

Long term thermal coal pricing – external forecasts

June 2023

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Price drivers of thermal coal

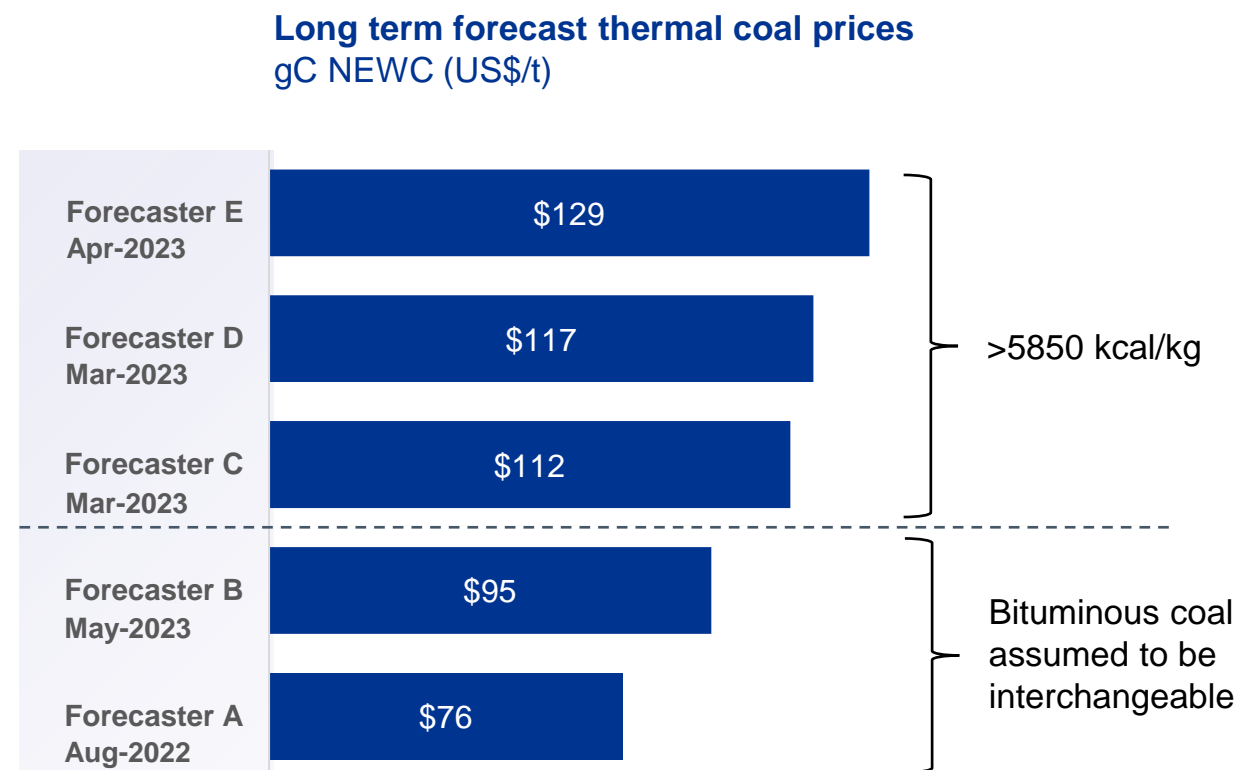
Near-term

- 'Energy security' resurfaced as a key priority for governments in key customer countries in CY2022
- Economic performance and arbitrage opportunities constrained by limits of substitution
- Supply constraints – trade flows (eg. Russian sanctions), weather impacts, coal reservation policy
- Seasonal drivers eg. mild northern hemisphere winter and high stock levels has seen a retreat from record high prices, increased gas sourcing, Russian thermal coal largely remaining in the market going to Russian affiliates and associates

Longer-term drivers / structural changes

- High quality, high CV (HCV) thermal coal required through the multi-decade transition including for reliable baseload energy and co-firing with ammonia, biomass and hydrogen
- Construction of USC coal fired power plants in Japan, South Korea, Malaysia to replace / upgrade sub-critical plants, designed to support future co-firing with low carbon fuels – ammonia and hydrogen and biomass
- Generators have little surplus capacity, therefore there is limited switching ability away from HCV thermal coal (but it is a tool that buyers use to apply pressure)
- Negligible supply side response to HCV thermal coal prices in CY2022
- European policy, Government policy, carbon price, ESG sentiment, net zero banking alliance (NZBA), and IEA continue to influence

While long term price forecasts are lifting, there is a range of forecasts in the market reflecting different assumptions



