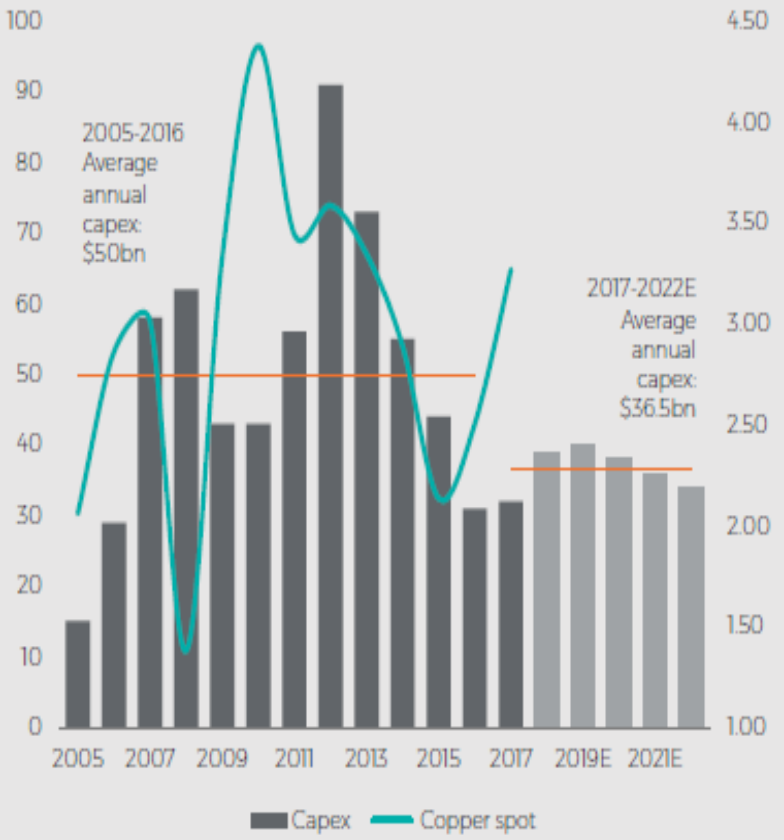
- More prudent/shareholder-friendly capex philosophy
- Lack of 'shovel ready' projects – particularly in copper/zinc/nickel/cobalt
- New growth will require miners to operate in 'challenging' geographies
- Increasing 'social licence to operate" complexity for greenfield project approvals

Capital efficient growth is key

- Sensible organic reinvestment vital to underpin long-term cash flows
- Investing with consideration for the global supply/demand balance

Lower forecast capex, but can it increase dramatically?

Total sector capex ($bn) vs copper spot price ($/lb, RHS)[1]



Bank of America Merrill Lynch
2018 Global Metals, Mining & Steel Conference

Sources: (1) Total sector capex from Morgan Stanley research, includes 29 European mining and steel companies and Morgan Stanley estimates to 2022E. Copper price from Bloomberg

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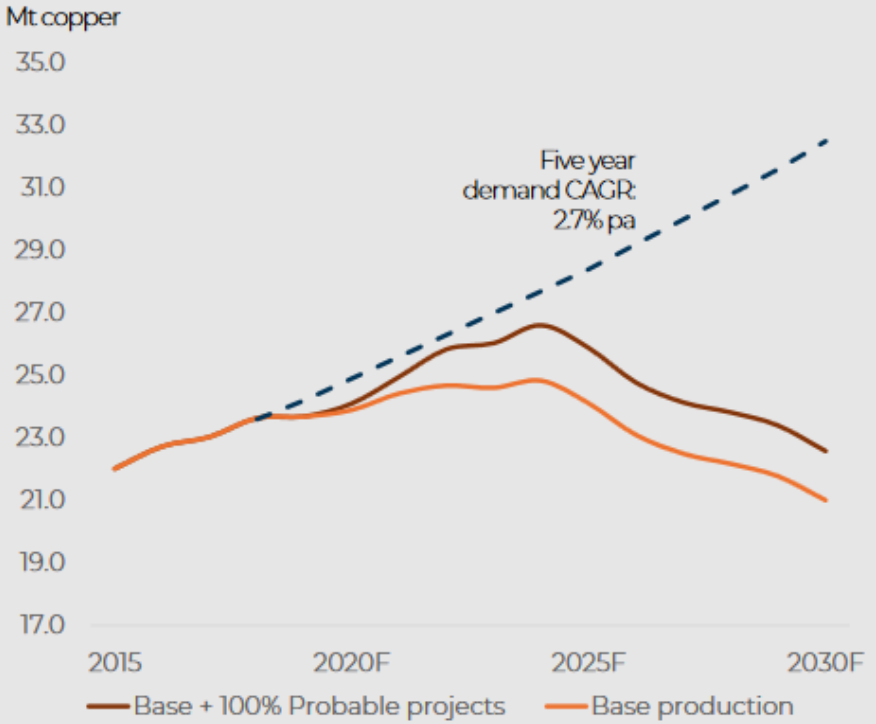
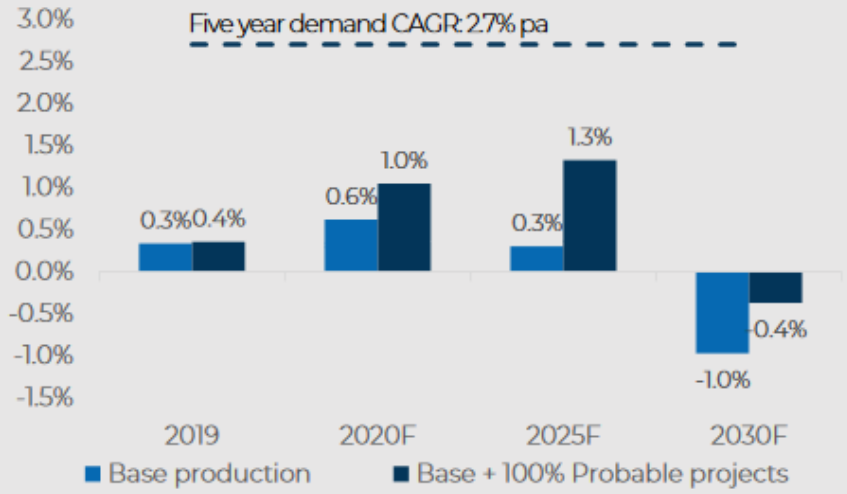
One has to adjust to the other

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**

Bank of America Merrill Lynch
2019 Global Metals, Mining & Steel Conference

Source: (1) Glencore estimates, Wood Mackenzie, CRU. Does not include the copper required for other parts of the EV supply chain including charging infrastructure, energy storage systems, grid

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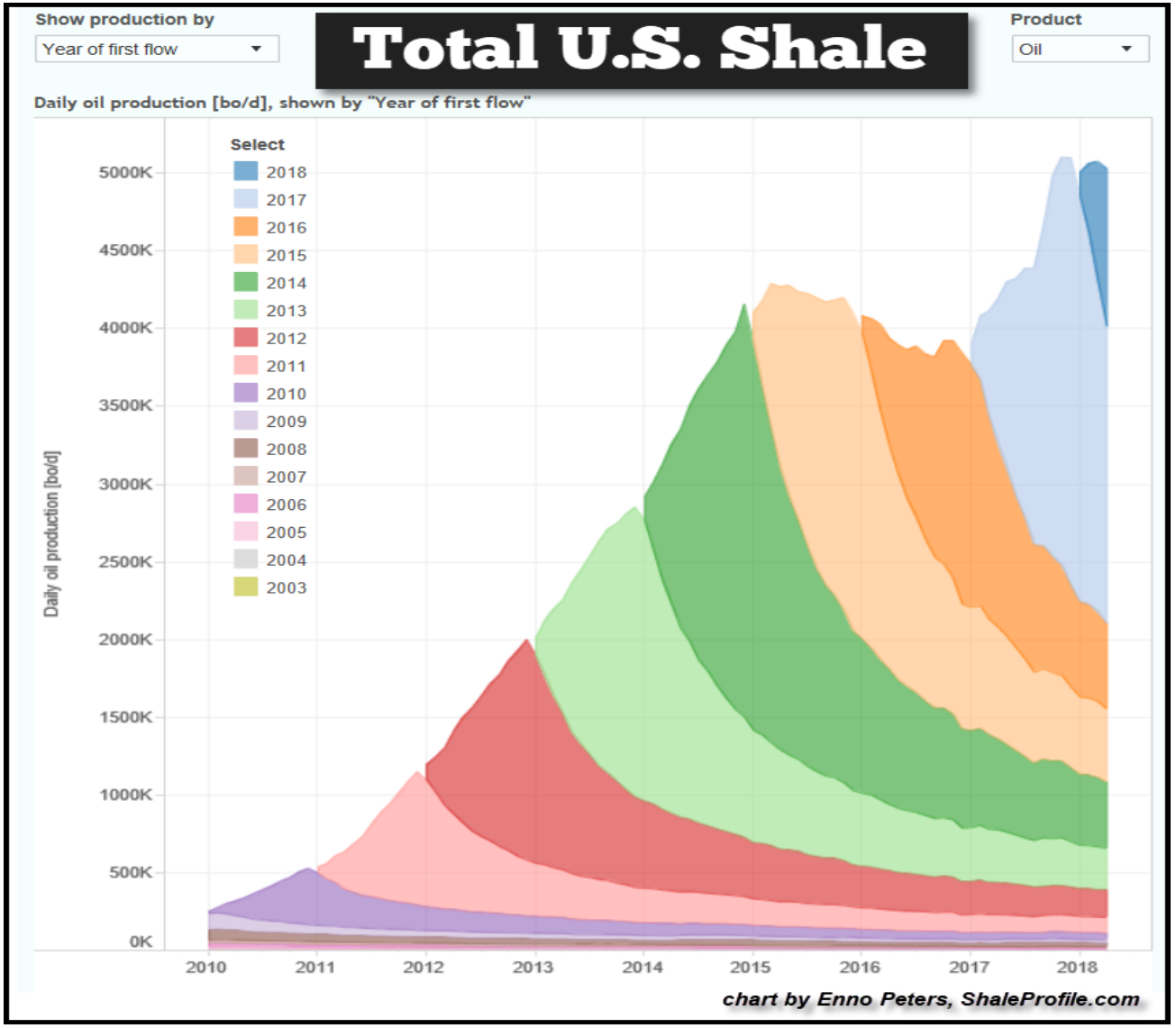
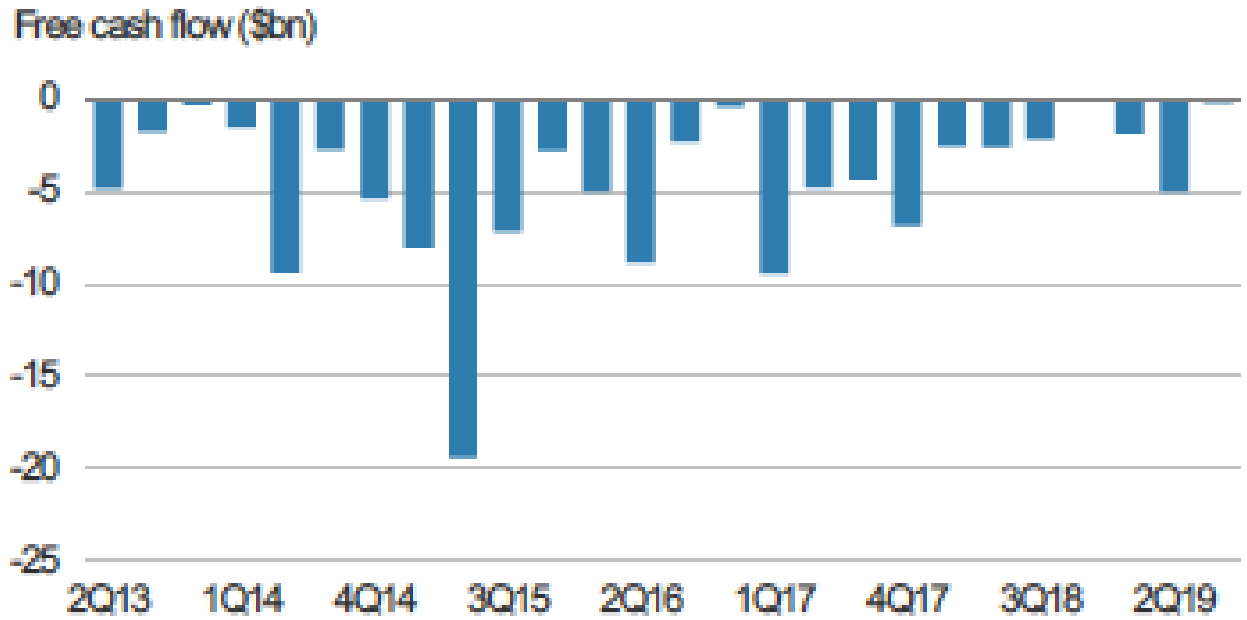
Growth stories; is patience/pockets of financiers endless?



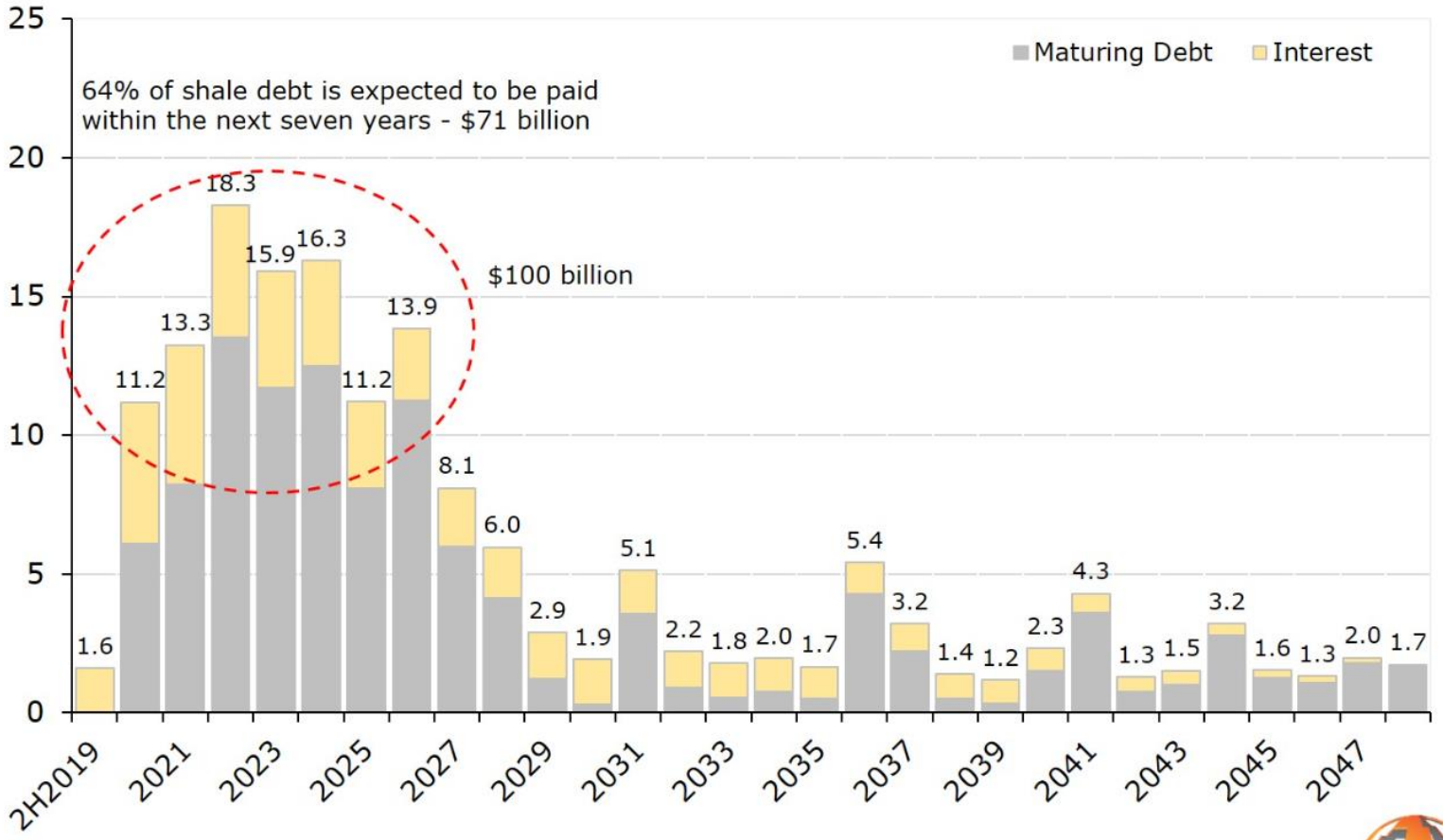
Frackers are neither generating FCF nor returns



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

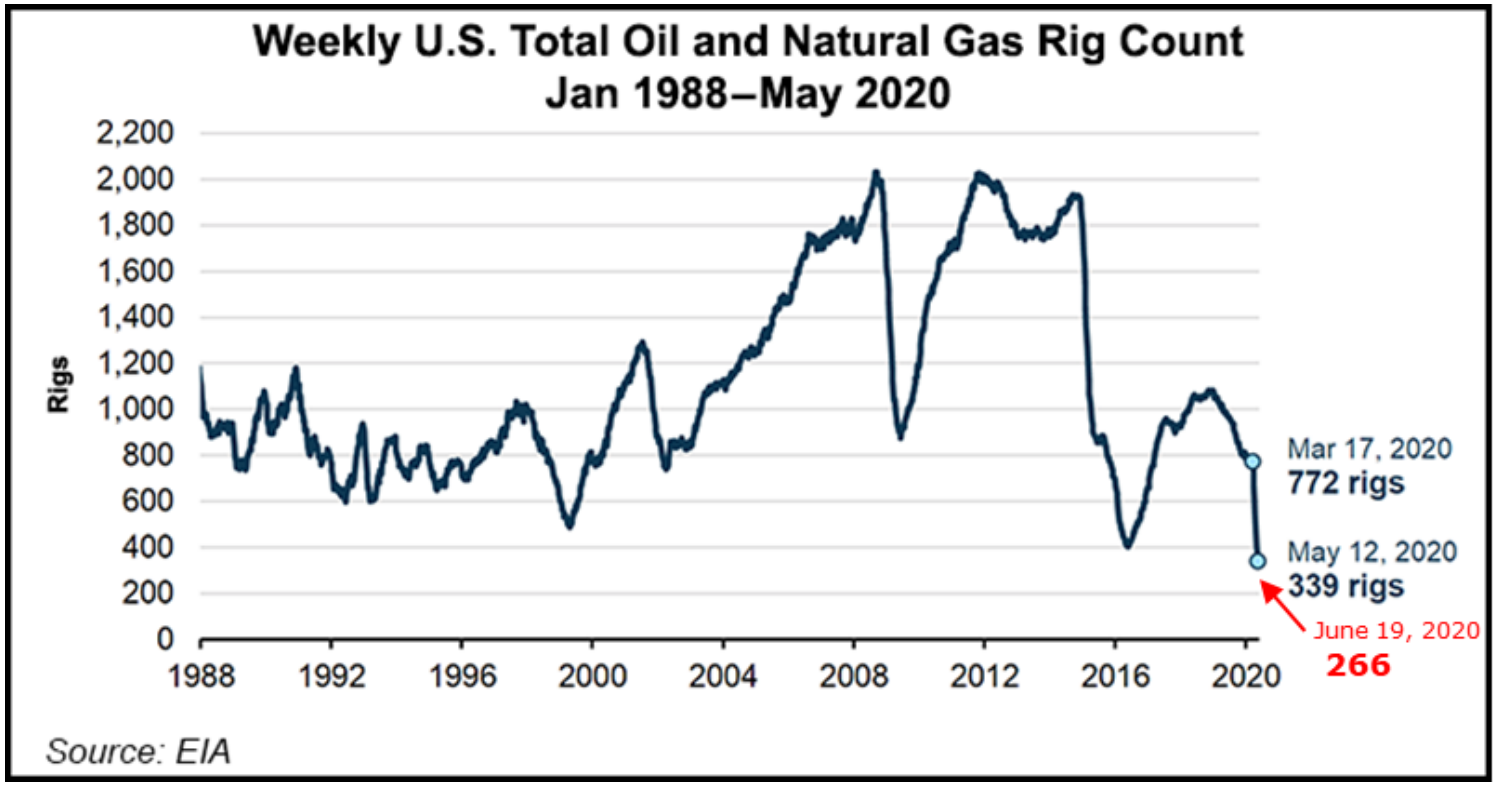
Decline rates/ever negative cashflows, shale is a debt bubble

Obligations schedule for 40 US shale oil producers
Billion USD



Source: Rystad Energy research and analytics

No money, no drilling, no oil

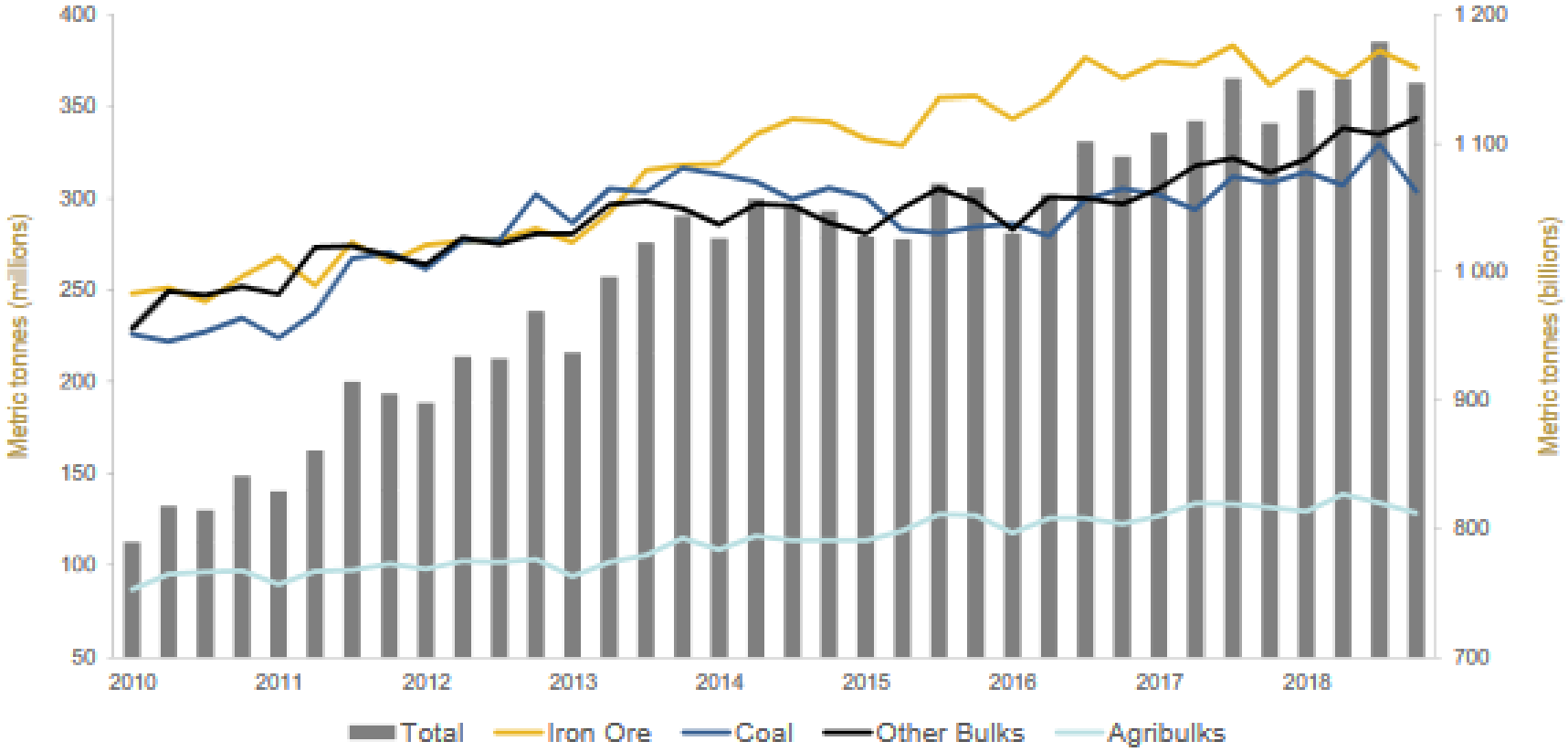


Price vola of Dr. Copper is a 0 indicator for demand

A good indicator for the «economy»/demand?