- A number of different assumptions underpin these price forecasts, starting with the definition of HCV, which helps explain the divergent views in long-term price forecasts
- Long term forecasts calculated as the average price between FY29-FY40

Forecasts are lifting as market dynamics are shifting and assumptions are being revised

Long term thermal coal price forecasts from key market forecasters, gC NEWC (US\$/t)

	As at FY21 ¹	Current FY23
Averages	\$65	\$76
	\$77	\$95
	-	\$112
	\$80	\$117
	-	\$129
	US\$74	US\$106

¹ 2020/21 prices adjusted to 2023 real prices

CHANGING DYNAMICS

- Change of trade flows – including Russian sanctions
- Approvals have become more difficult:
 - increased government time for review of submissions plus delays caused by litigation, increased regulator scrutiny
- Technology advances required to meet global decarbonisation targets
- Restrictions on access to capital
- Increased price volatility due to tensions between the world's need for reliable, affordable energy and the need to decarbonise

Realistic longer-term price forecasts are important when making capital allocation decisions and to underpin shareholder / investor confidence



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Analyst Presentation

Seaborne Thermal Coal Markets

22nd June 2023

The conclusions expressed in this report are correct as of 22nd June 2023 and may change in time in response to variations in economic, market, legal or political factors.

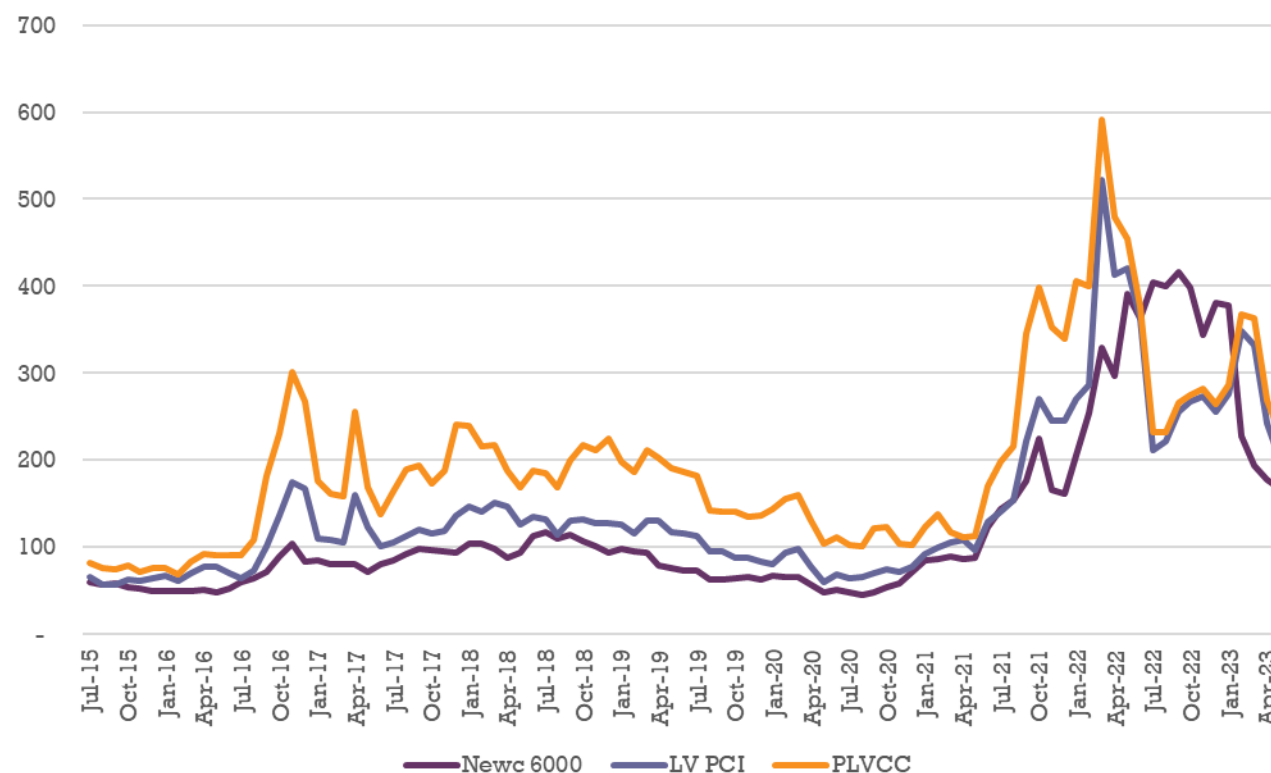
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WE HAVE ENTERED A NEW COAL MARKET ERA, WHERE SYSTEMIC SHOCKS ARE 'NORMAL'