But 0 correlation to global bulk trade volume

SEABORNE TRADE OF DRY BULK COMMODITIES *(MAJOR IMPORTERS)*



SOURCE: MARITIME ANALYTICS

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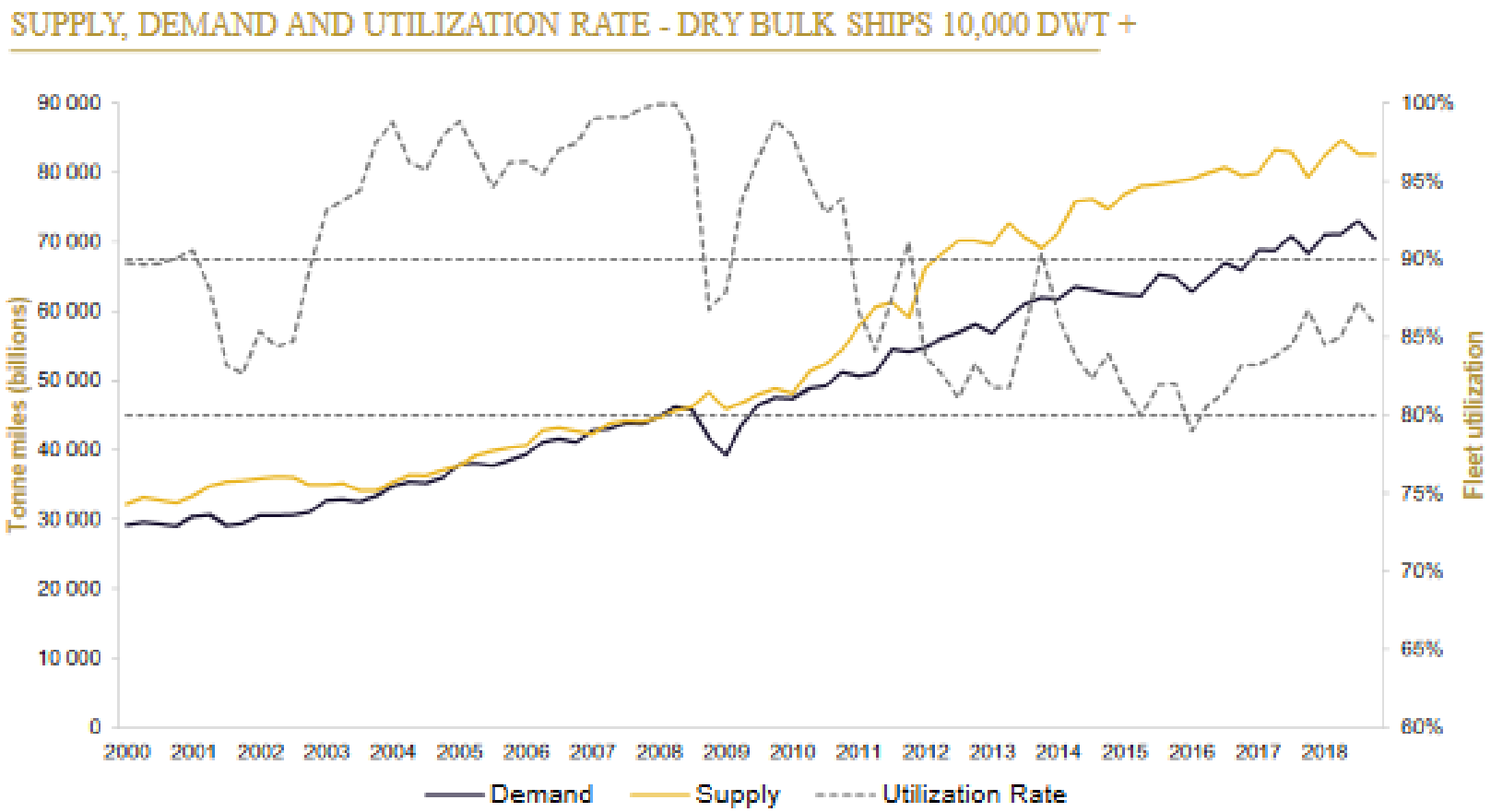
It shows over/underinvestment in freight capacity

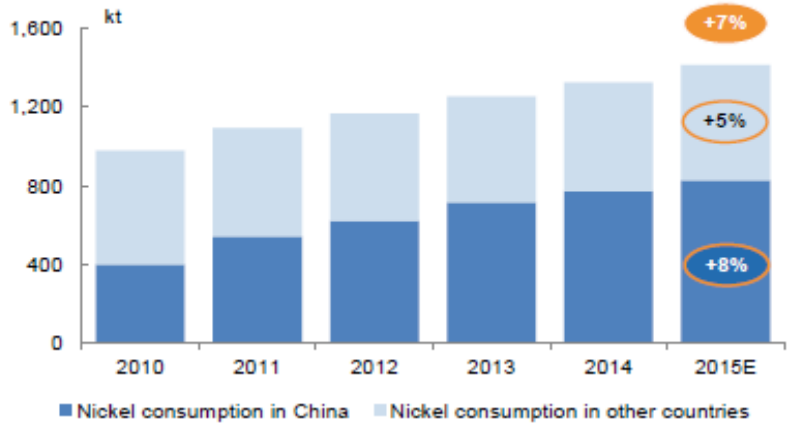


SOURCE: MARITIME ANALYTICS

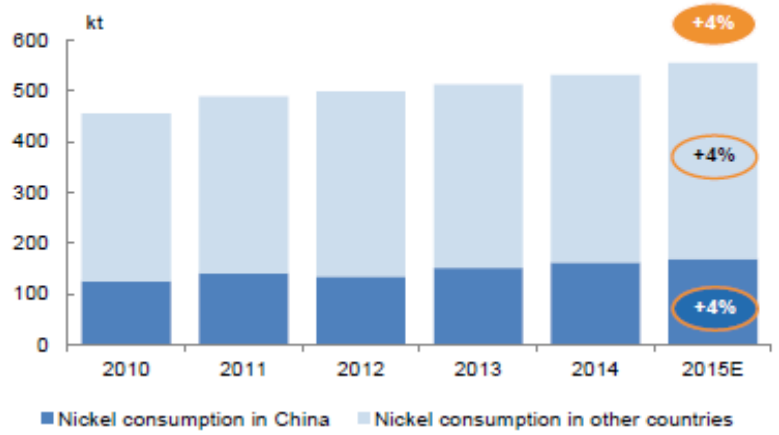
Nickel, a little volatile...

Bear market rather due to destocking than demand

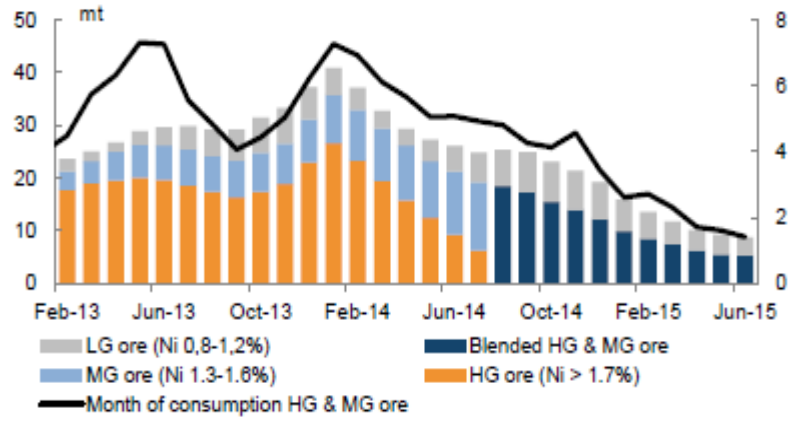
Primary Nickel Consumption (Stainless Steel)



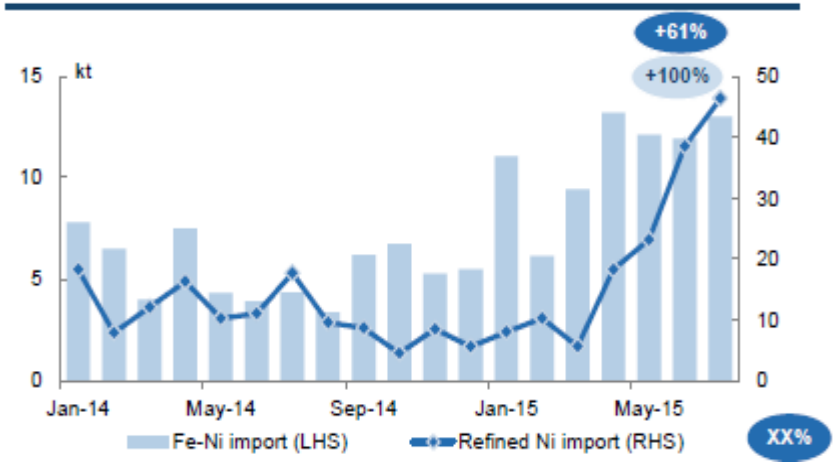
Primary Nickel Consumption (Non-Stainless Steel)



Chinese Ni Ore Inventories: High&Medium Grade Ore – Just Over a Month of Consumption Left

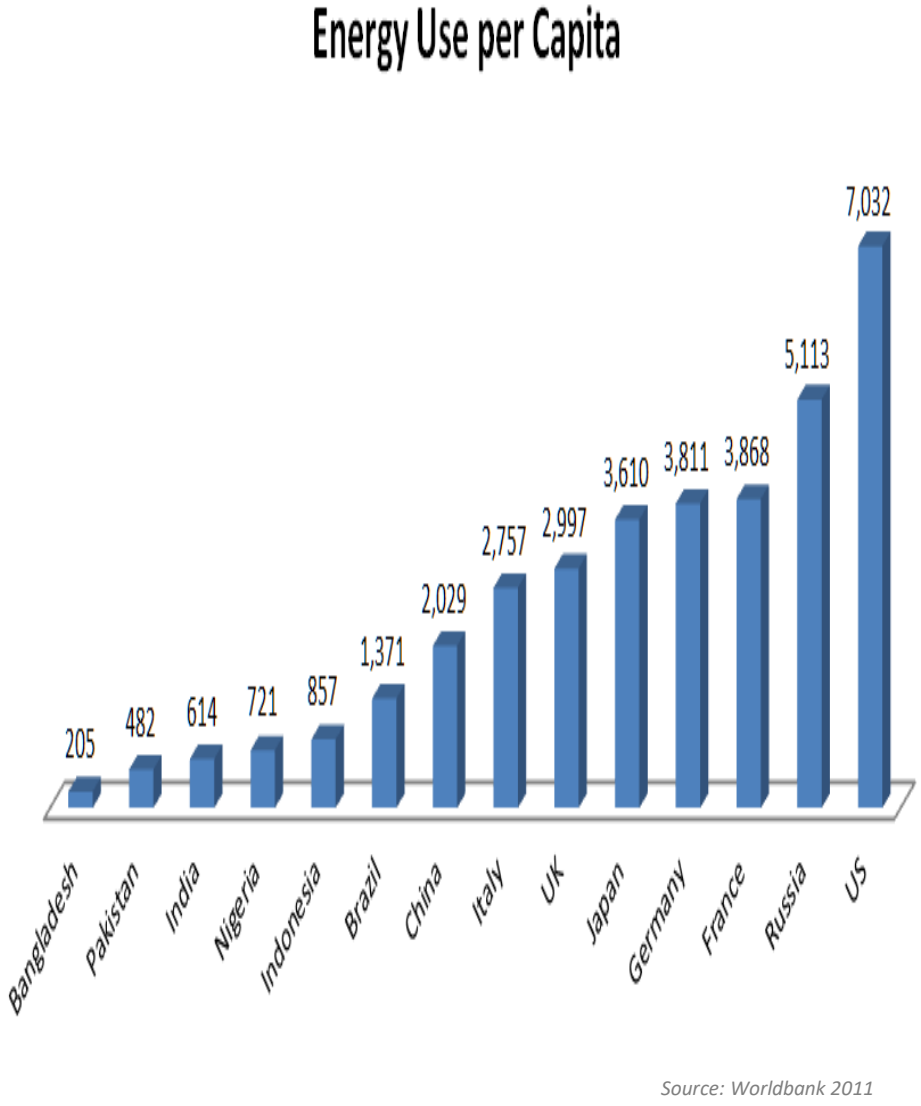


Strong Increase of Fe-Ni and Re-Ni Imports to China

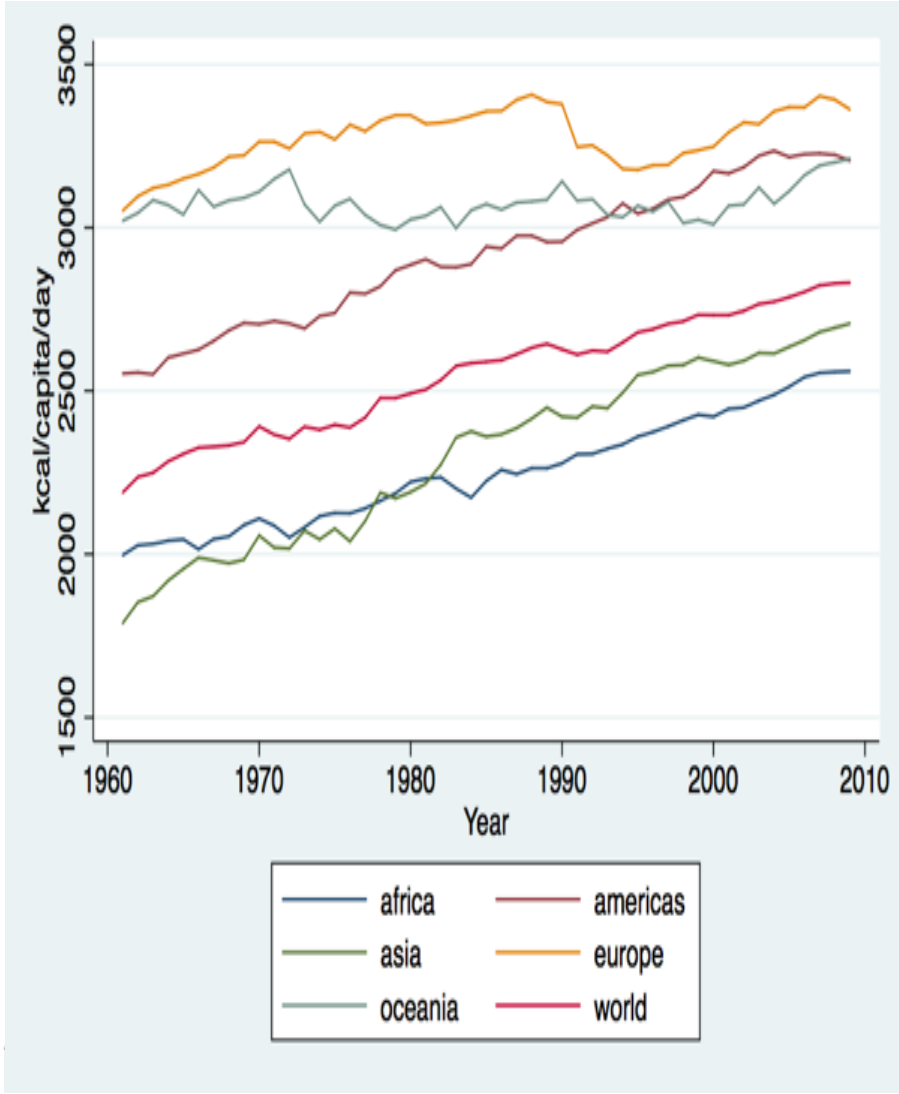


Source: Norilsk Nickel

Usage per capita all the same story



Source: Worldbank 2011

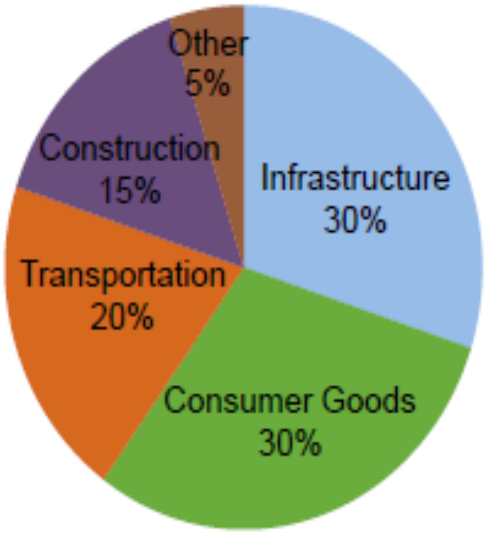


Chinese zinc usage will rise

Chinese Zinc Demand to Remain Strong

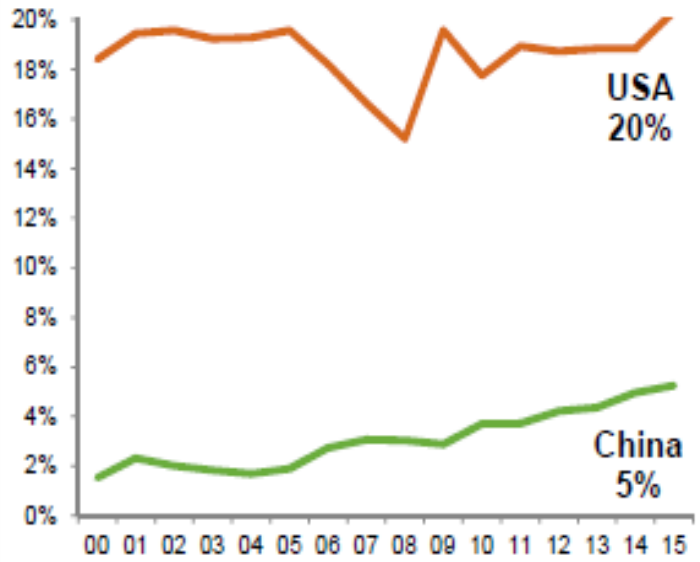
Teck

China Zinc Demand



Source: Teck

Galvanized Steel as % Crude Production



Source: Teck

If China were to galvanize crude steel at half the rate of the US using the same amount of zinc/tonne, a further 2.1 Mt would be added to global zinc consumption

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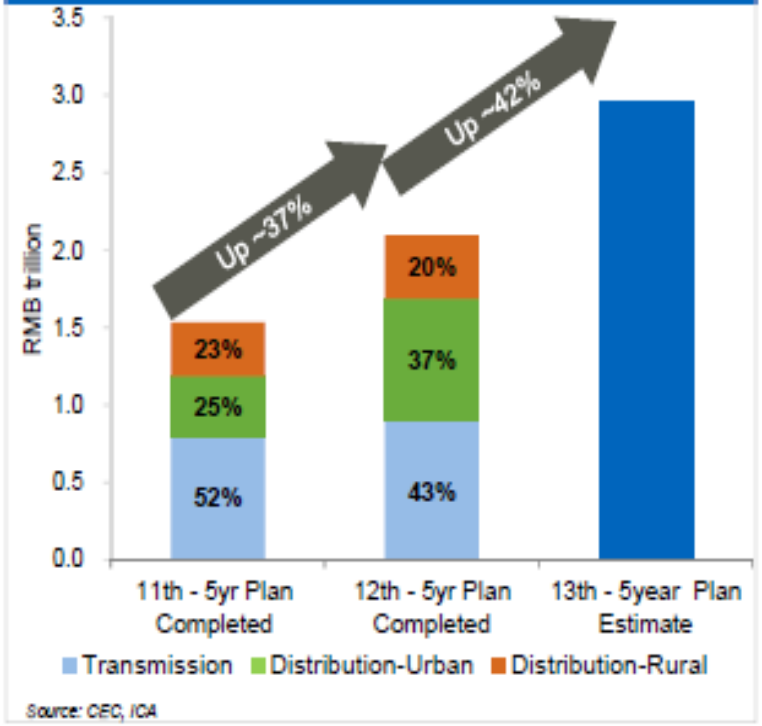
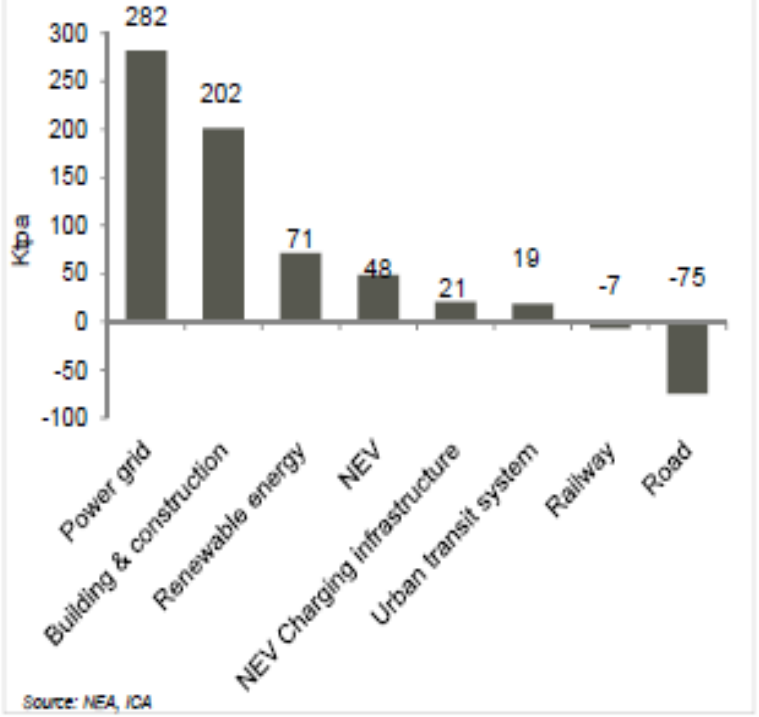
Chinese Copper Demand to Remain Strong

Teck

Significant Power Grid Investment



Potential Annual Growth in Most Sectors



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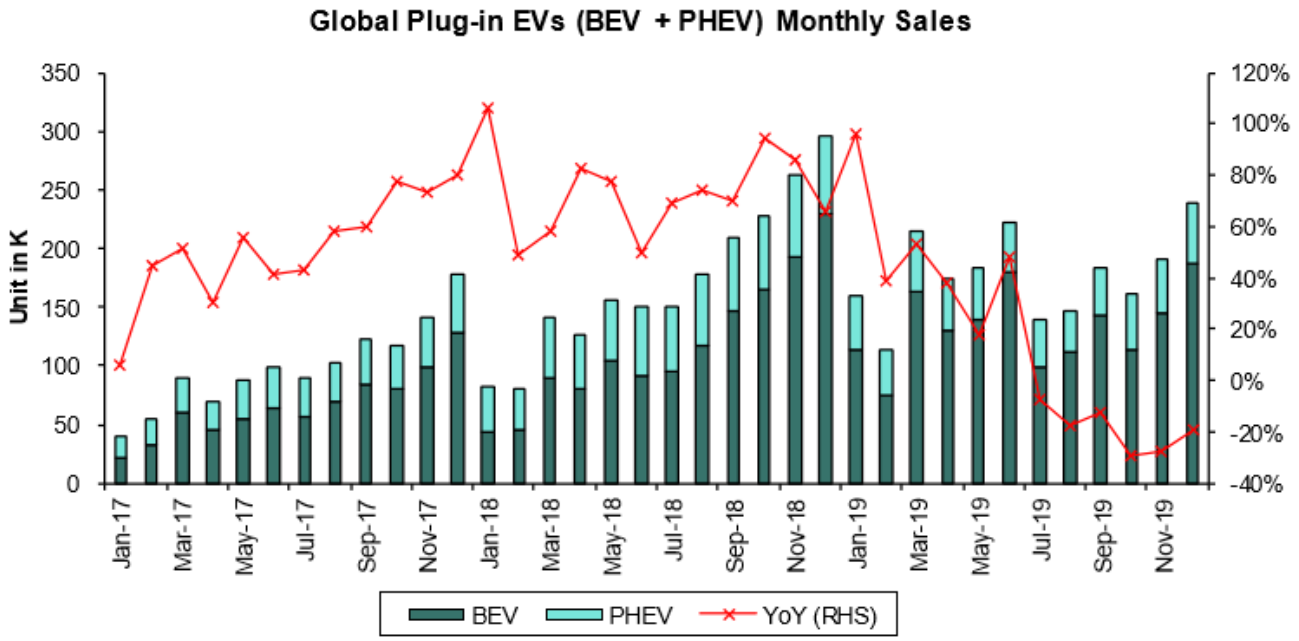
A boom that cannot be seen on the streets...

1. GLOBAL PASSENGER XEV SALES OVERVIEW: 2019 PLUG-IN EV SALES HIT 2.1MILLION (+3% YOY)

+ December global plug-in EVs (BEV + PHEV, including all battery chemistries) sales came in at 238K (-20% YoY). BEV and PHEV were -18%/-24% YoY to 188K/50K units. (**Exhibit 1**).
+ On a rolling 3-month basis for Plug-in EV sales, the growth of total global sales slid to -25% YoY (**Exhibit 2**).
+ In MWh terms, total LiB sales in December were 11GWh, -6% YoY (2019 full year: 96GWh, +27% YoY), most of which coming from BEVs (**Exhibit 3**).

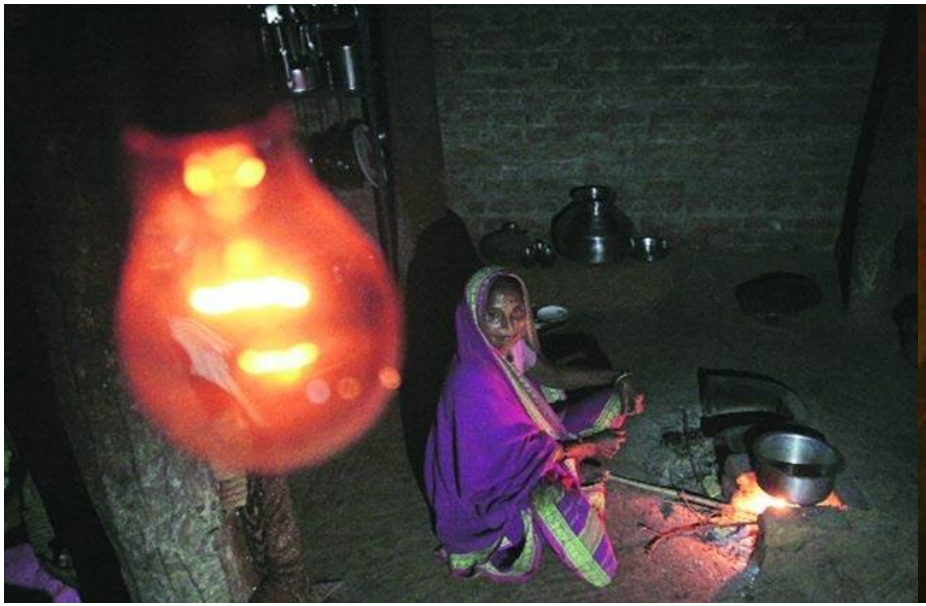
EXHIBIT 1: **December global plug-in EVs (BEV + PHEV) sales were 238K (-20% YoY)**



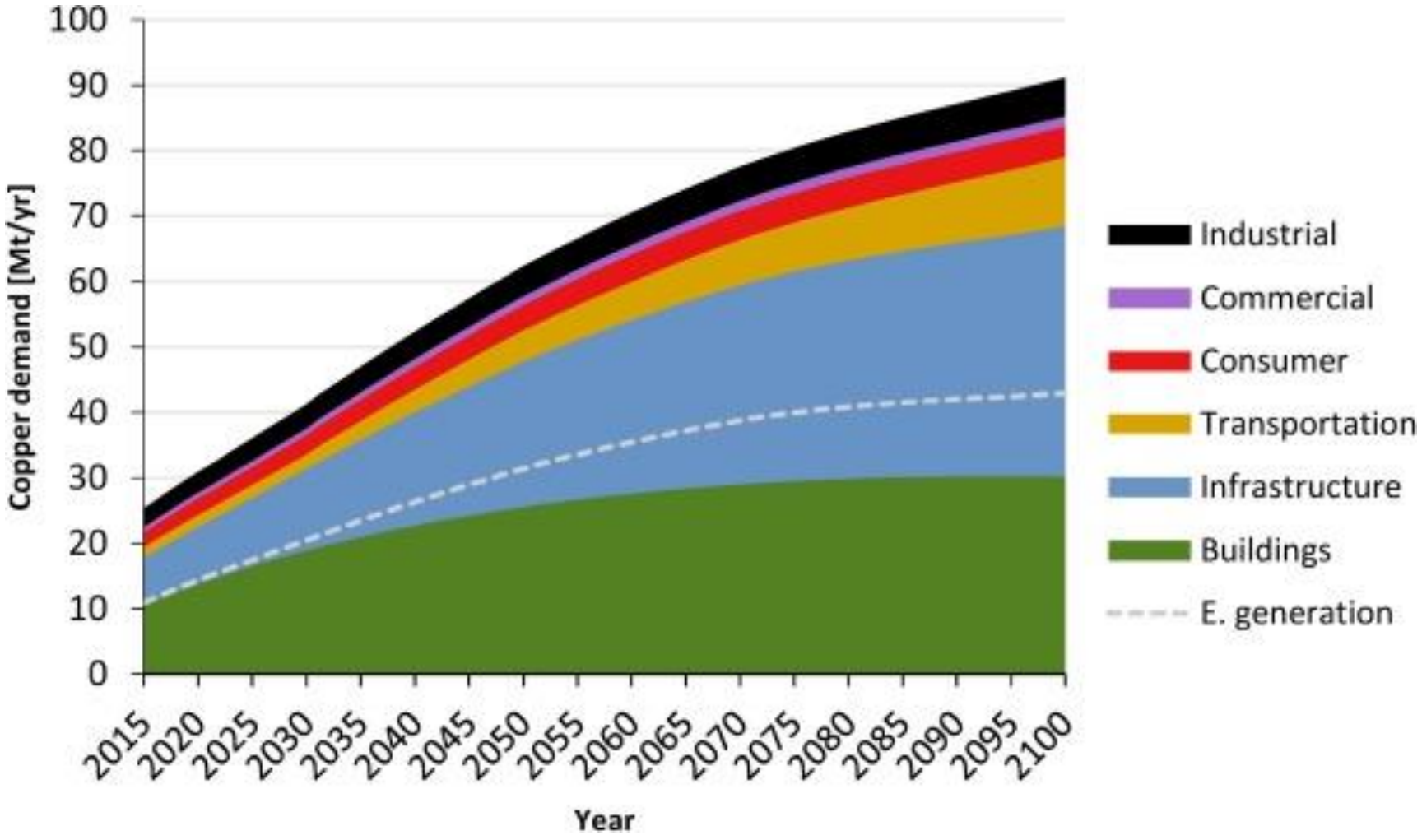
Source: SNE Research, Bernstein analysis

Electrification of India. Any copper left for EV?

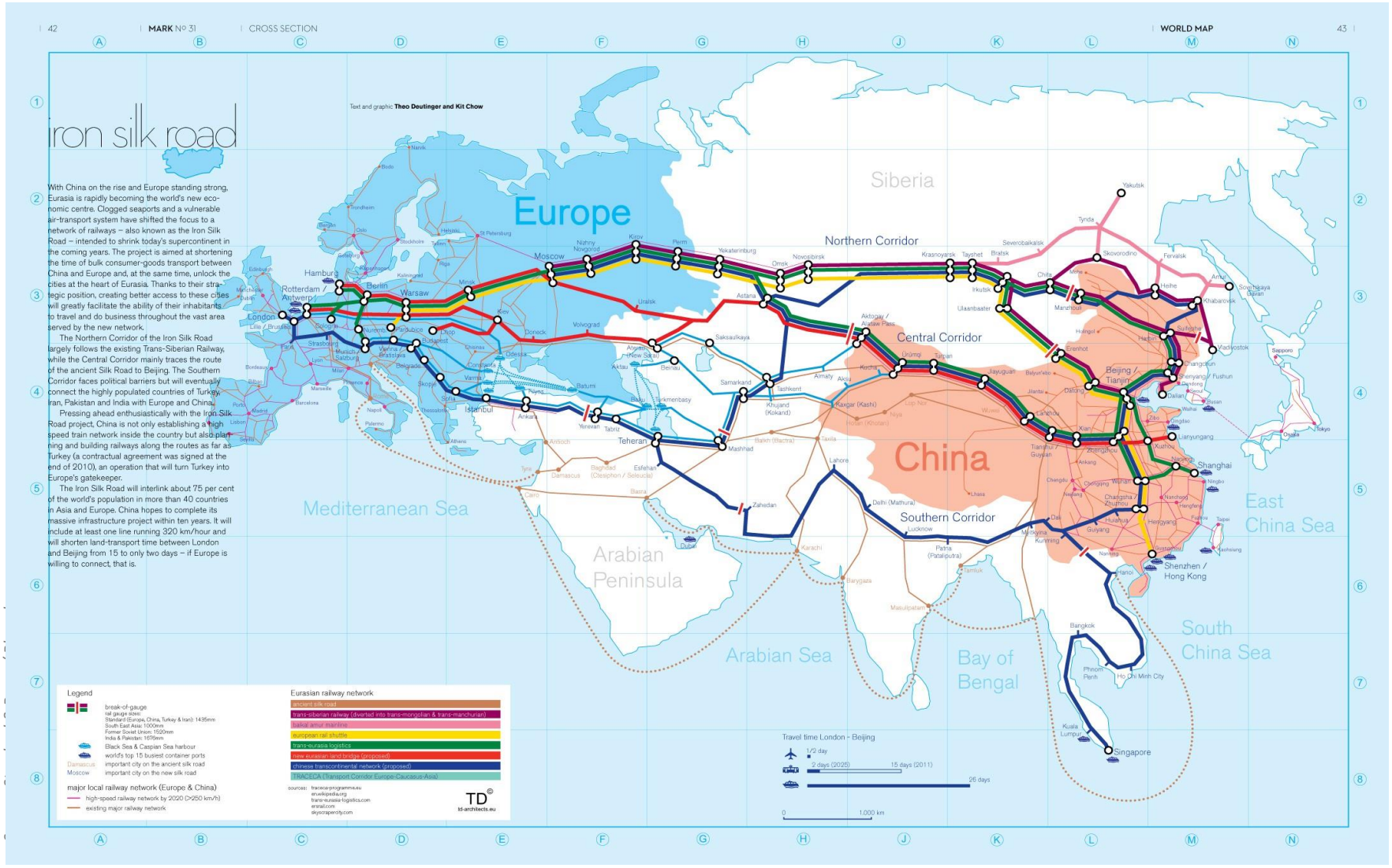
India has one of the lowest levels of copper installed per capita in the world. With a real per capita GDP of $4,500 (in real 2005 US dollars), we calculate India has less than **14 pounds of copper** installed in its economy per person. **China, on the other hand, has nearly 170 pounds** of copper installed 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 & Rozencwajg)



Estimated copper demand



New silk road

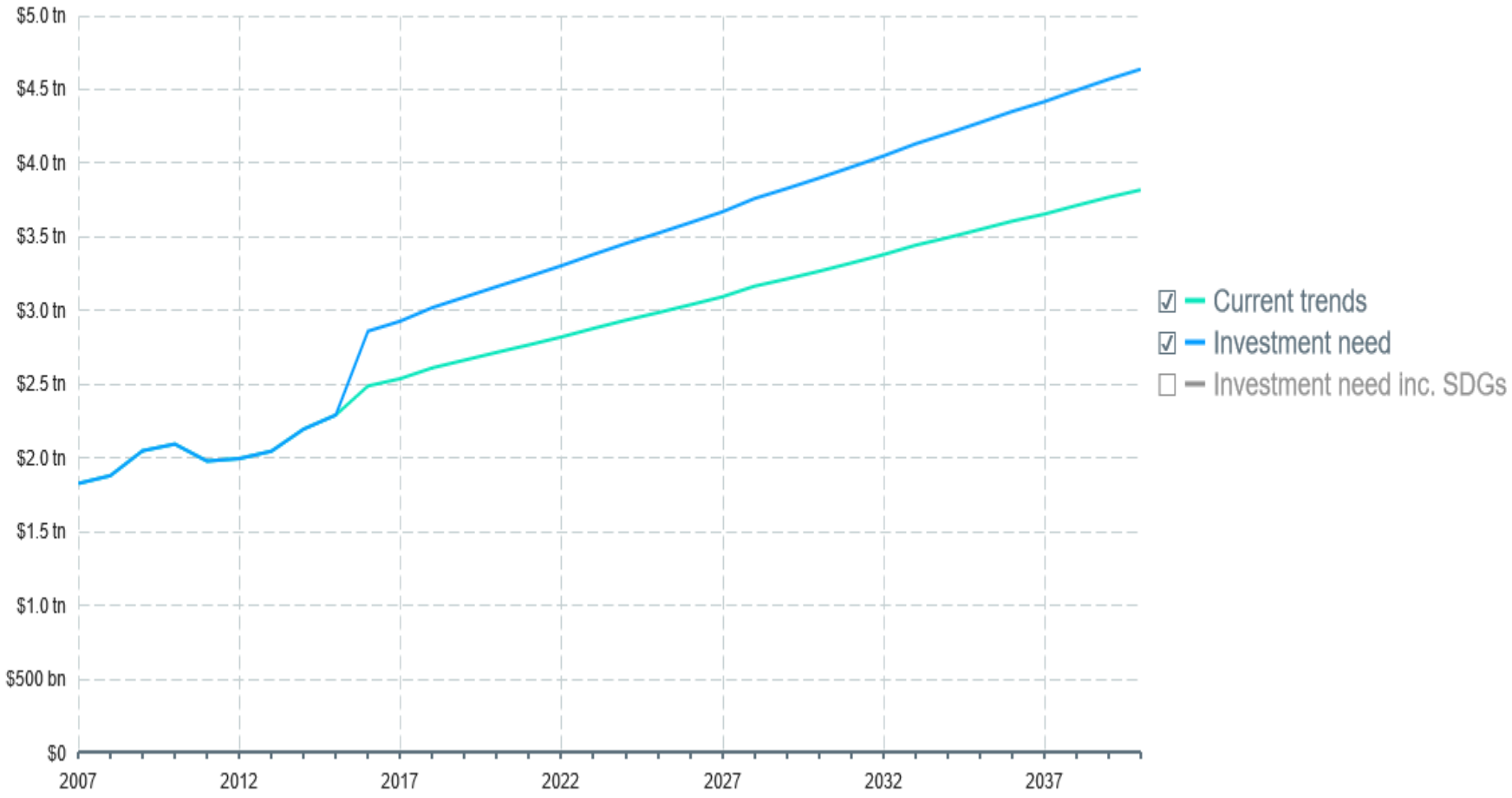


What is it all about?

- 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.

Funding «Gap»...

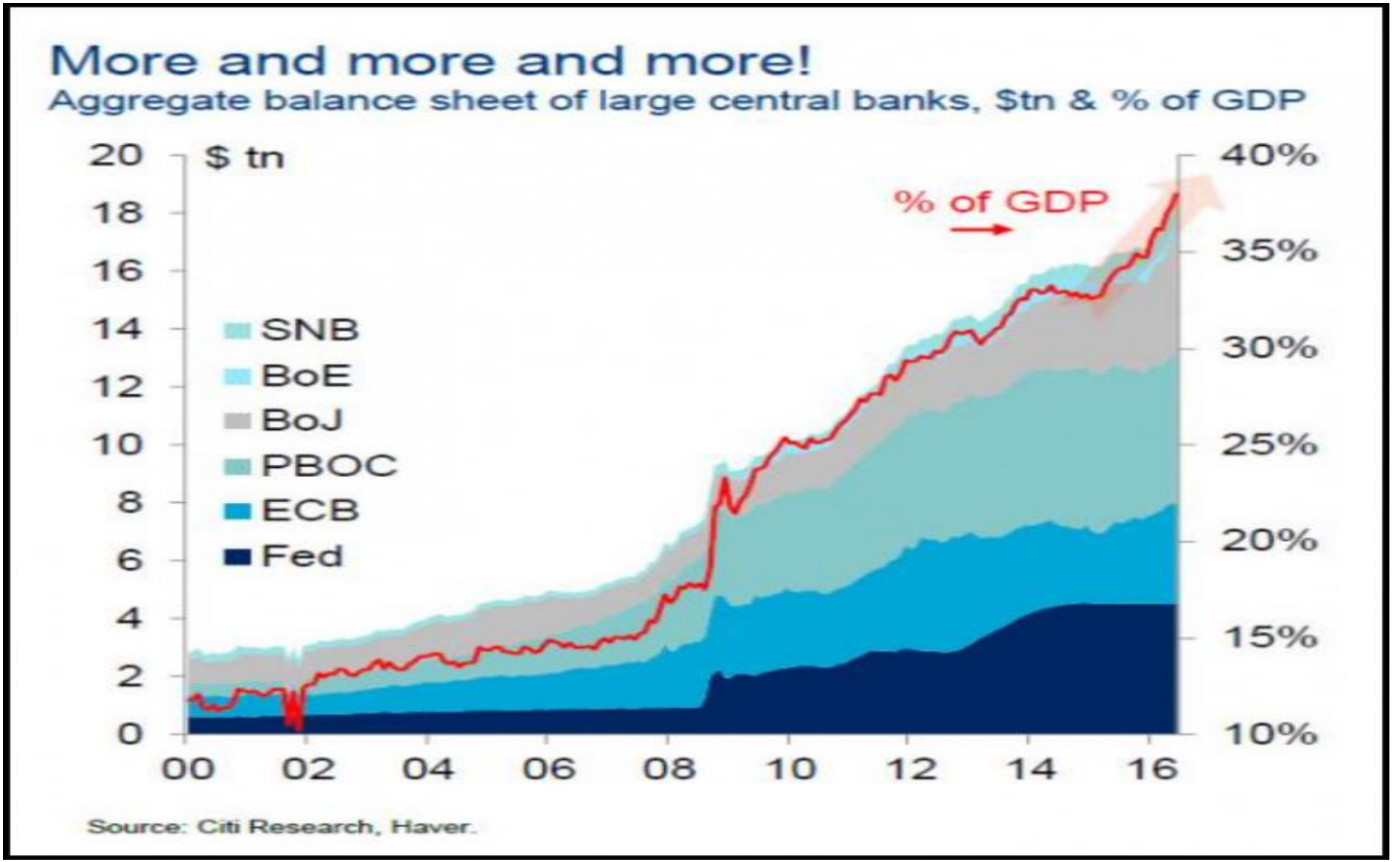
Infrastructure investment at current trends and need



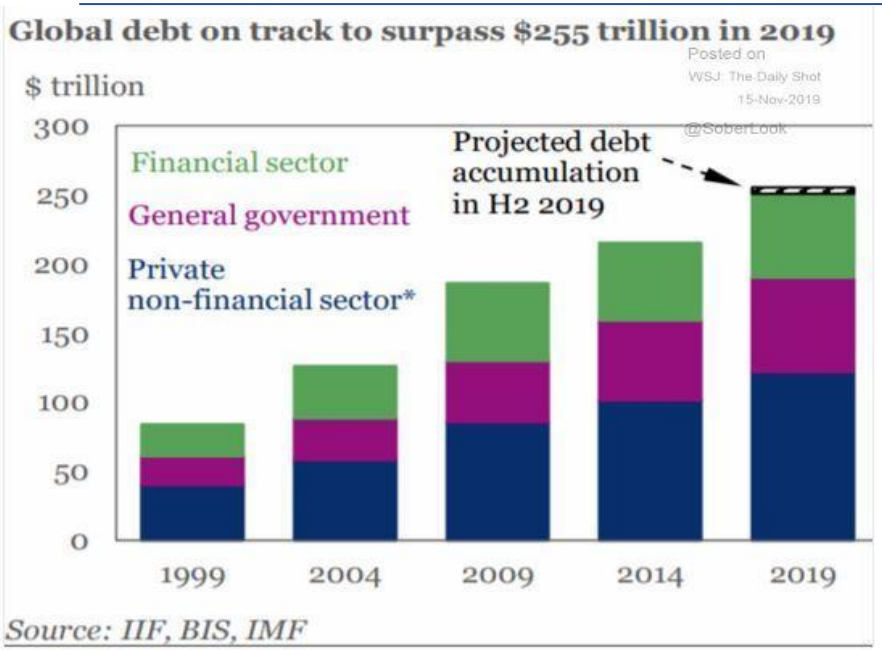
General govt gross debt % of GDP (IMF)

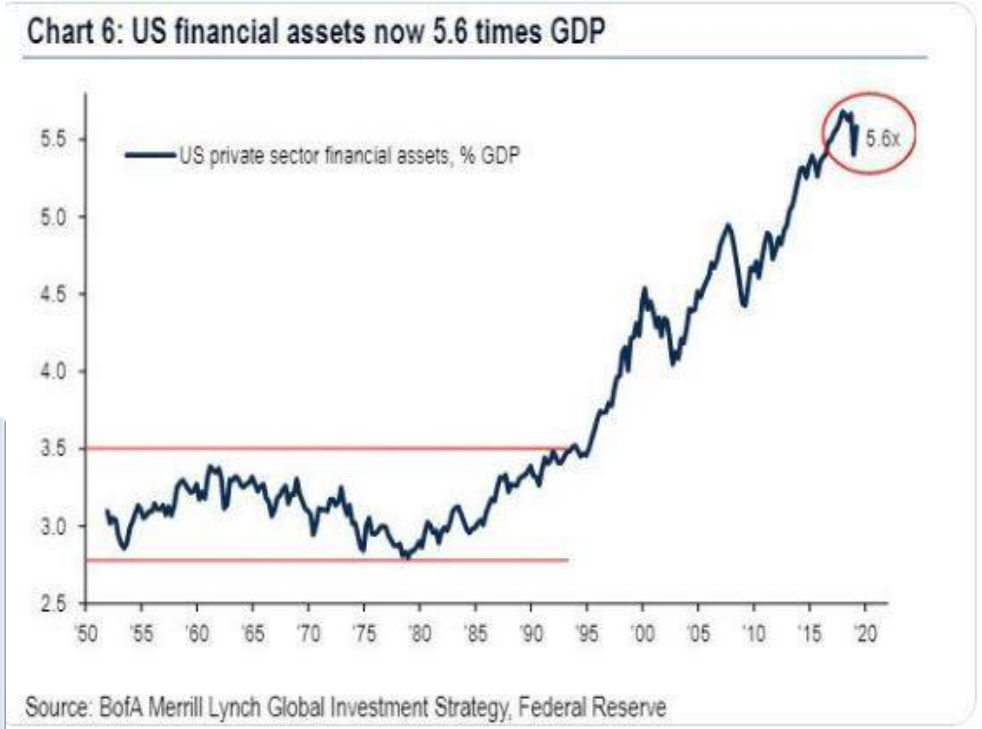
Japan	236.6%	**China**	**53.9%**
Italy	128.7%	Germany	56.0%
USA	107.8%	Australia	40.6%
France	96.5%	Switzerland	38.6%
Brazil	90.5%	Indonesia	29.8%
Canada	84.7%	Russia	15.4%
India	68.1%		

The rock-steady beat of madness: One step beyond!



Asset price deflation cannot be allowed





Source: https://fred.stlouisfed.org

It cannot be allowed, whatever it takes…

But there is no free lunch

Ready for take-off?

Source: https://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

What the h... is UNEDIC??? (Wikipedia)

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.

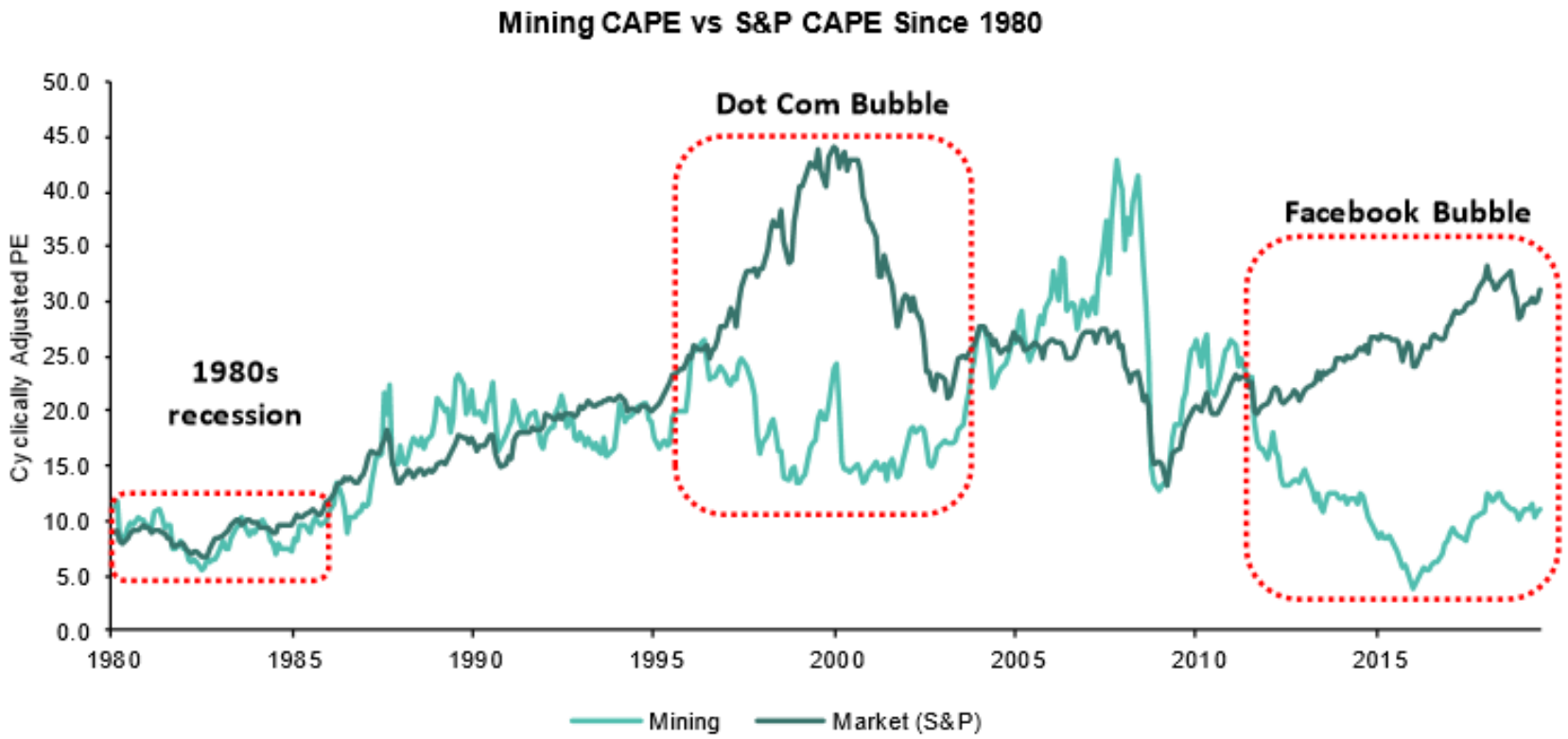
The agency used set the amount of unemployment contributions (paid by a part of salaries). It was affiliated to the Assedic agencies, which collected and paid the contributions. In 2008, it employed almost 15,000 people.

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.

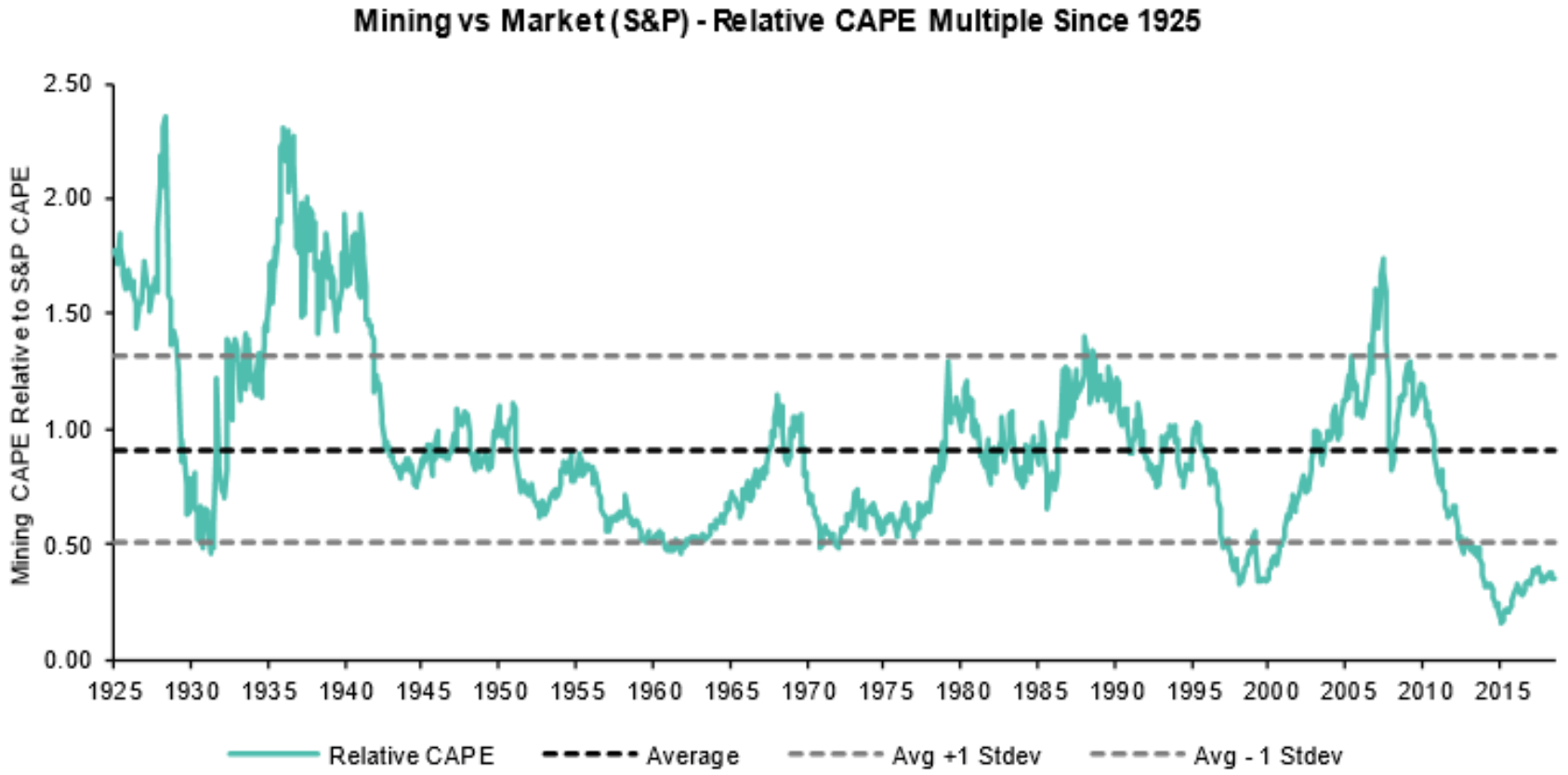
GSCI/S&P500 Ratio: As cheap as it can get?

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**



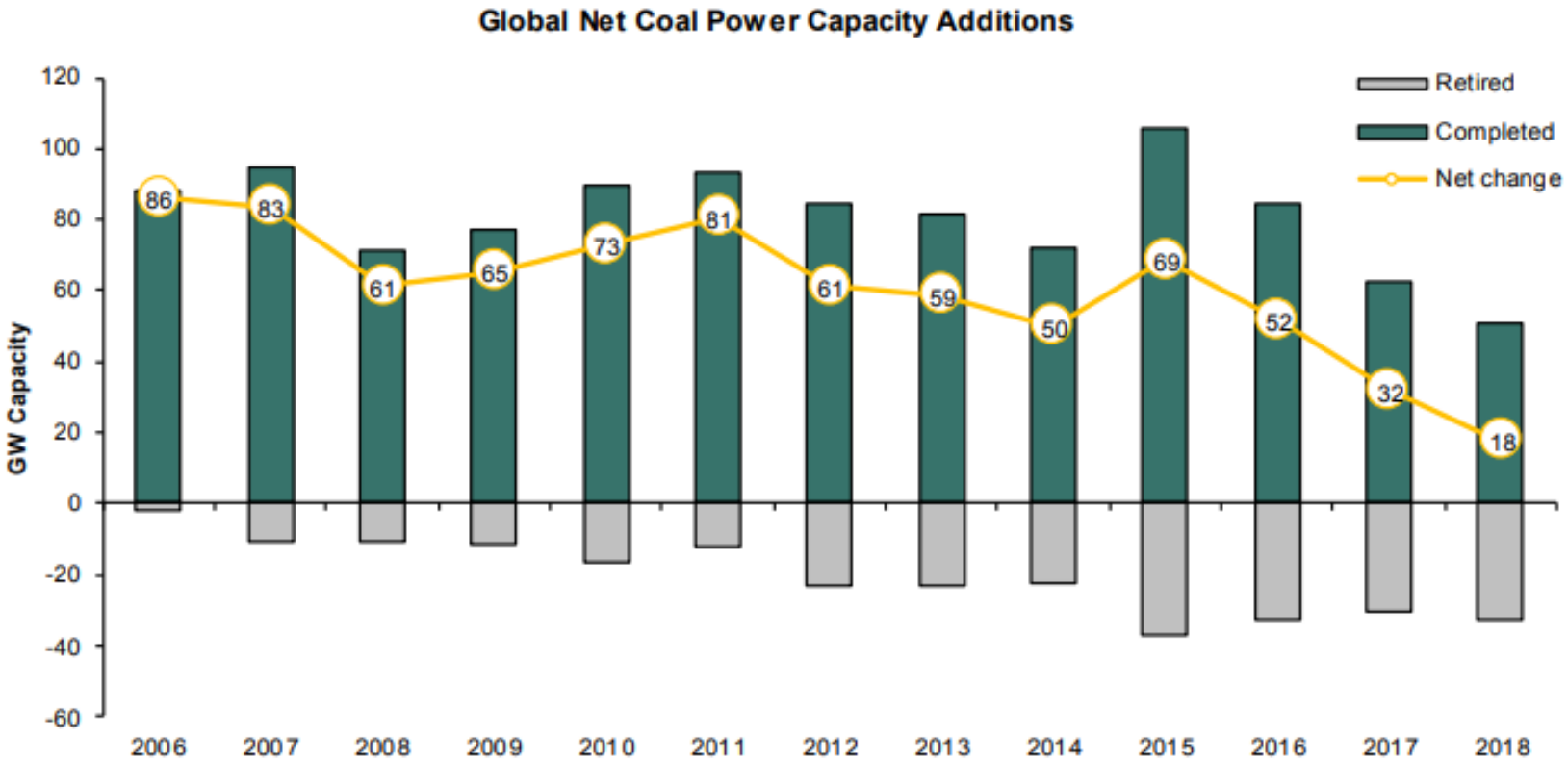
Source: Datastream, Bloomberg, CRSP, Corporate reports, Bernstein analysis & estimates

GSCI/S&P500 Ratio: As cheap as it can get?



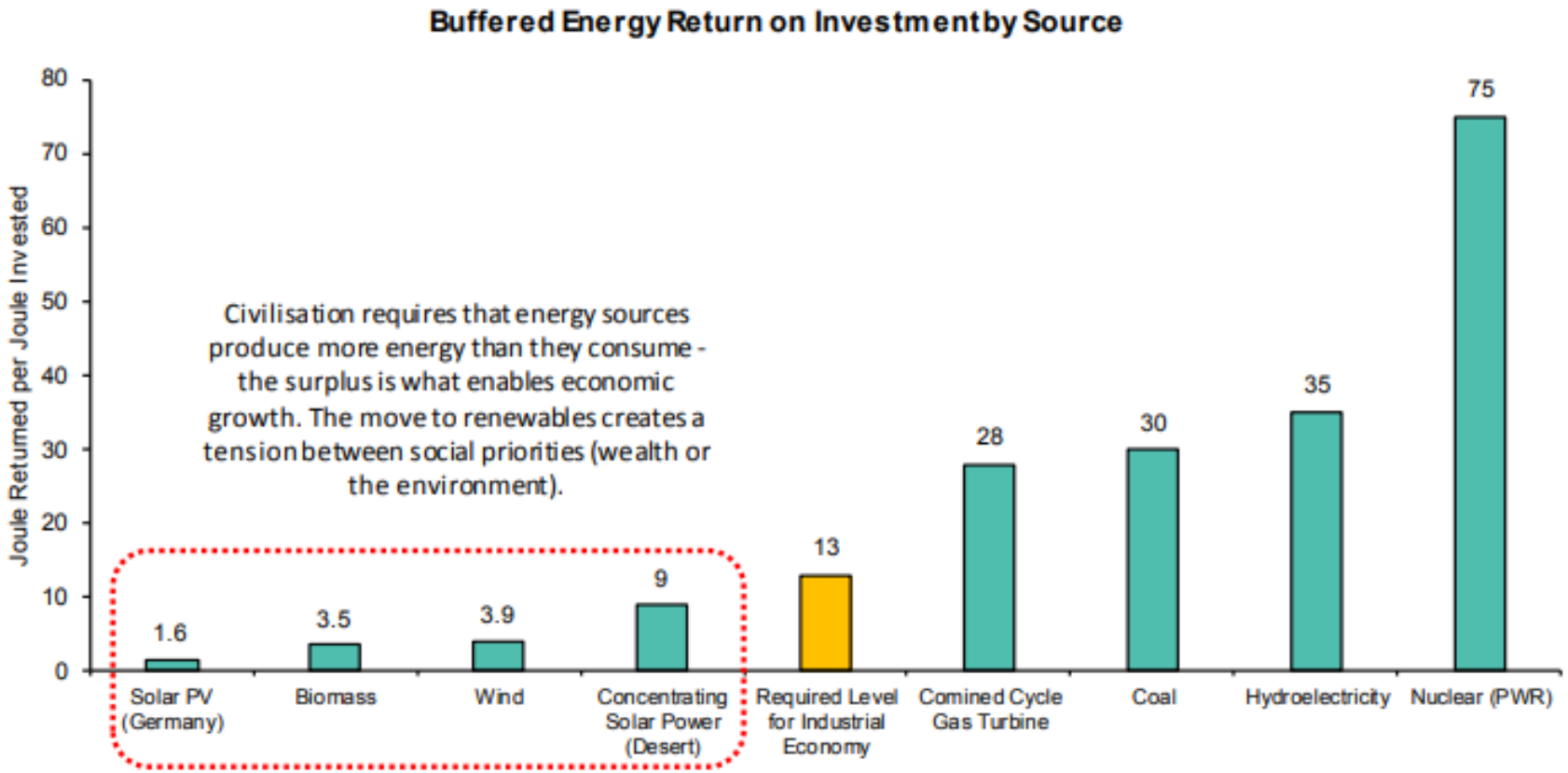
Source: Datastream, Bloomberg, CRSP, Corporate reports, Bernstein analysis & estimates

2018 Coal consumption grew 3.7% (in line with energy cons.)



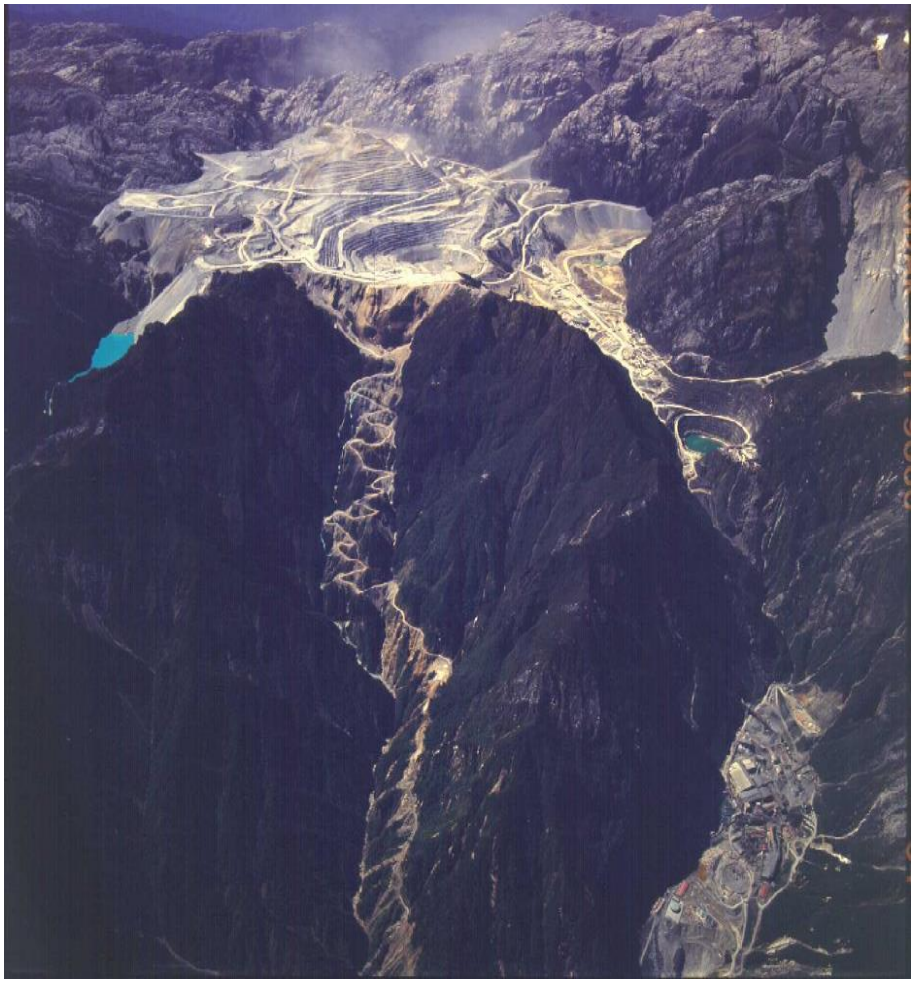
Source: Bernstein

It is about density of energy



Source: Bernstein

Erdsberg/ Grasberg, 4300 m a.b.s.l. Irian Jaya



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

Shorting Dr. Copper because of Brexit, Nasdaq, Italy, etc?

JAKARTA, Jan 9 (Reuters) - Copper concentrate exports from Indonesia's Grasberg mine, the world's second-largest copper mine, are forecast to plunge this year because of a lag in output as operations move from open pit to underground mining, a government official said on Wednesday.
In 2019, copper concentrate exports are expected to drop to 200,000 tonnes from about 1.2 million tonnes last year, said Yunus Saefulhak, the director of minerals at the Energy and Mineral Resources Ministry.

Grasberg will produce around 1.2 million tonnes of copper concentrate this year, compared to 2.1 million tonnes in 2018, while **domestic consumption will grow to 1 million tonnes compared to 800,000 tonnes in 2018**, the ministry said.

Just an example, but Indonesian exports set to disappear

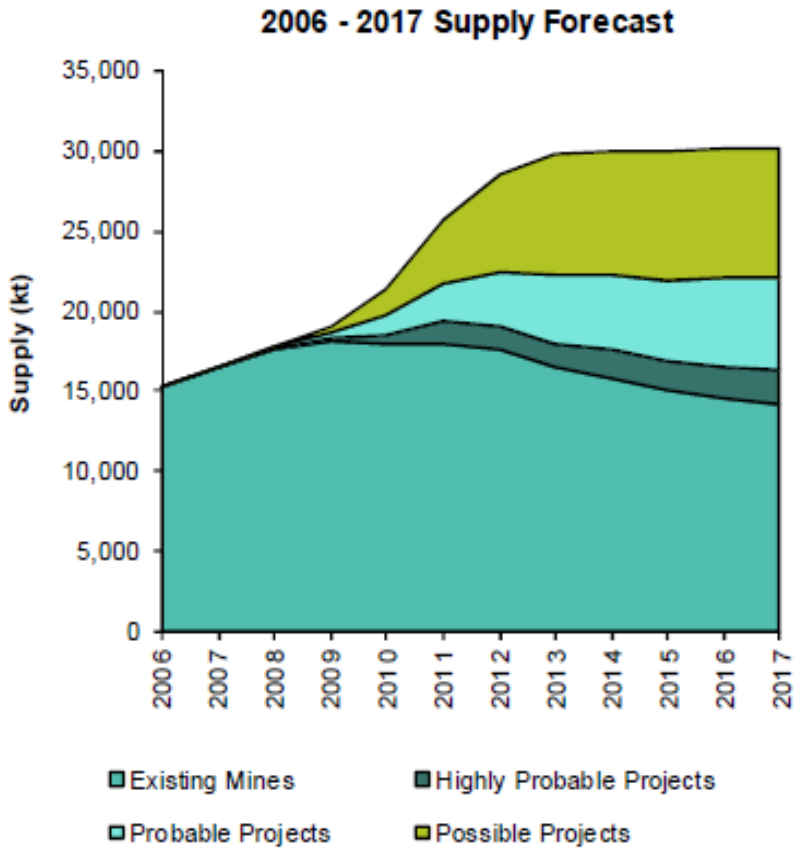
Below are the 15 countries that exported the highest dollar value worth of copper ore during 2017.

Chile: US$17.4 billion (29.9% of total copper exports)
Peru: $12 billion (20.6%)
Australia: $3.6 billion (6.3%)
Indonesia: $3.4 billion (5.9%)
Canada: $2.8 billion (4.7%)
Brazil: $2.5 billion (4.3%)
Spain: $2.1 billion (3.6%)
Mexico: $1.9 billion (3.2%)
United States: $1.7 billion (2.9%)
Mongolia: $1.6 billion (2.8%)
Kazakhstan: $1.1 billion (1.9%)
Democratic Rep. Congo: $989 million (1.7%)
Papua New Guinea: $813.8 million (1.4%)
Taiwan: $597.9 million (1%)
Armenia: $586.8 million (1%)

The listed 15 countries shipped 91.2% of all copper ore exports in 2017 (by value).

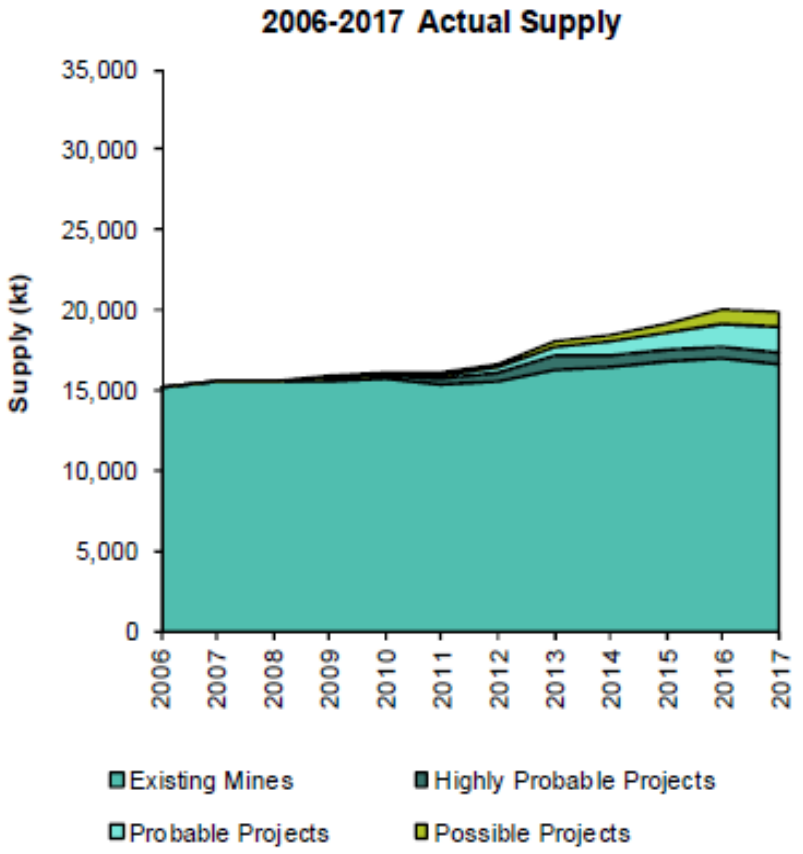
Mediocre supply response in relation to capex

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"...**



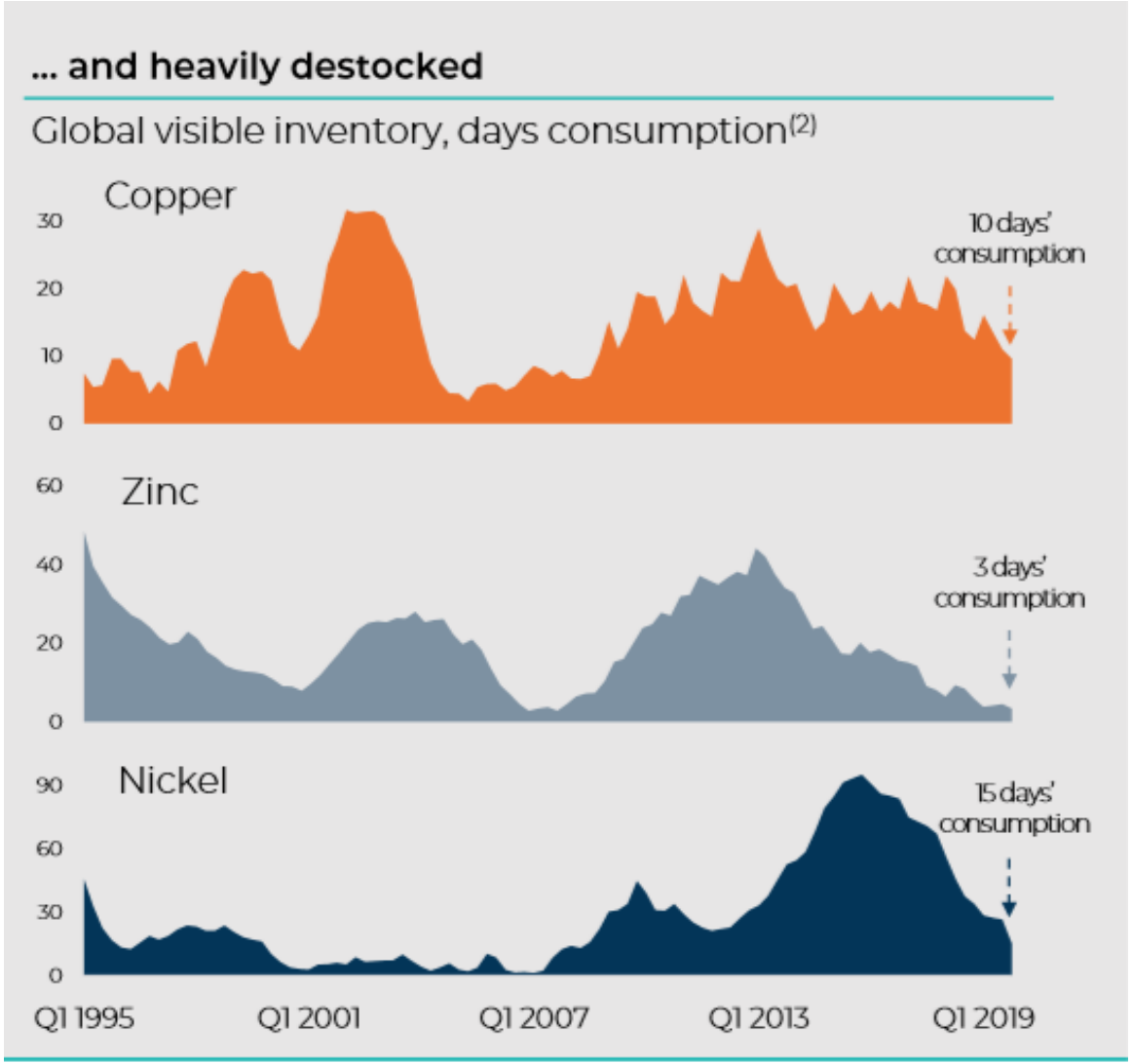
Source: Brook Hunt, Wood Mackenzie, Bernstein analysis

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

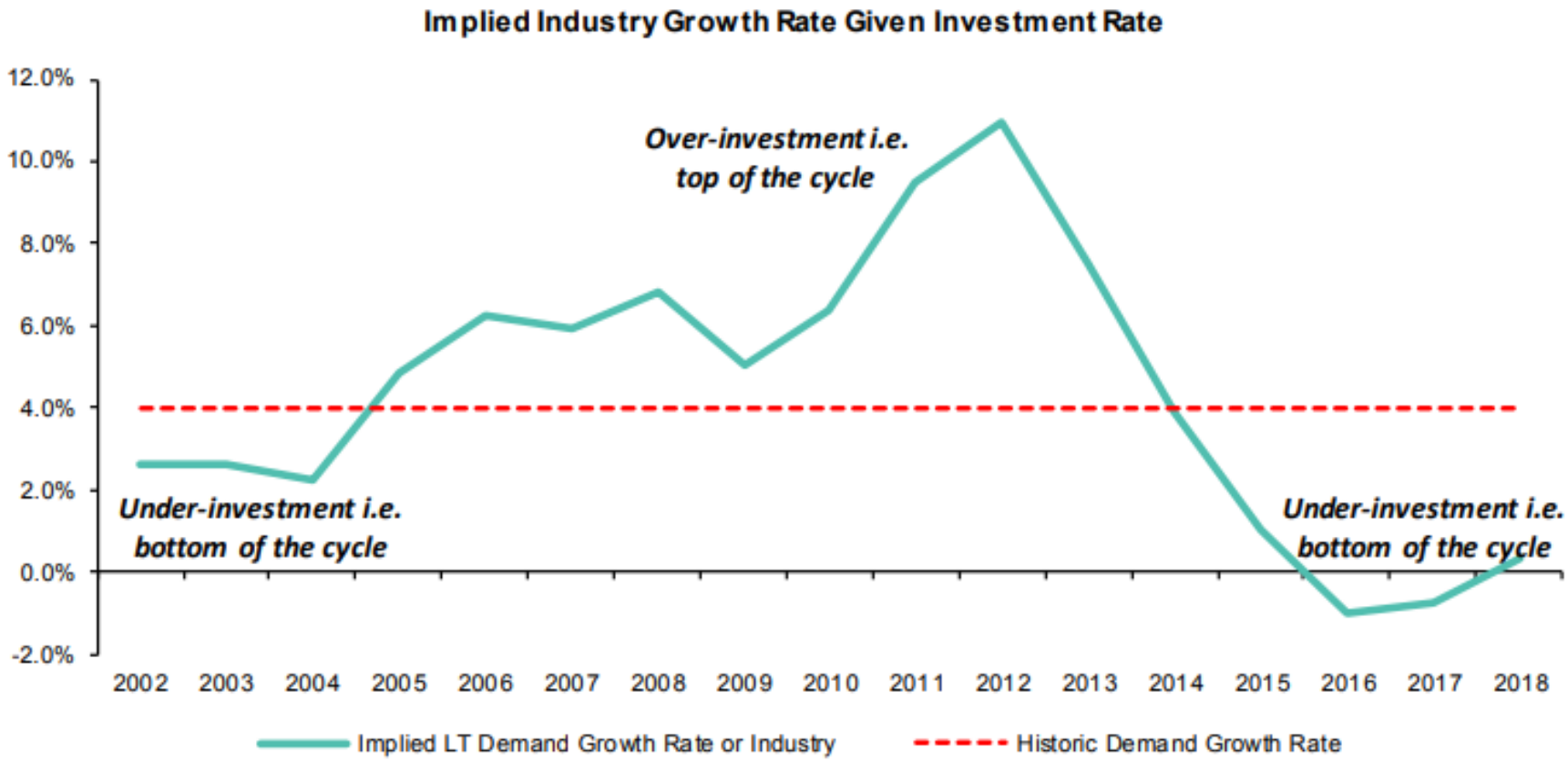


Source: Brook Hunt, Wood Mackenzie, Bernstein analysis

Already destocked



Mining capex cyle



Bernstein analysis

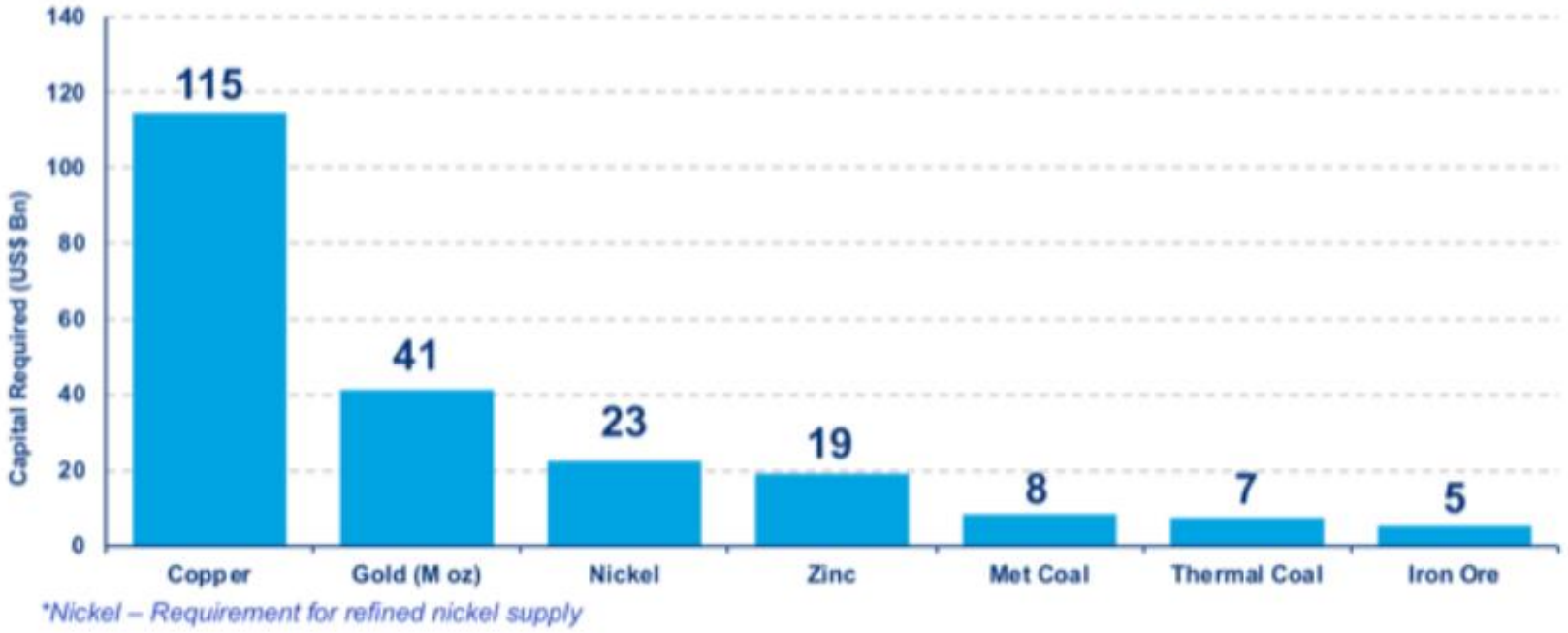
Lots of money... (and shareholder willingness)

PDAC 2019

There is a distinct lack of investment across many commodities

Industry is unable or unwilling to commit capital

Committed and still-required capital required to meet supply deficits by 2028 (US$bn)

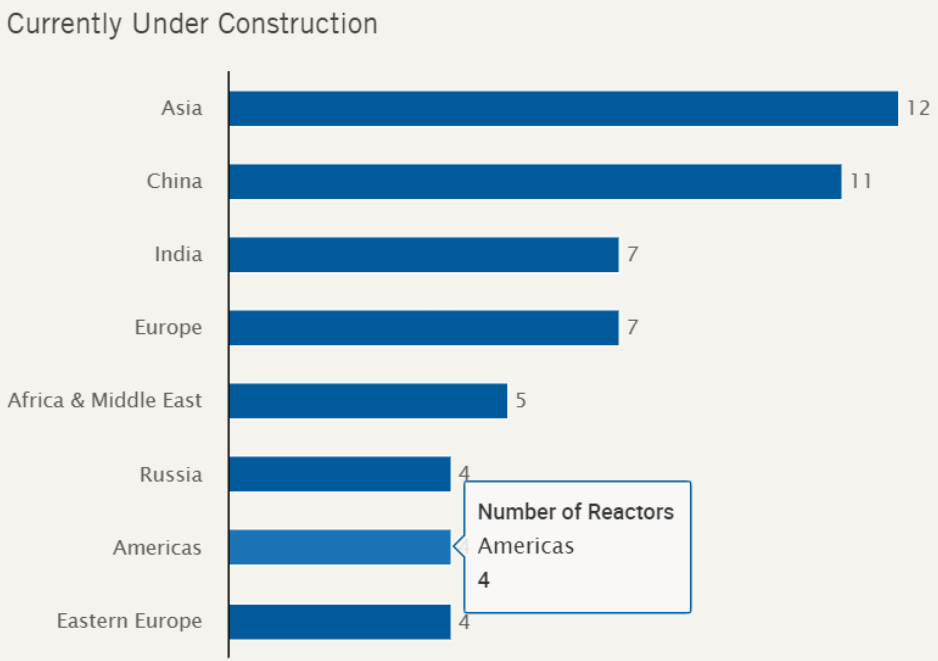


*Nickel – Requirement for refined nickel supply

Reactor growth

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.

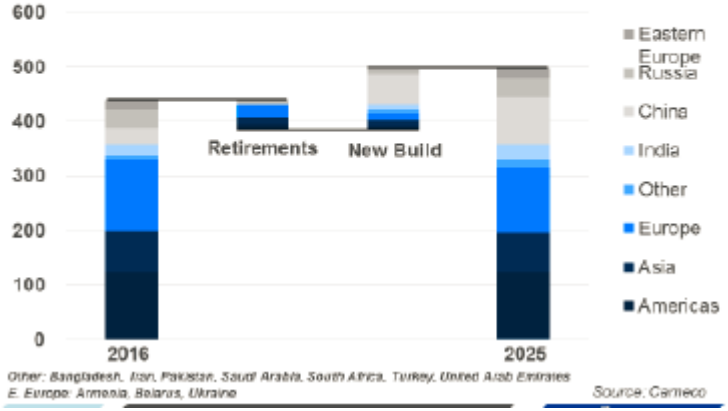


LTIF
Long Term Investment Fund

Diminishing secondary sources will lead to supply gap

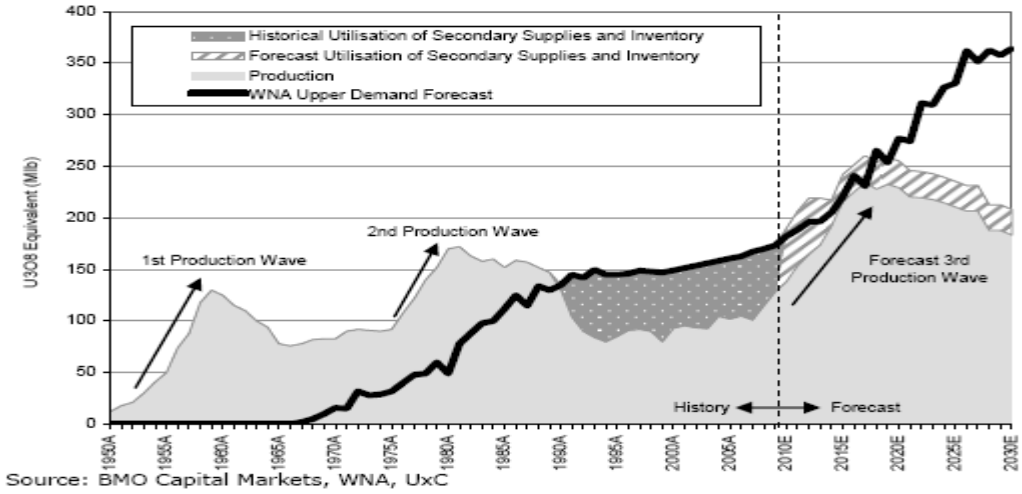
Substantial Reactor Growth

- 64 reactors under construction today
- 65% expected to come online over next 5 years



Other: Bangladesh, Iran, Pakistan, Saudi Arabia, South Africa, Turkey, United Arab Emirates
E. Europe: Armenia, Belarus, Ukraine

Source: Cameco

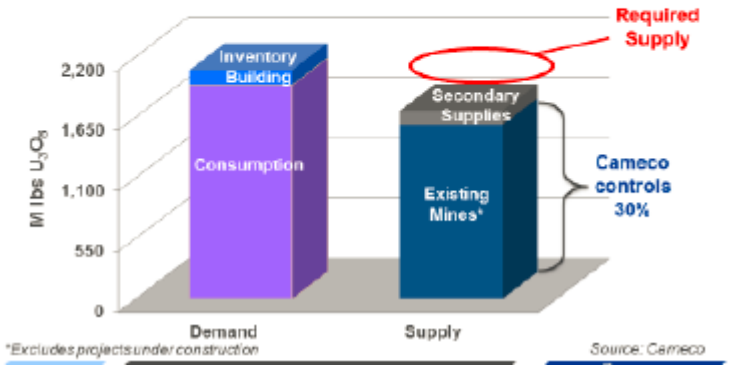


Source: BMO Capital Markets, WNA, UxC

New Uranium Supply Needed

2016 – 2025

- 10% of demand will need to be filled by new supply
- Investment in new production not occurring today

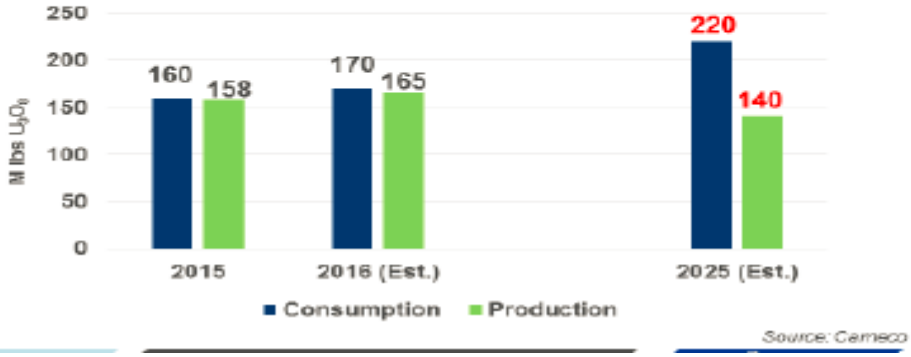


*Excludes projects under construction

Source: Cameco

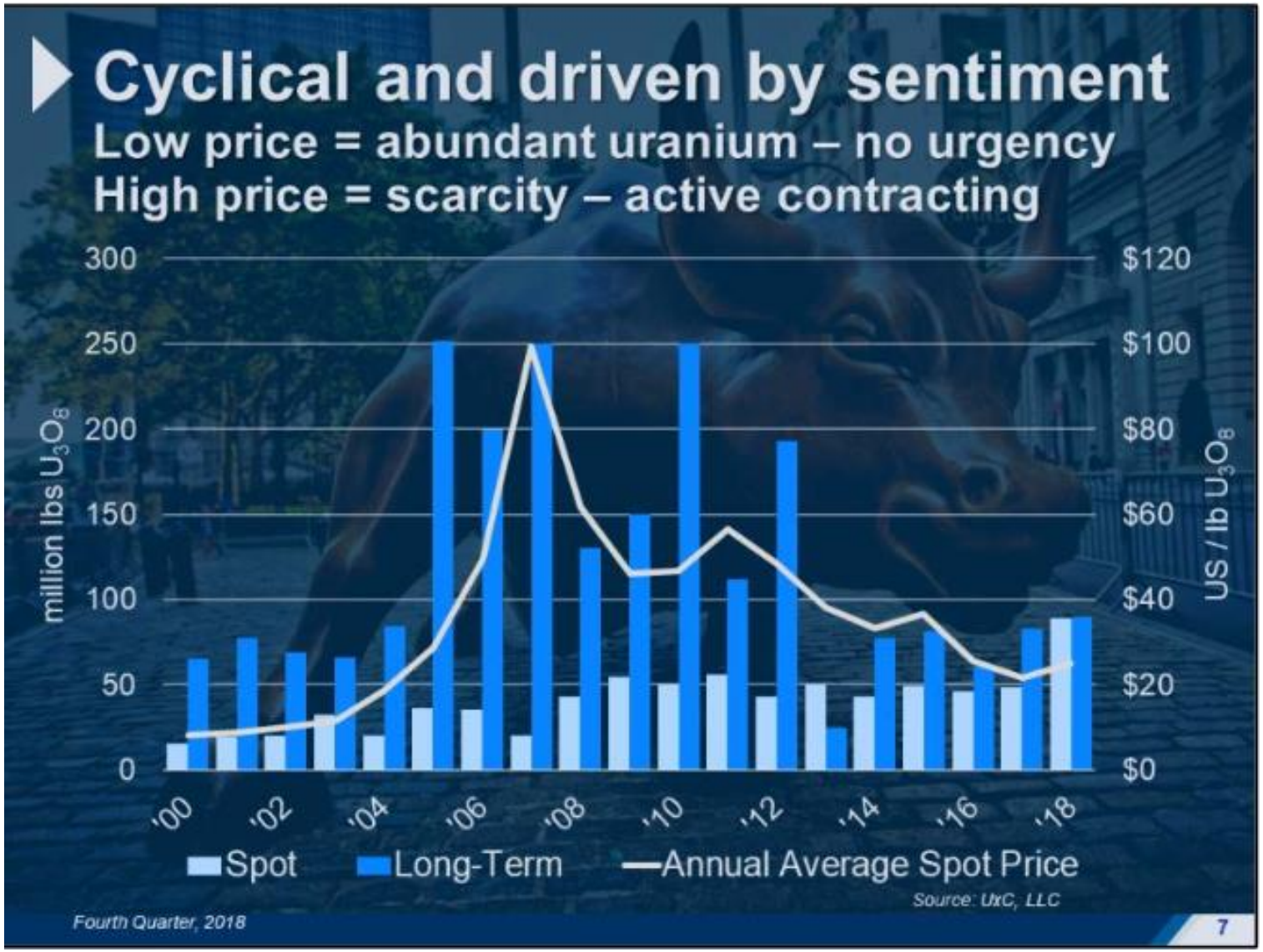
Consumption Outpaces Production

- Only 35% of U consumed over the last three years has been replaced under long-term contracting

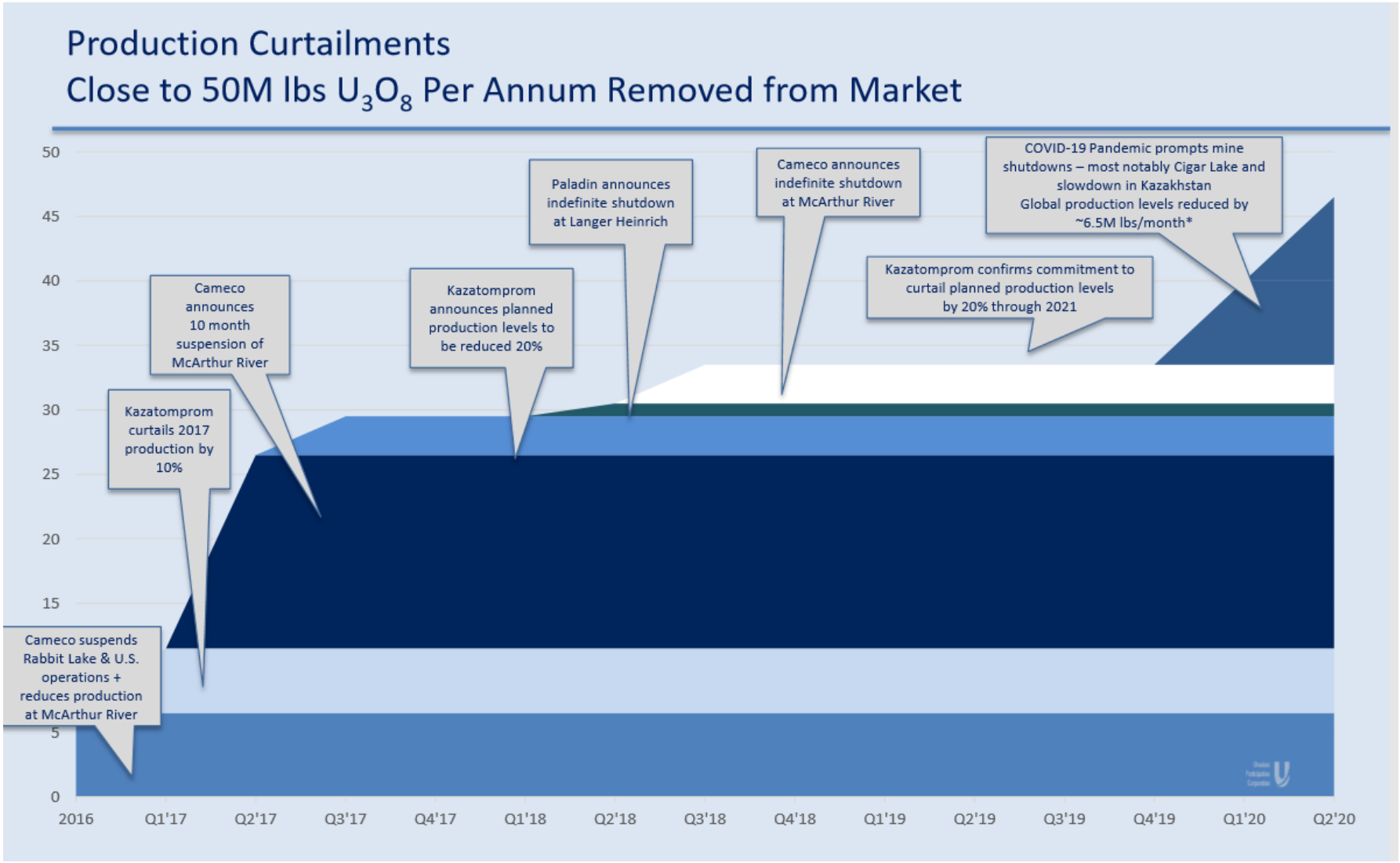


Source: Cameco

Contracting is the base for production



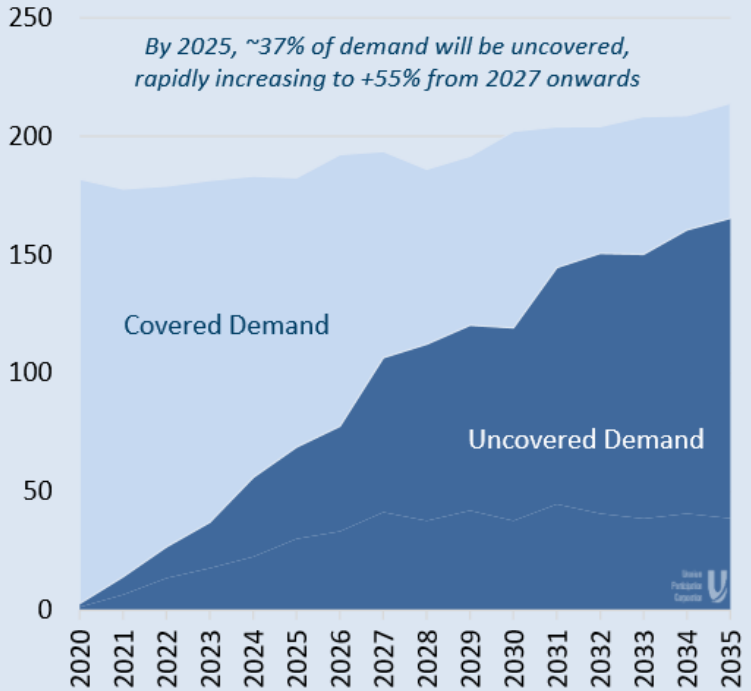
When producers become spot buyers



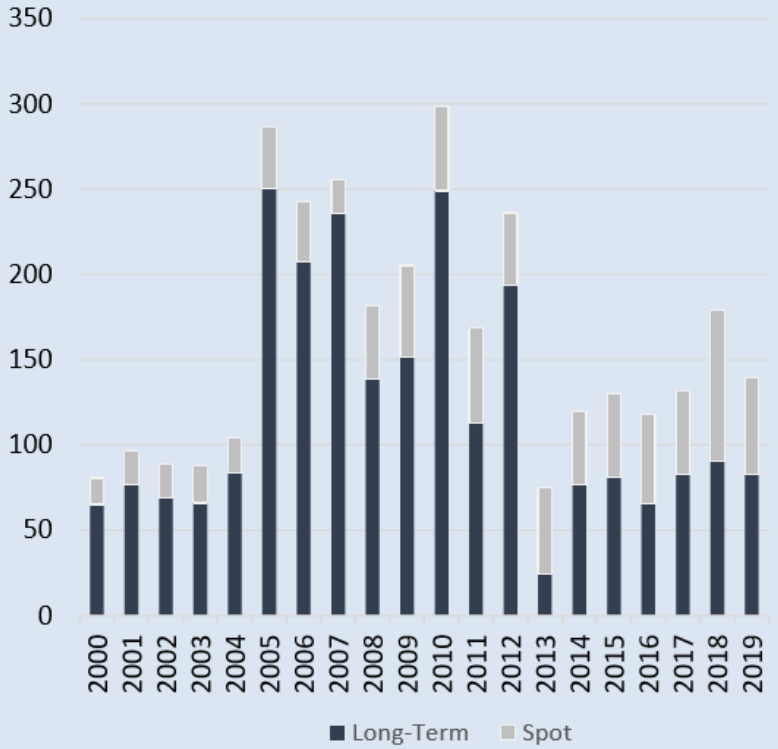
These pounds will not exist at these prices

Long-term Contract Coverage
+1.5B lbs U_3O_8 remain Uncovered Between 2020 to 2035

Utility Uranium Requirements
(million pounds U_3O_8 - per UxC Q2'20)



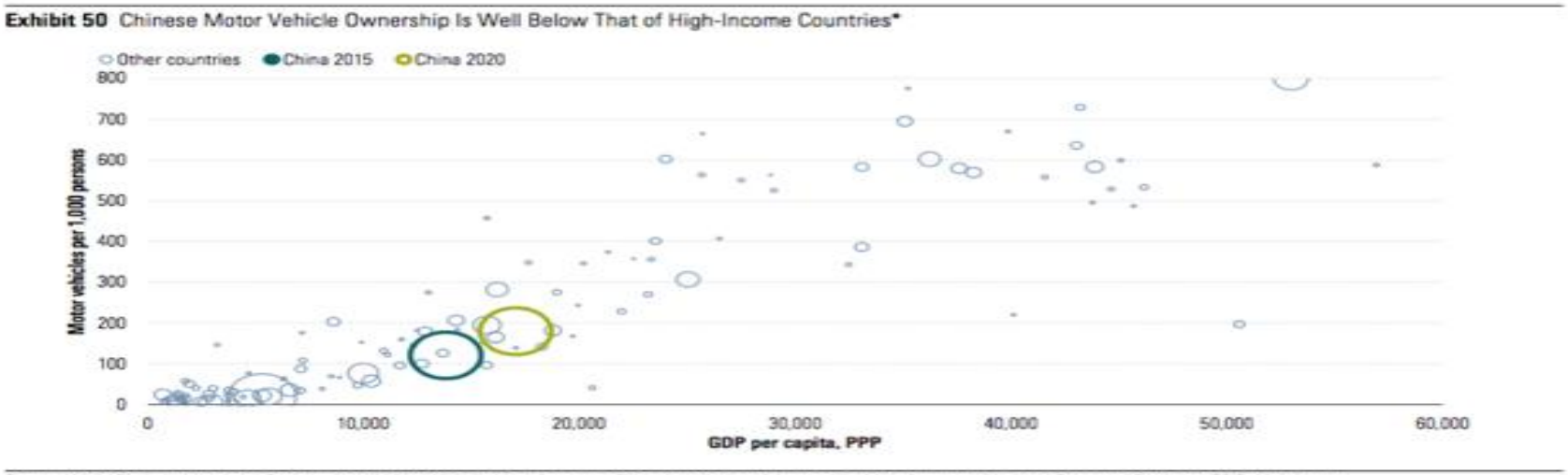
Contract Volumes – Low in Recent Years
(million pounds U_3O_8 - per UxC Q2'20)



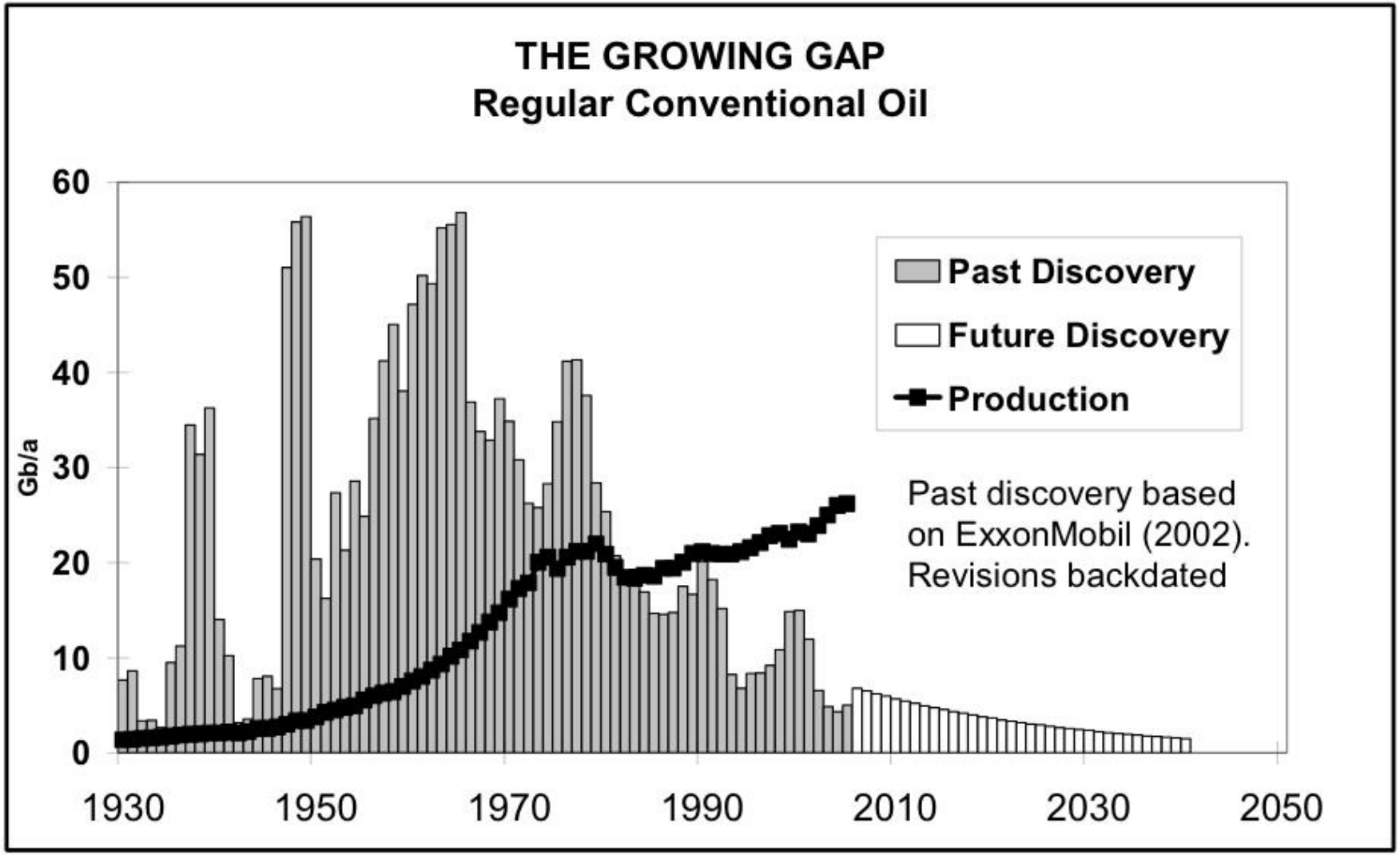
Source: UxC Uranium Market Outlook Q2 2020

Transport penetration rises

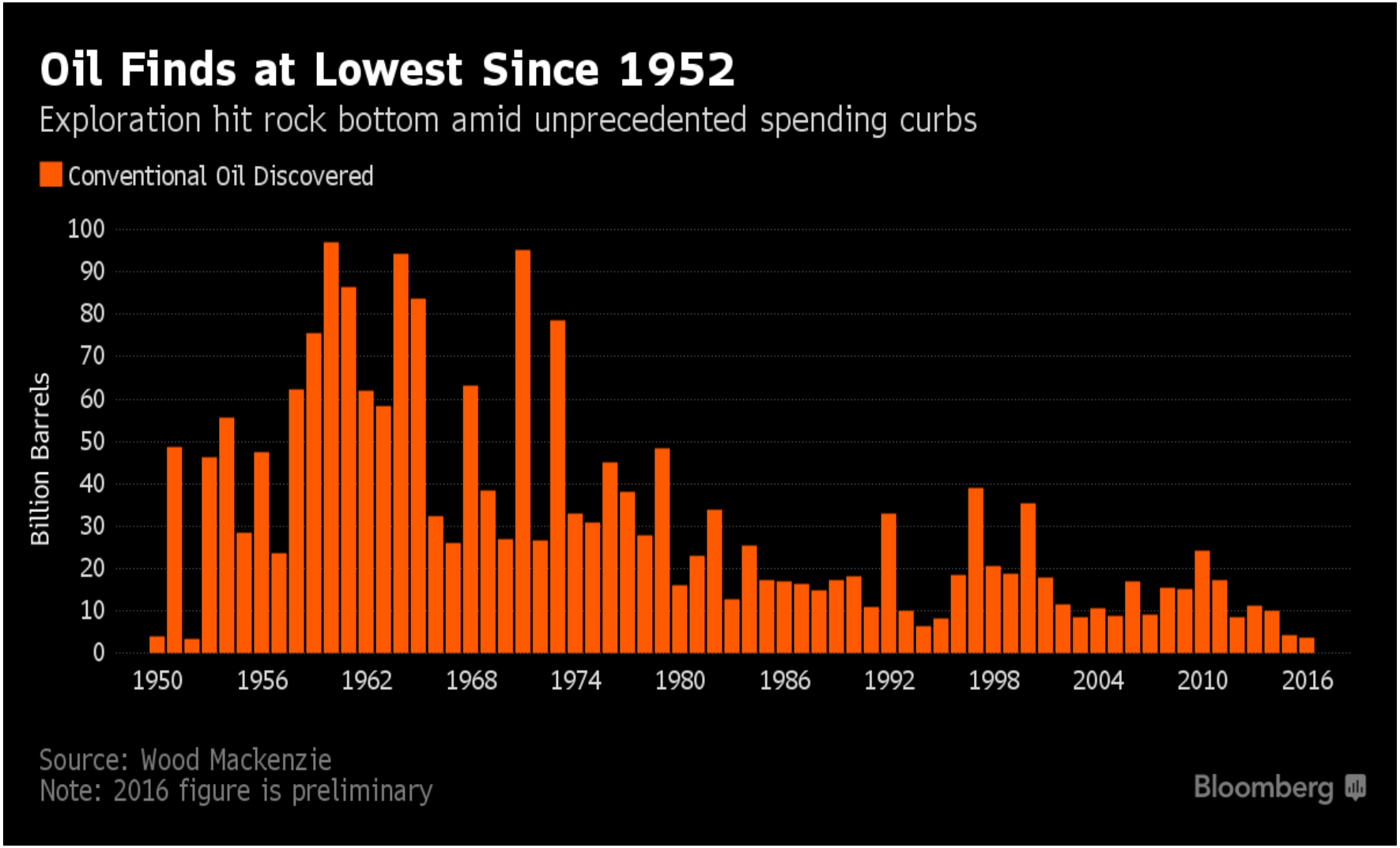
- Transport accounts for ca. 2/3 of oil products demand and transport is very much related to GDP growth. Very steady growth excluding large crisis
- China, and further down the road India, and most developing countries will continue to increase motor vehicle penetration. CHI now has around 15% penetration in motor vehicles per person vs 80%+ in most advanced economies.
- China sells a similar number of new cars than the US and growth has been monitored by the CHI authorities (licenses, pollution, …)



Unconventional is urgently needed…

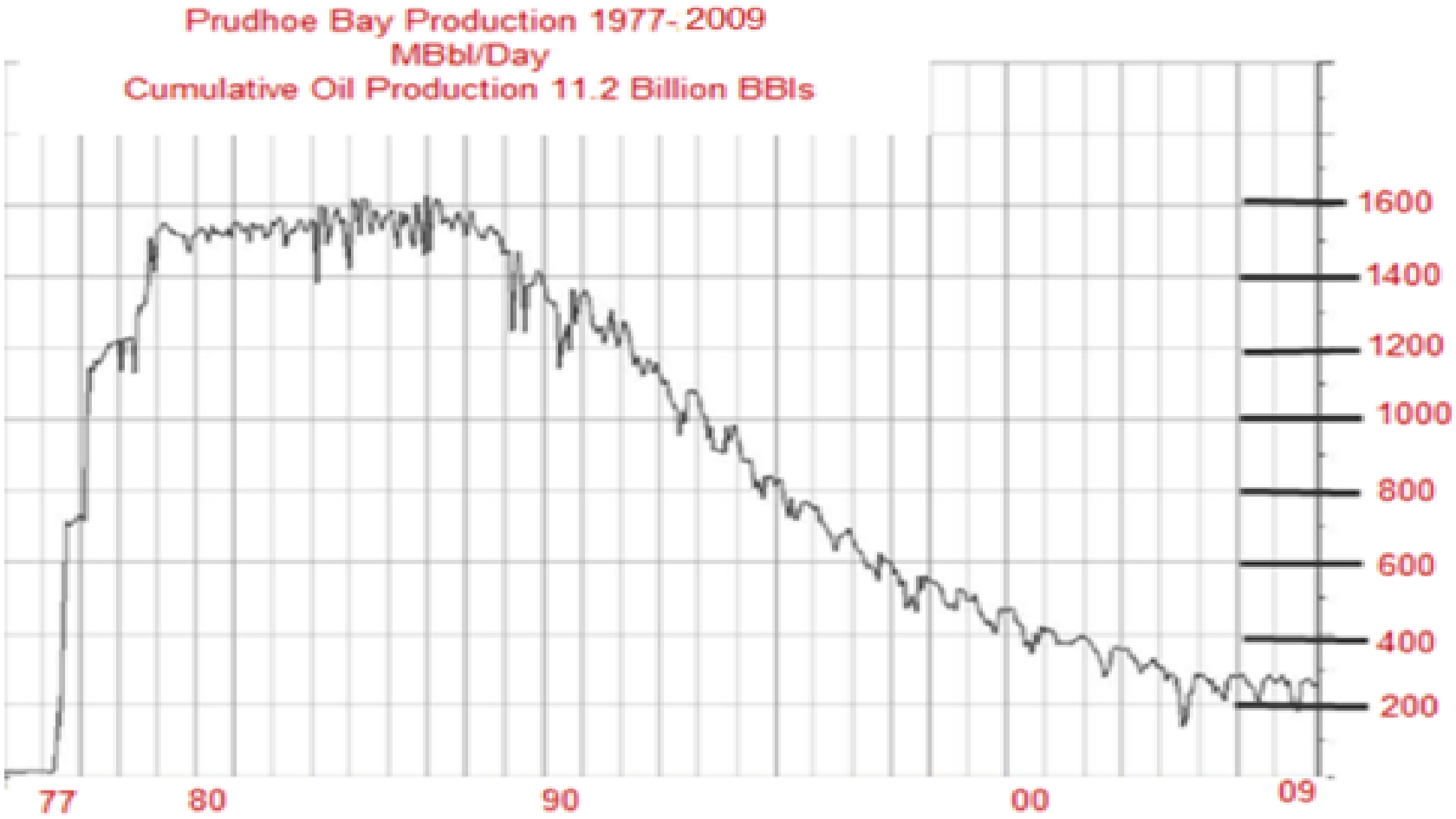


Horrible development given the explosion of cashflows and subsequent exploration spending!



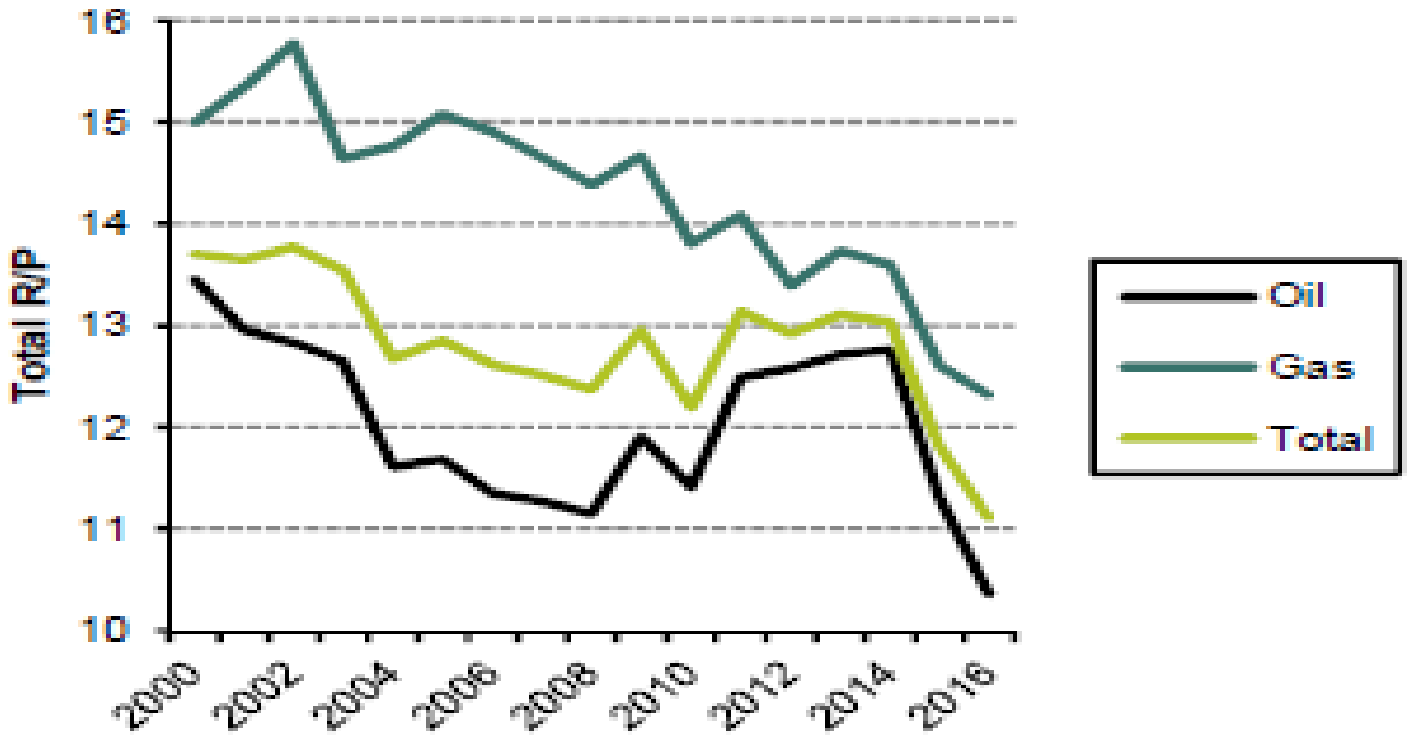
Hubbert's peak

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.



Production / reserve life lowest since 2000

EXHIBIT 2: **Reserves life of *TOP50* Companies. Oil reserves life has declined to its lowest level since 2000...**



Source: Corporate Reports, Bernstein Analysis

LTIF
Long Term Investment Fund

Opec quotas get allocated in relation to reserves and population...!!

Year	Abu Dhabi	Dubai	Iran	Iraq	Kuwait	Neutral Zone	Saudi Arabia	Venezuela
1980	28.0	1.4	58.0	31.0	65.4	6.1	163.4	17.9
1981	29.0	1.4	57.5	30.0	65.9	6.0	165.0	18.0
1982	30.6	1.3	57.0	29.7	64.5	5.9	164.6	20.3
1983	30.5	1.4	55.3	41.0	64.2	5.7	162.4	21.5
1984	30.4	1.4	51.0	43.0	63.9	5.6	166.0	24.9
1985	30.5	1.4	48.5	44.5	90.0	5.4	169.0	25.9
1986	30.0	1.4	47.9	44.1	89.8	5.4	168.8	25.6
1987	31.0	1.4	48.8	47.1	91.9	5.3	166.6	25.0
1988	92.2	4.0	92.9	100.0	91.9	5.2	167.0	56.3
1989	92.2	4.0	92.9	100.0	91.9	5.2	170.0	58.1
1990	92.2	4.0	92.9	100.0	91.9	5.0	257.5	59.1
1991	92.2	4.0	92.9	100.0	94.5	5.0	257.5	59.1
1992	92.2	4.0	92.9	100.0	94.0	5.0	257.9	62.7
1993	92.2	4.0	92.9	100.0	94.0	5.0	258.7	63.3
1994	92.2	4.3	89.3	100.0	94.0	5.0	258.7	64.5
1995	92.2	4.3	88.2	100.0	94.0	5.0	258.7	64.9
1996	92.2	4.0	93.0	112.0	94.0	5.0	259.0	64.9
1997	92.2	4.0	93.0	112.5	94.0	5.0	259.0	71.7
1998	92.2	4.0	89.7	112.5	94.0	5.0	259.0	72.6
1999	92.2	4.0	89.7	112.5	94.0	5.0	261.0	72.6

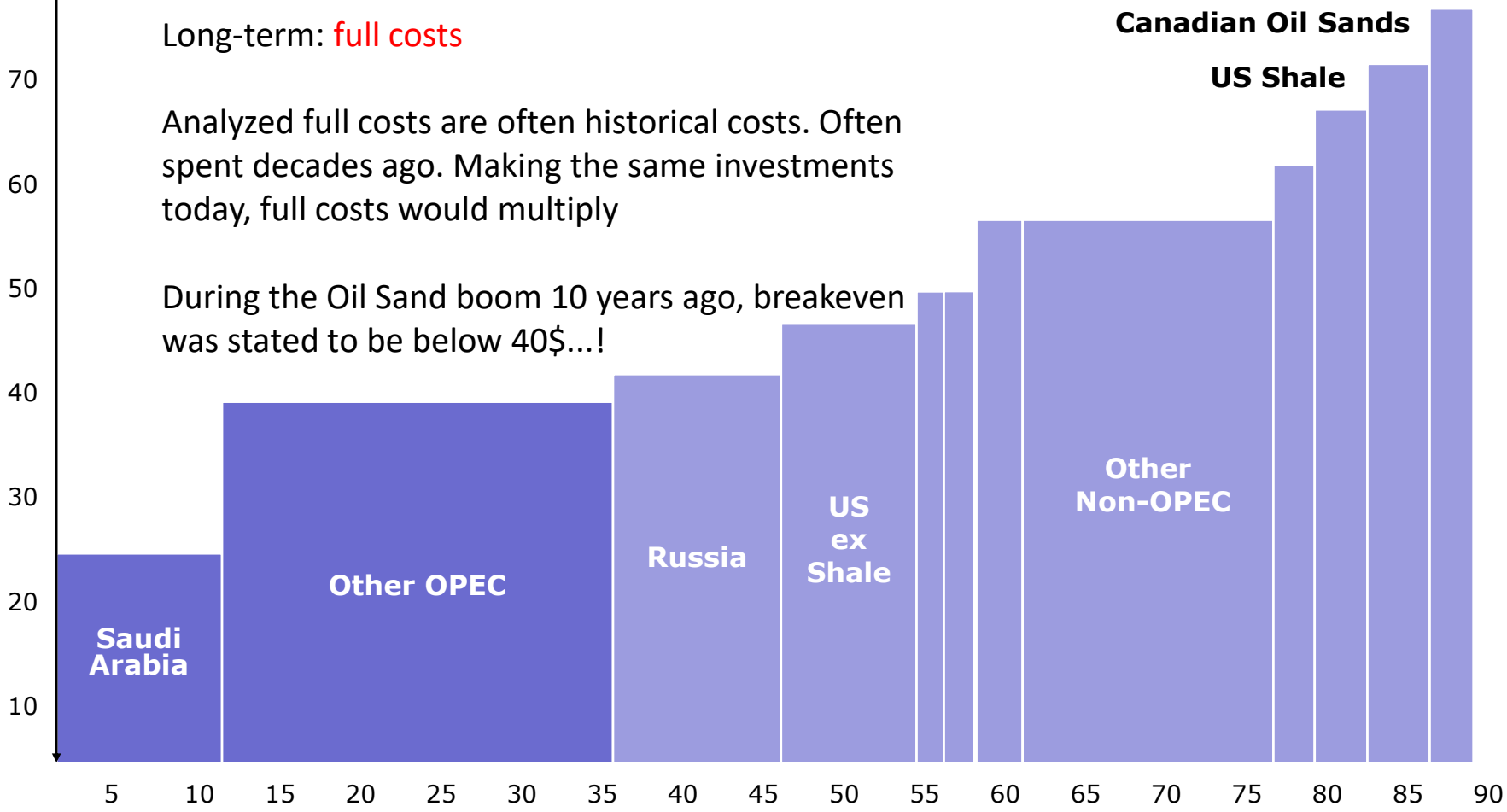
Mother nature determines costs

Short-term: variable (lifting) costs against net-back. Current lift costs go from $15 to > $30

Long-term: full costs

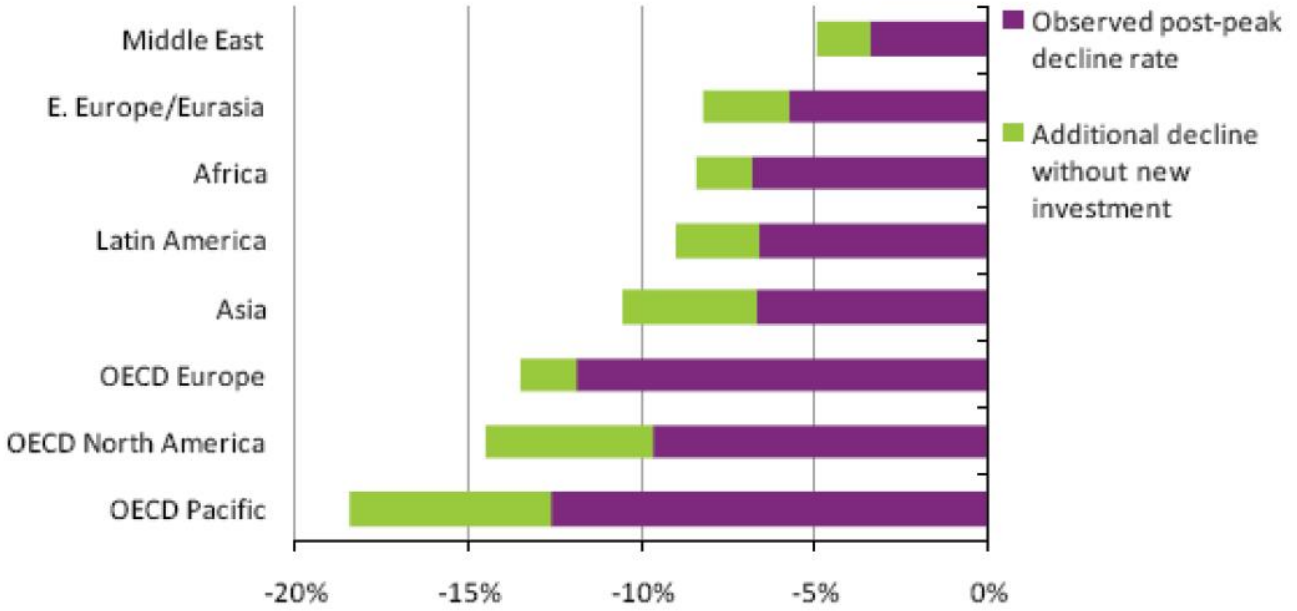
Analyzed full costs are often historical costs. Often spent decades ago. Making the same investments today, full costs would multiply

During the Oil Sand boom 10 years ago, breakeven was stated to be below 40$...!



The clock is ticking… depletion is kicking

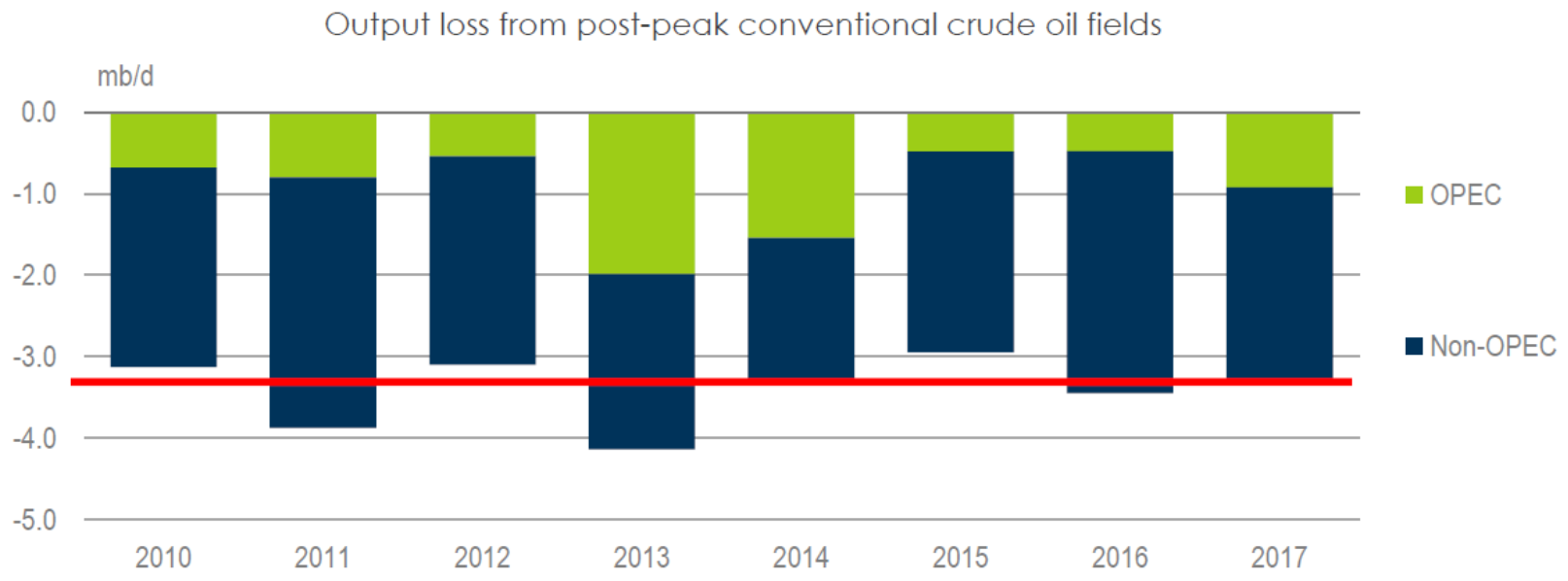
- **Global depletion is around 3-4% per year** and IEA forecasts increased depletion for the next years
- Global depletion is accelerating due to reduced capex globally and tight formations
- **Shale oil depletion is much higher**



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).

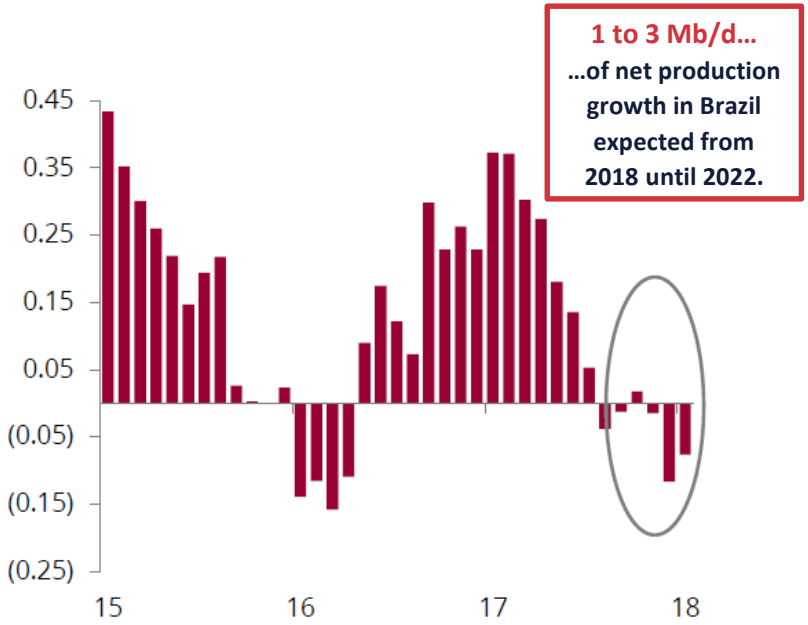
Every 3rd year a new Saudi is needed

Worldwide Base Decline from Ageing Oil Fields (in Mb/d)



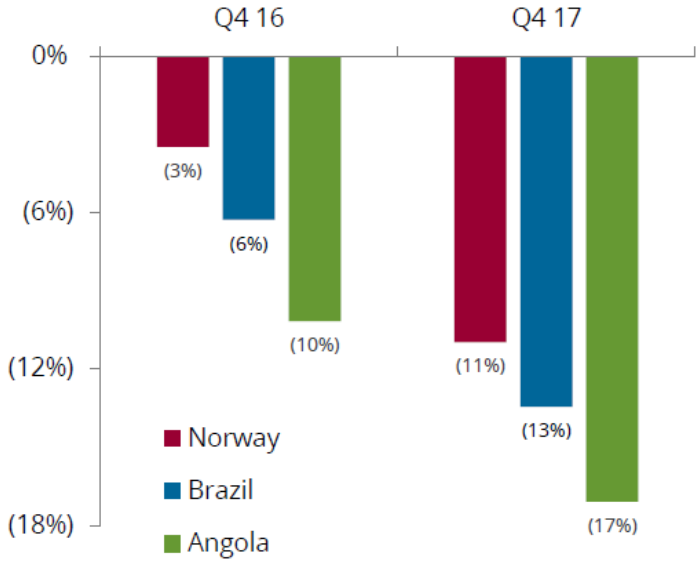
Decline rates are rising

Brazilian liquids production (y/y change, Mb/d)



Brazilian crude production has underperformed relative to expectations amid high declines in the Campos

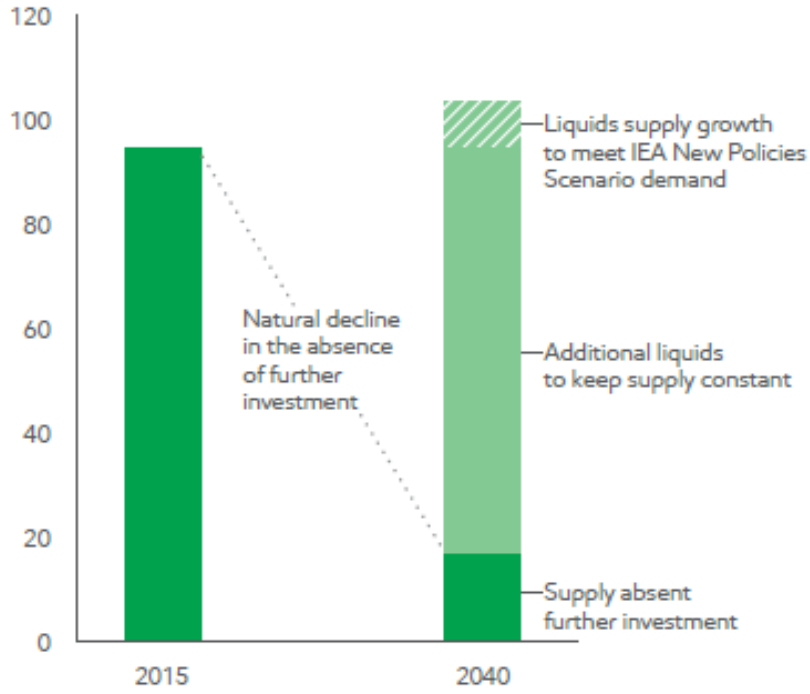
Selected base decline rate (Q4, in %)



Rising base decline rate for conventional liquids production was clearly visible across Q4 17

Structural need for higher prices to incentivize capex

Liquids demand & supply (Mb/d)

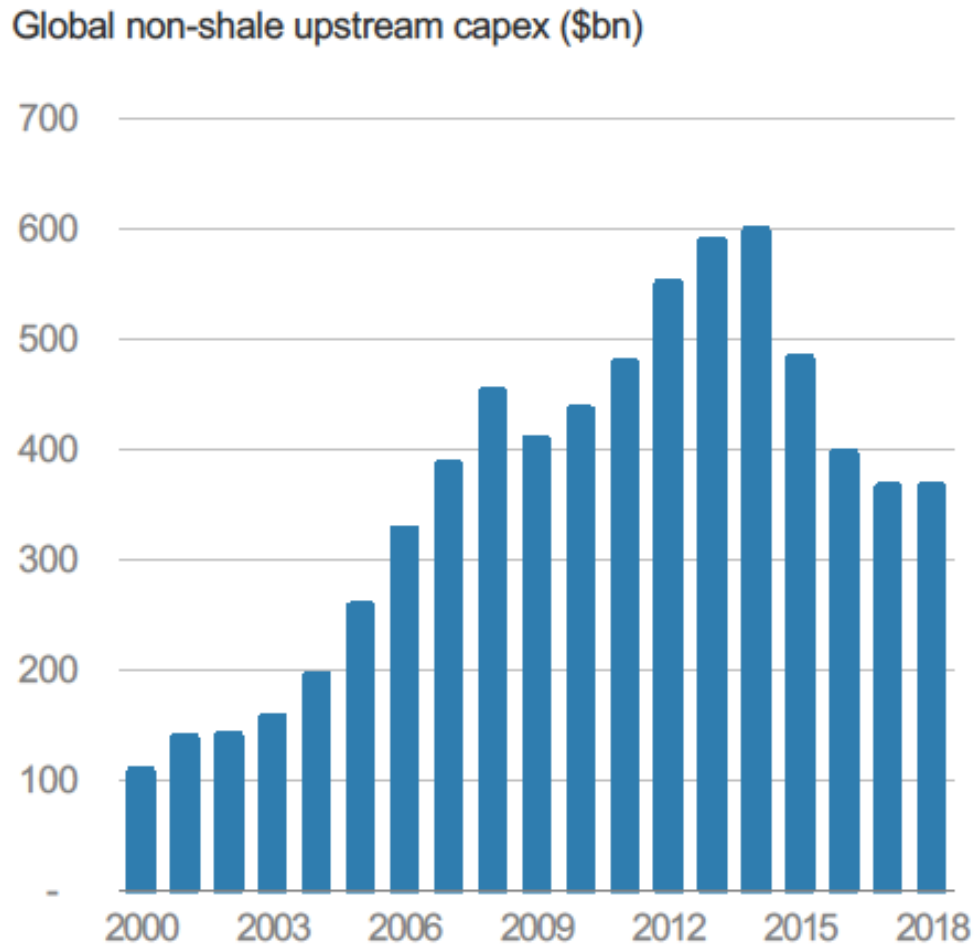


Exxon Mobil, March 2018

- Upward of US$450 billion a year of upstream oil investment is needed to meet demand;
- Without further investment, liquids supply would decline steeply;
- Over 80% of new liquids supply needed to offset natural decline;

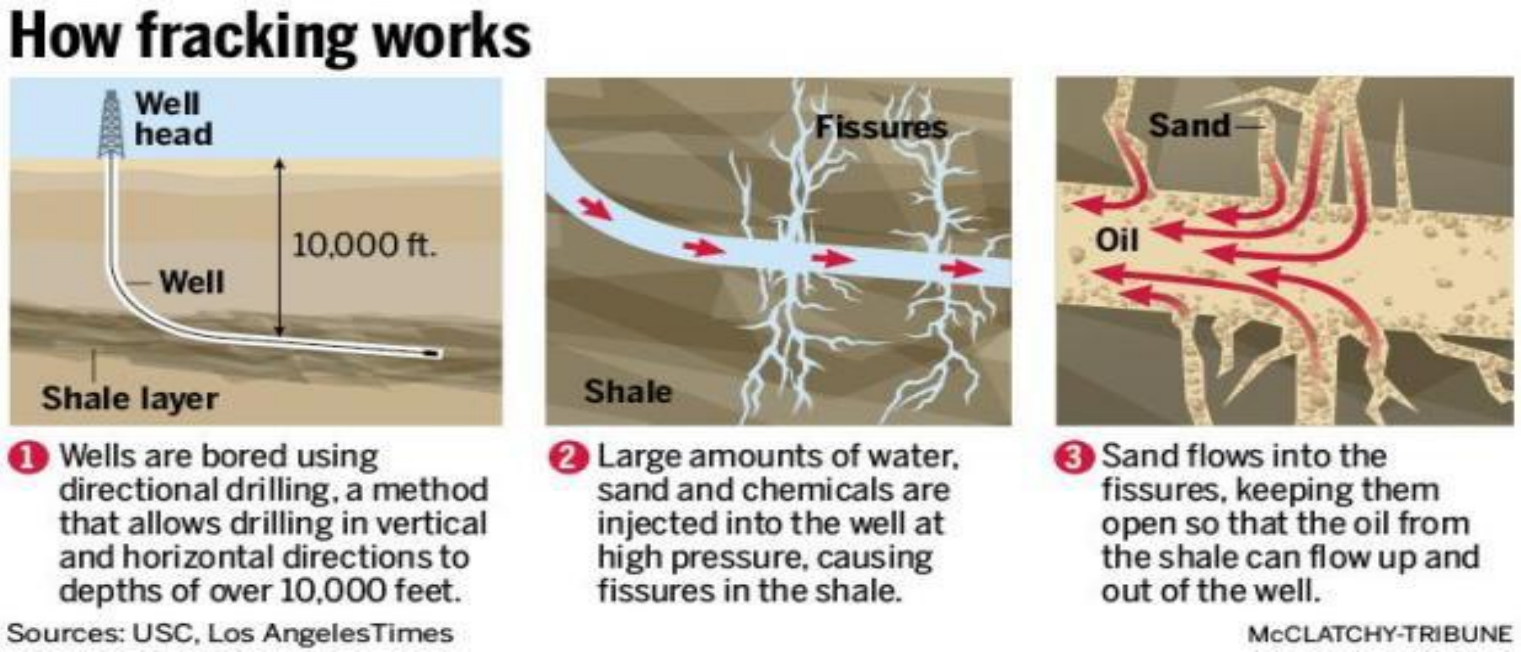
51 Mb/d
of global supply is assumed to be in decline by the IEA in 2017!

Deep capex cuts are a real problem



Source: Rystad Energy, Morgan Stanley Research

Shale oil, old technology, revolution



- **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**

The "MotherFrackers" depletion

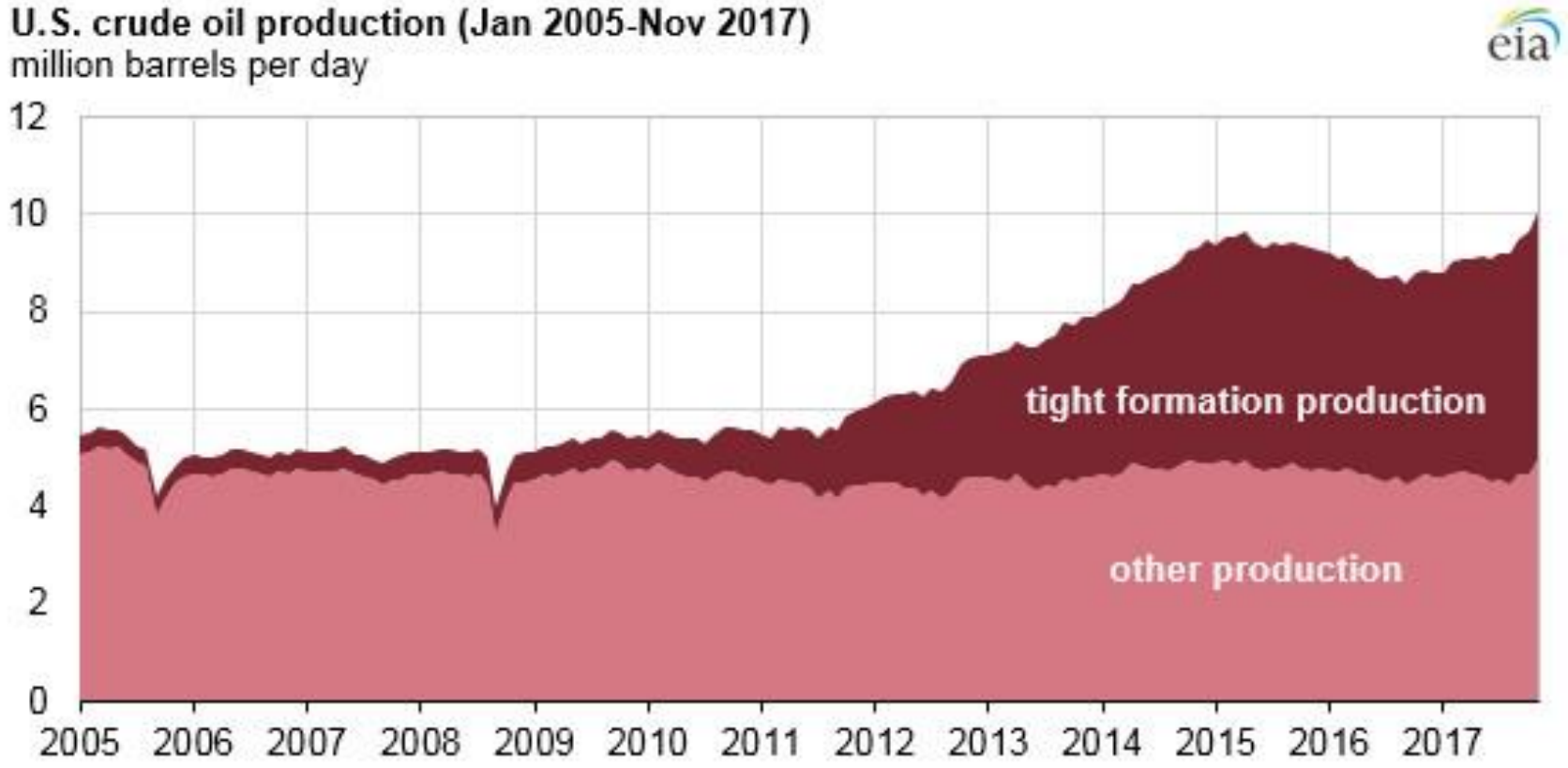
- US shale depletion is 65% year 1, 50% year 2 and 30% year 3. How do we make numbers when your facilities must be 66% amortized by year 3? Nobody cares
- Global depletion is accelerating due to reduced capex globally and tight formations
- We encourage you to take a look at an excellent presentation 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

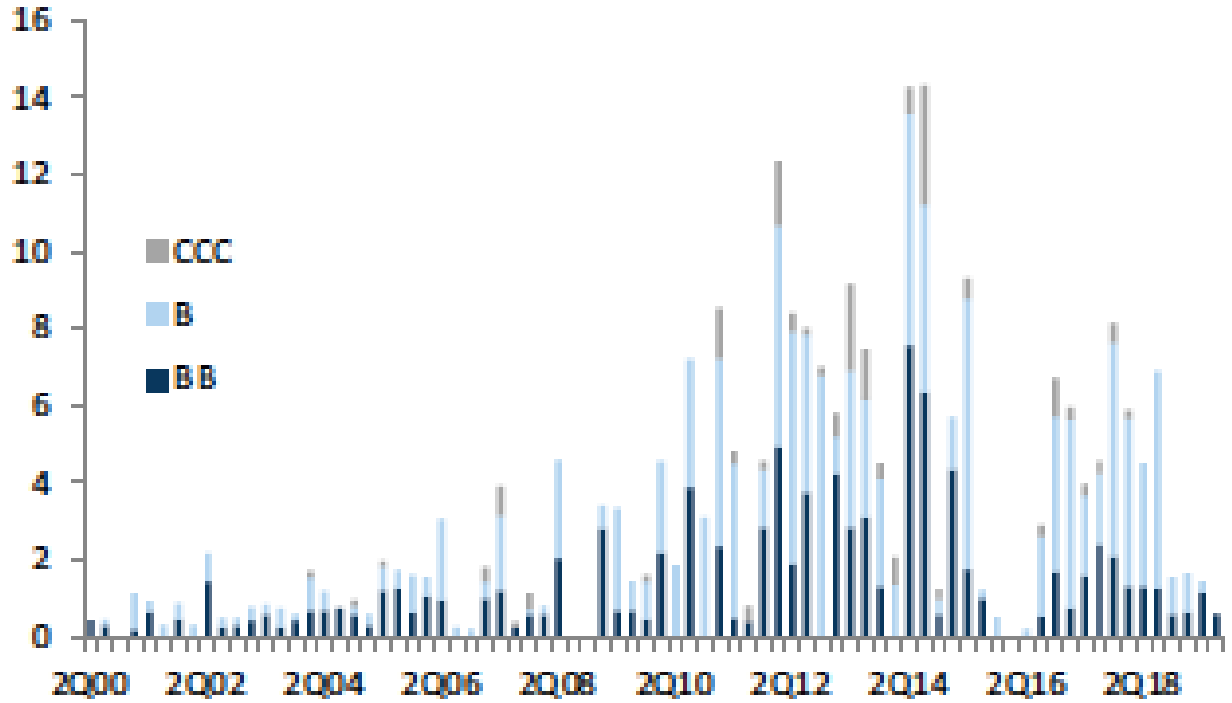
Is it about oil price, geology, technology or cheap money????



Debt market is closed now

Exhibit 15: The 2017-18 growth was fueled by high-yield debt, which has tightened since Q4 2018...

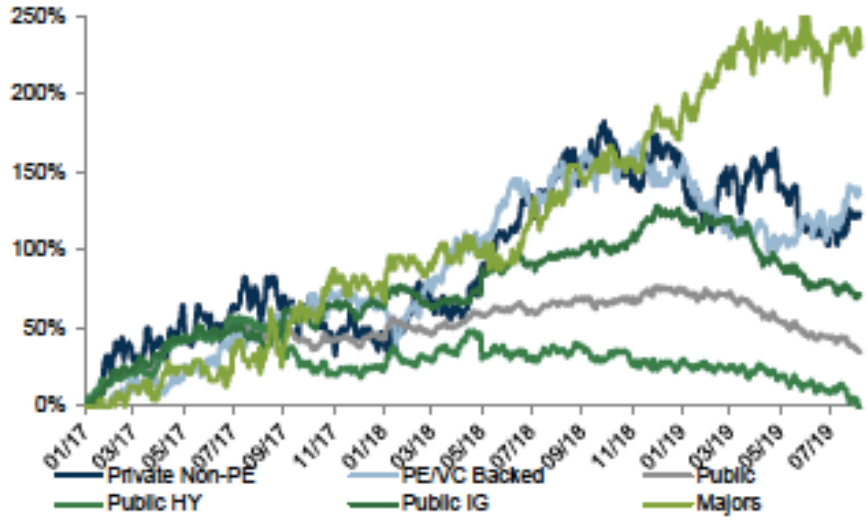
Quarterly HY US E&P debt issuance per quarter by credit rating



Source: Goldman Sachs Global Investment Research, Bloomberg, Dealogic

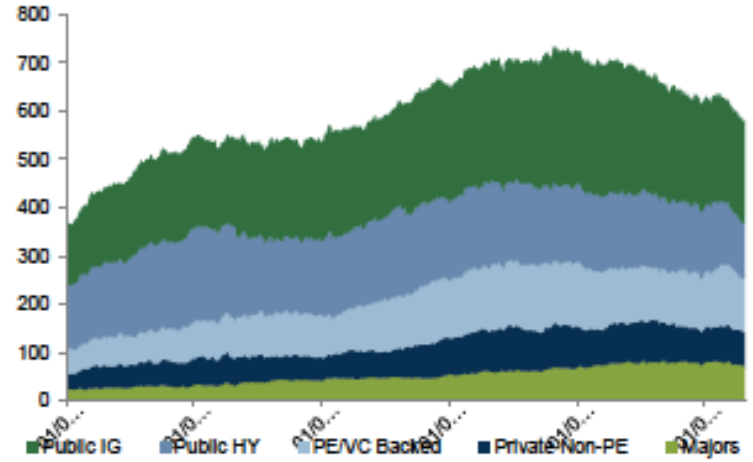
So drilling goes down

Exhibit 22: Since end 2018, rig activity is down 19% - even as the majors grow
% increase since 2017 in US horizontal oil rigs, per our Commodities team's analysis



Source: Drillinginfo, Goldman Sachs Global Investment Research

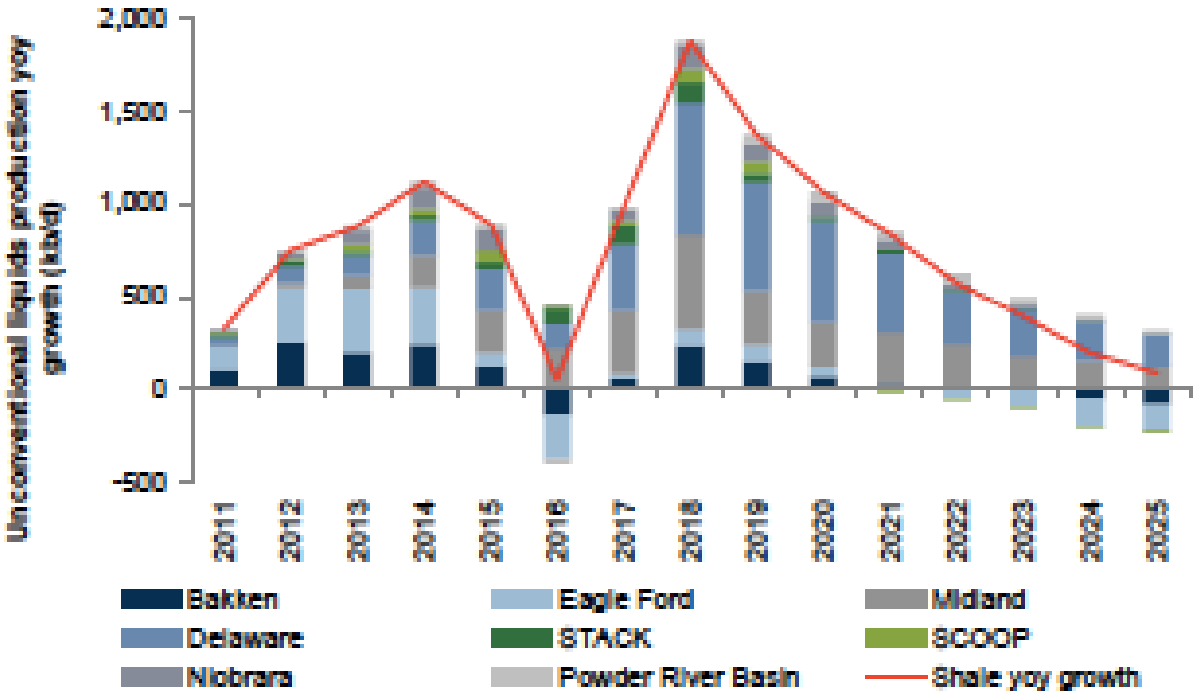
Exhibit 23: Since early 2019, we have seen a reduction in Horizontal rig count, which appears to be accelerating through H2
Oil horizontal rig count, per our Commodities team's analysis



Source: RigData, Goldman Sachs Global Investment Research

So will production (growth)

Exhibit 13: We expect net shale growth to slow rapidly from the 2018 peak growth level
Unconventional liquid production growth year on year in kb/d



Source: Goldman Sachs Global Investment Research

Collapsing capex/investment will have an effect…

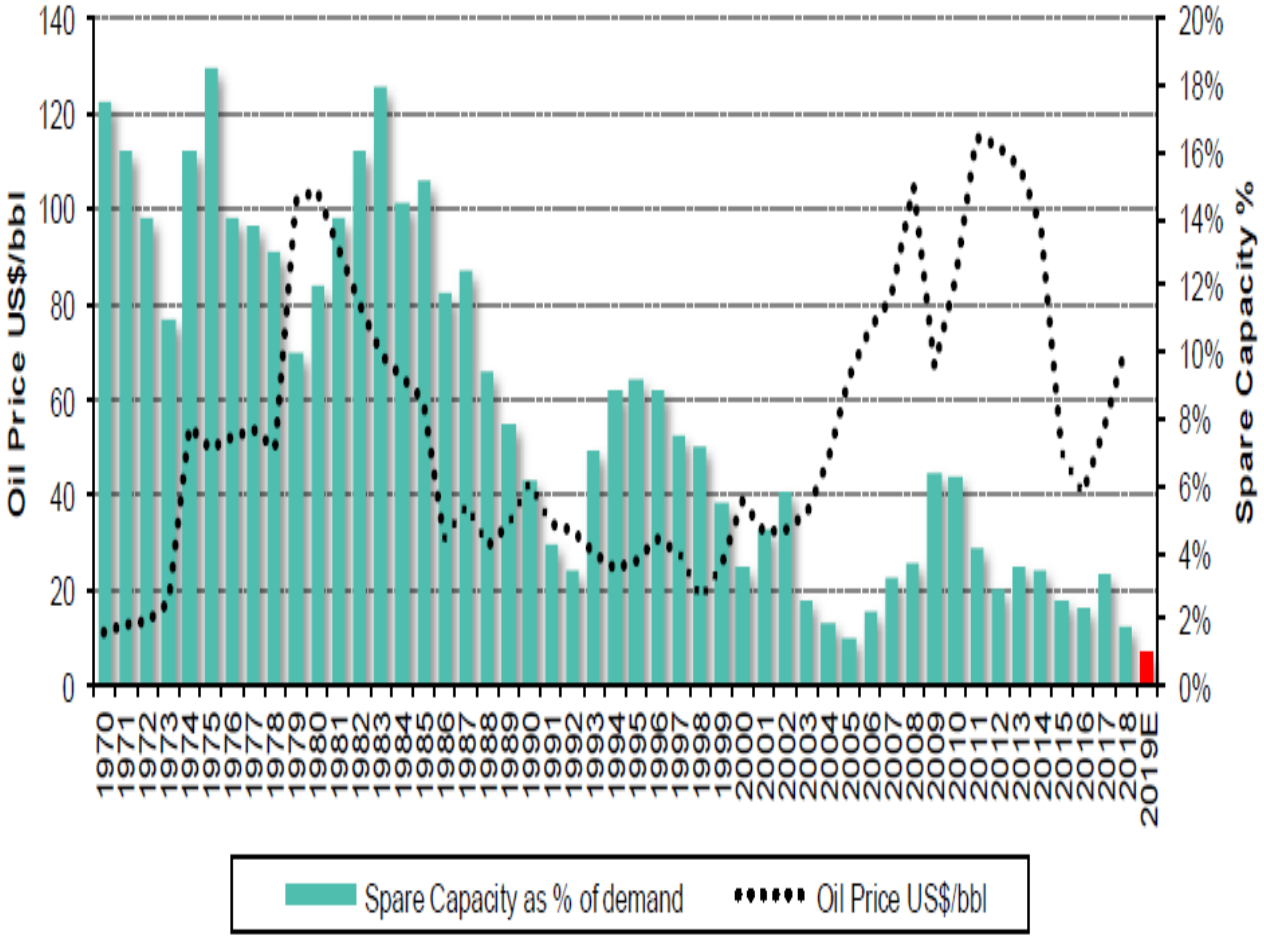
- The supply of oil from existing fields declines on an average of 5-7% per year
- The largest onshore oil fields decline at a slower rate
- Deepwater offshore fields decline 2+ times faster than onshore fields
- The latest onshore tight oil fields in North America show annual decline rates greater than 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

Source: IHS, Deloitte & Touch, USGS databases, IEA, other industry sources

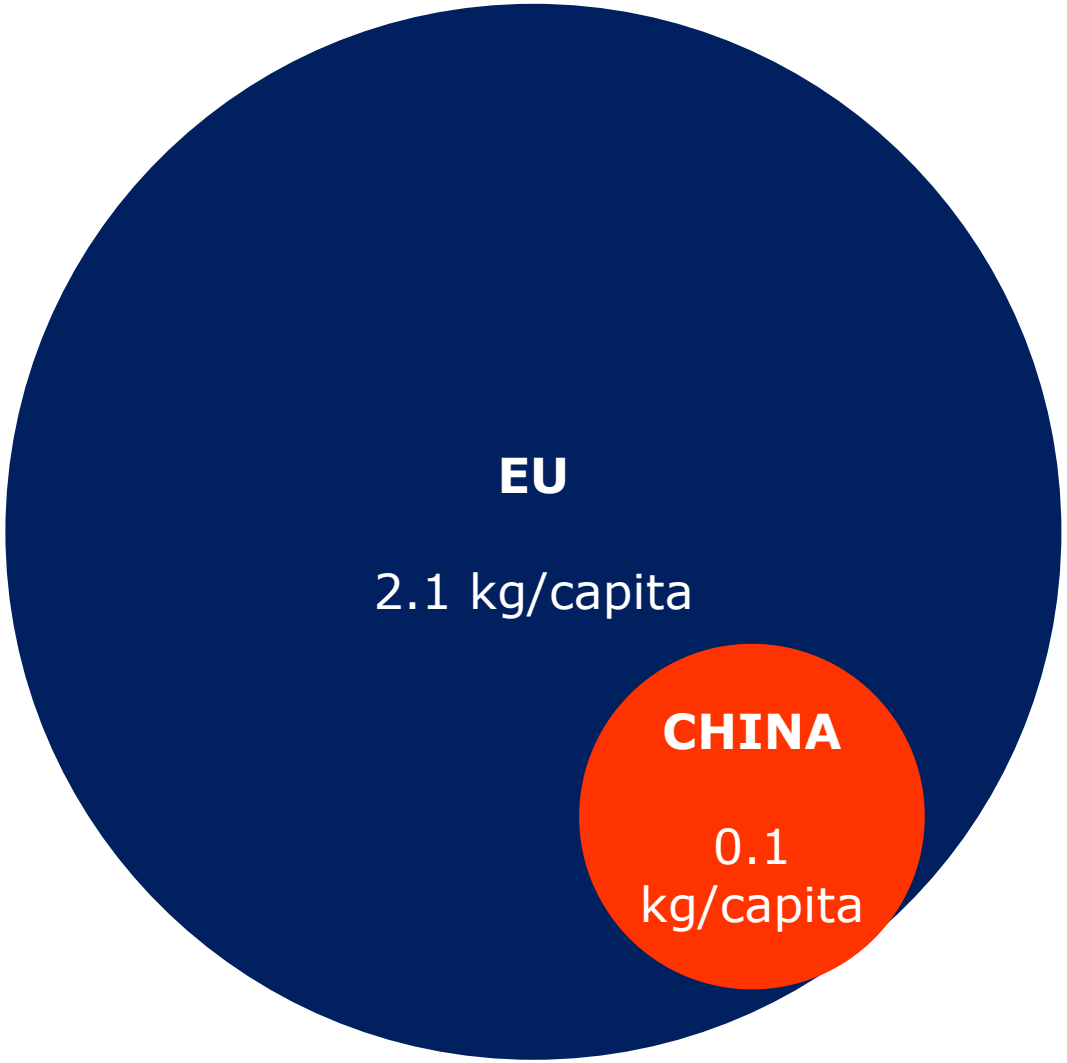
The clock is ticking… current spare capacity is all time low

- Most in Saudi Arabia
- 2% of global capacity were the levels reached in 2005, before prices shoot up
- 4-5% needed to protect the market from disruptions
- It is not an exact science. Back looking and depending on what governments say. It might not be available. Mainentance, Libya, Iran, etc.
- There is a risk of oil prices overshooting

EXHIBIT 3: **OPEC spare capacity has been in secular decline since the 1980's. It has now dropped below 2% and could drop below 1% next year on Iran**



Salmon consumption per capita in EU and China



Limited supply growth

Farmed salmon is mainly produced in Norway and Chile, accounting for 75% of the total… the rest in the UK, Faroe Islands, North America, New Zealand and Tasmania

Natural Conditions

Sea Water, protected location, fjords
Sea currents
Defined temperature (8-14 degrees Celsius)

Industrial Conditions

Concentrated industry
Sanitary regulation
Logistics

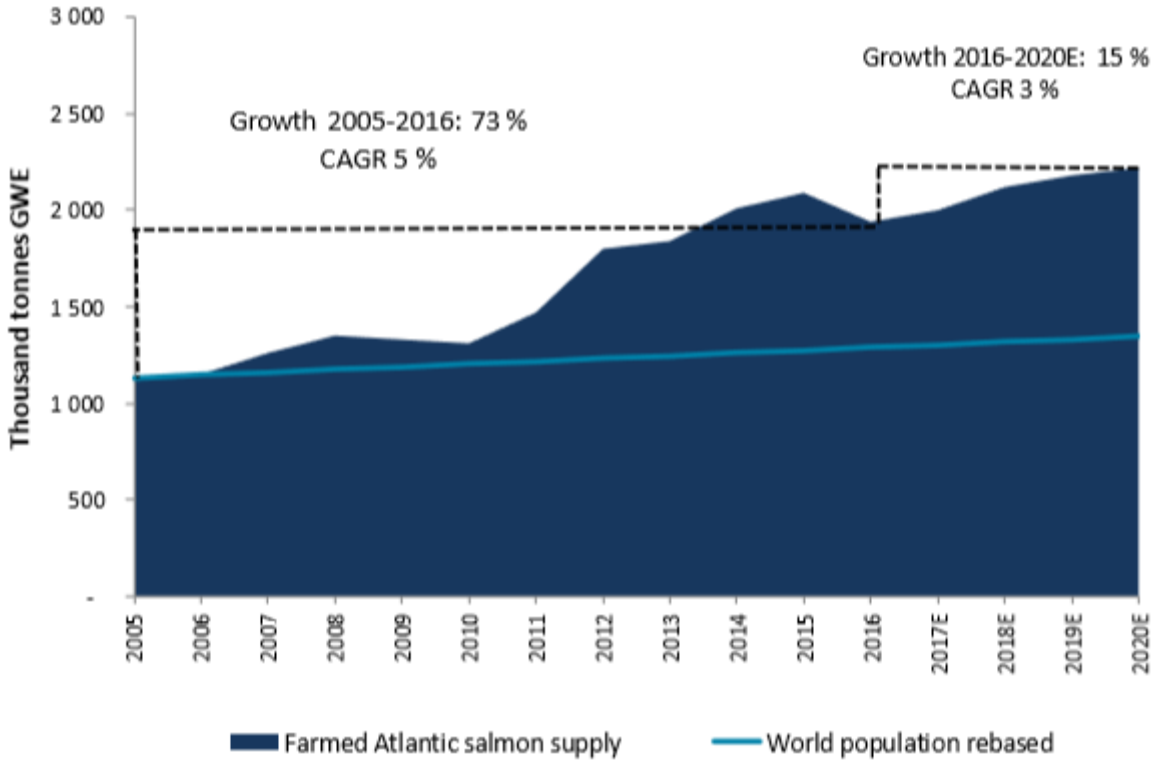
Geographical limits

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

LTIF
Long Term Investment Fund

Salmon farming needs protected fjords

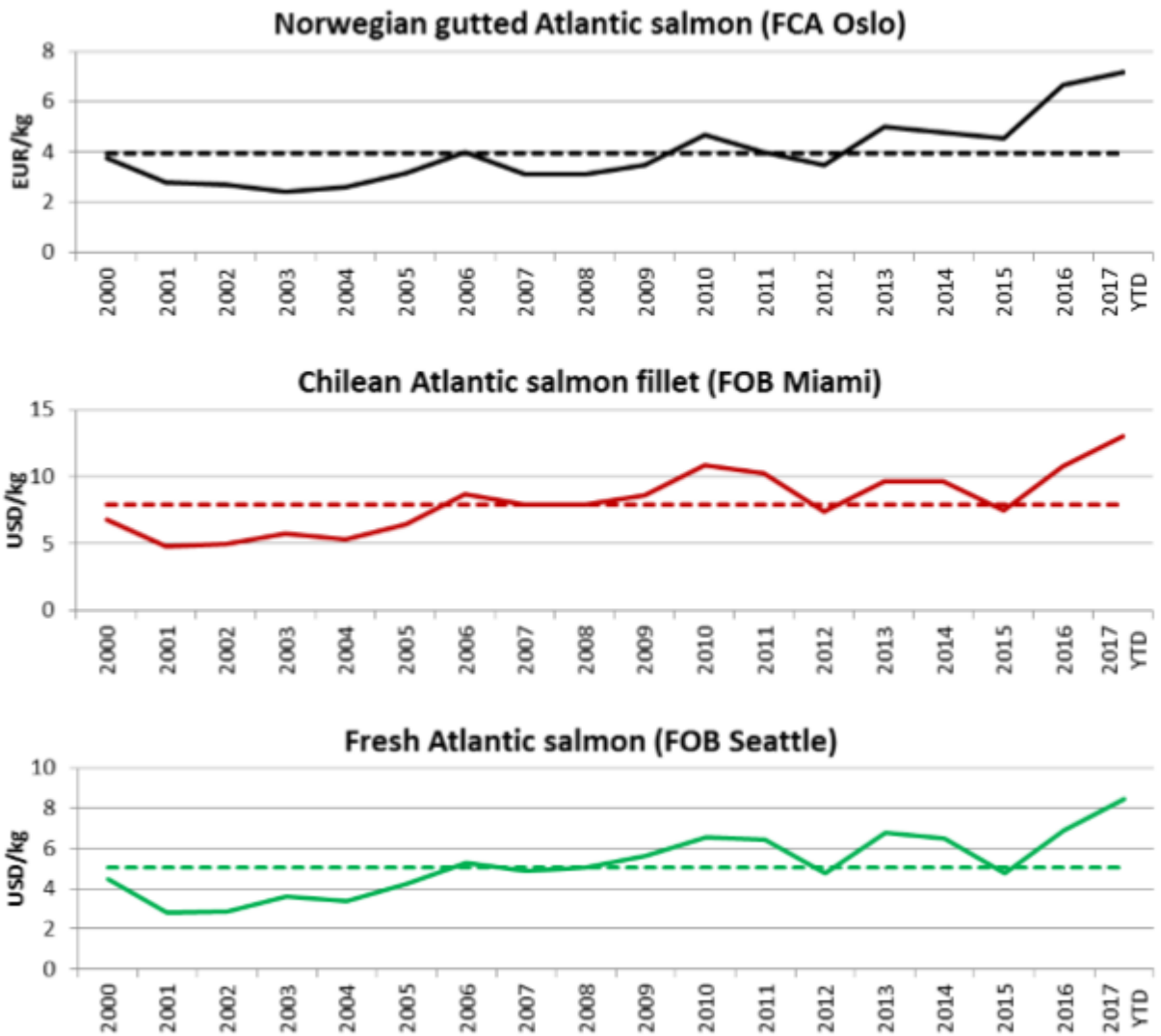
2018-2020 limited supply growth



Supply Growth: CAGR(e) of 3% next few years

Structural undersupply & higher prices

- The sector struggles to grow supply & demand is very strong
- Higher prices will balance supply and demand
- High prices are here to stay, unless some tech revolution



Main risks? Technology

Expensive

Ocean farms

On shore farming

Genetics

Slow

But still cheap

- **PER (2019) between 9x-14x**
- Bakkafrost 14x MHG-Mowi 12x Leroy 11x NRS 10x Grieg 9x

- **Dividend Yield(s) 4-6%**
- Bakkafrost 4% Mowi 6% Leroy 4% NRS 6% Grieg 5%

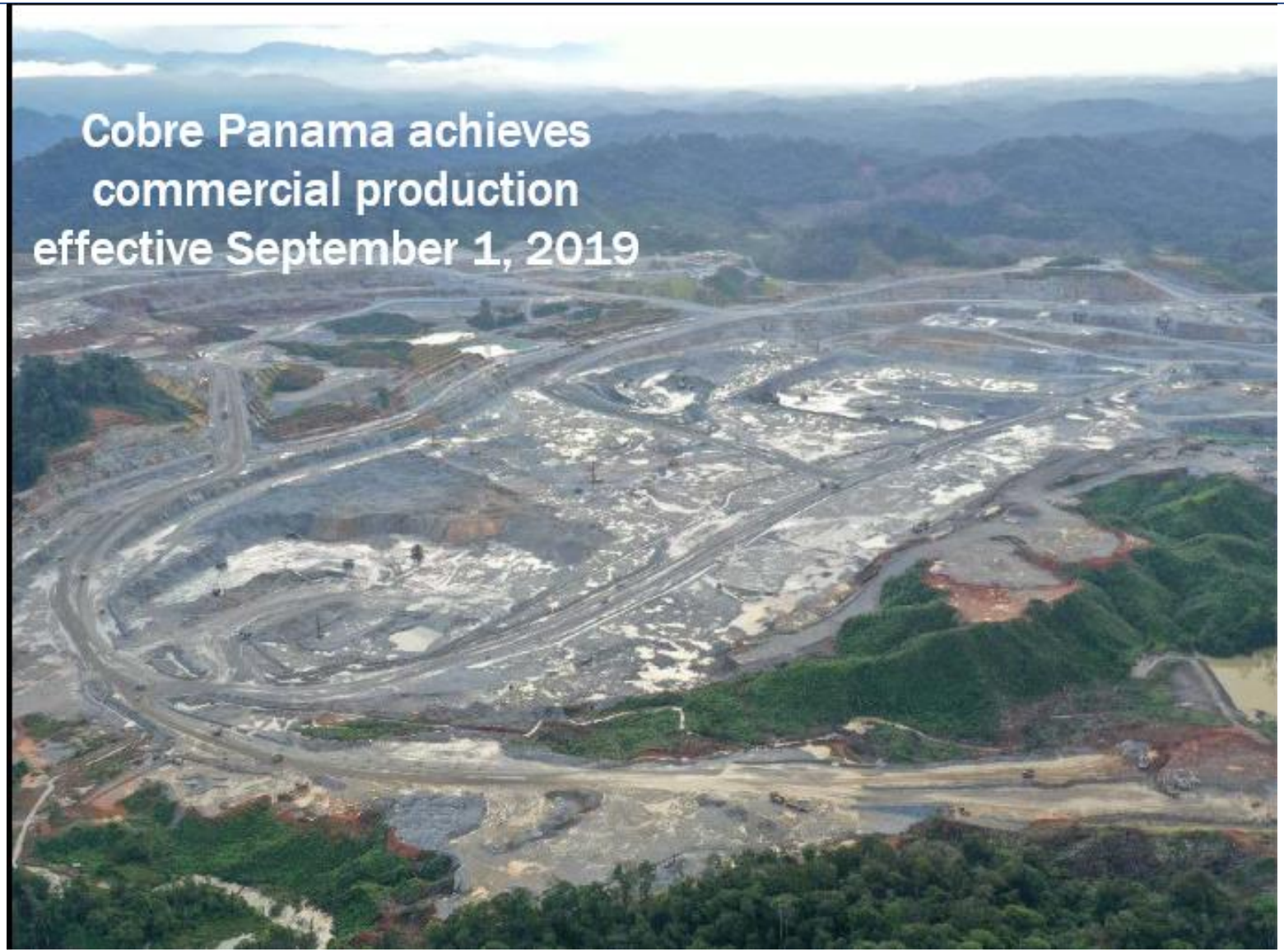
- **IRR's: 12-14%**
- Between 12-14% IRRs at normalised prices and returns

Should you be the owner of one of these fish farms, would you sell it at a PER of 12x?

Company search

- Sectors that are in the right capex/supply cycle
- Cure for low prices are low prices. Companies within sectors where low prices and other influences start impacting supply as long until high prices and subsequent capex will start to impact supply again
- Buying the $ for Cents. No further financing/dilution for being/moving into production
- Capital structure analysis, risk/reward profile might be better in senior debt Freedom to invest up to 15% in debt
- Ounces in the ground, total cost of extraction, etc. In some cases (Uranium) exposure to physical commodities offer superior risk/reward. Fund cannot have investments with risk to physical assignment/delivery

Cobre Panama



Cobre Panama

Cobre Panama

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