Key Seaborne Coal Price Markers (US\$/t)



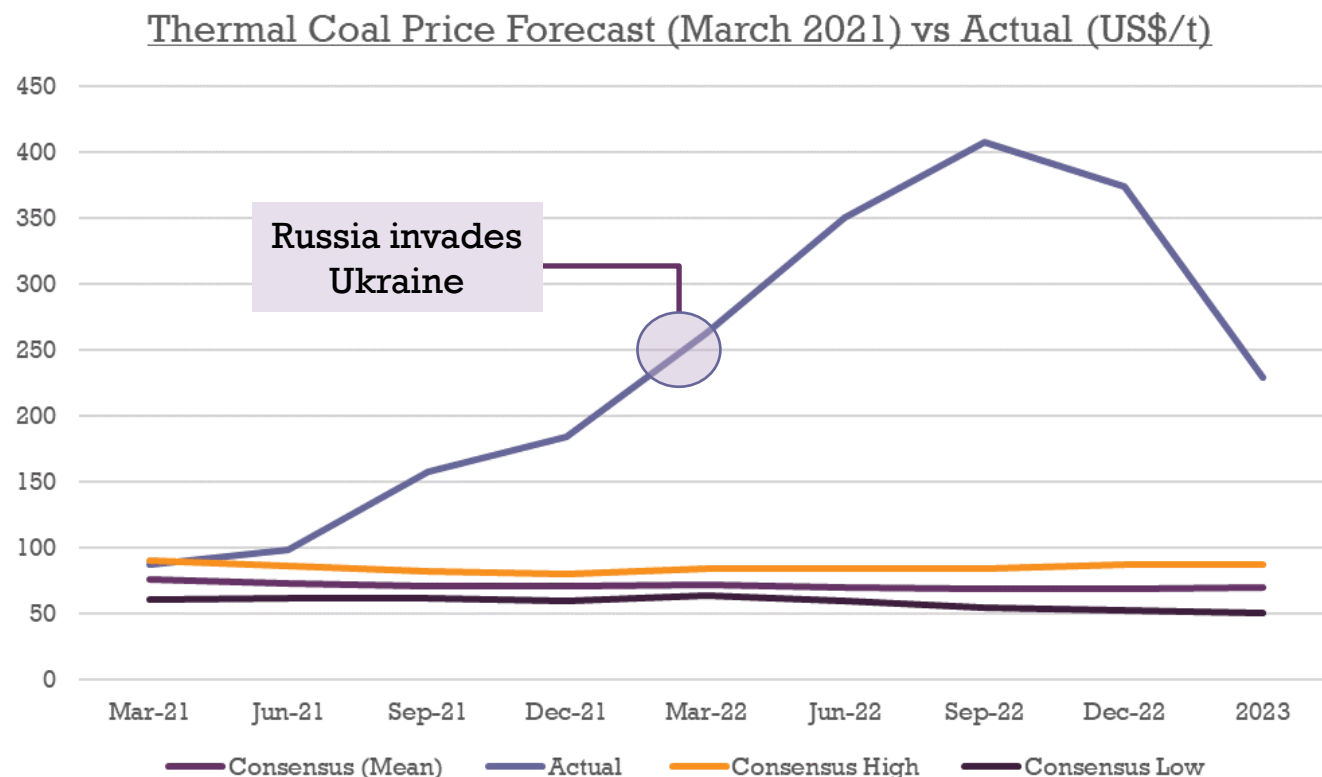
Pre-2021 was an era of relative stability in coal markets

Post-2021 market features include:

- Volatility being the 'new norm'
- Unprecedented price levels and price relativities
- Significantly bifurcated markets
- Constrained supply
- Increased government interference

ANALYST'S THERMAL COAL PRICE FORECASTS HAVE BEEN MATERIALLY WRONG

Seaborne Thermal Coal Prices (US\$/t)



- Consensus is the average of 16 banks, brokers and government departments.
- All these forecasters missed the largest thermal coal bull market in history.
- The Russian/Ukrainian war did not cause the price spike (it exacerbated it). Prices were at record highs BEFORE the conflict at US\$254/t in February 2022.

“

The coal industry is set for an extended period of high prices and super-normal profits.

Commodity Insights, APCC, March 2021

”

MISSING THE MARKET – WHY?

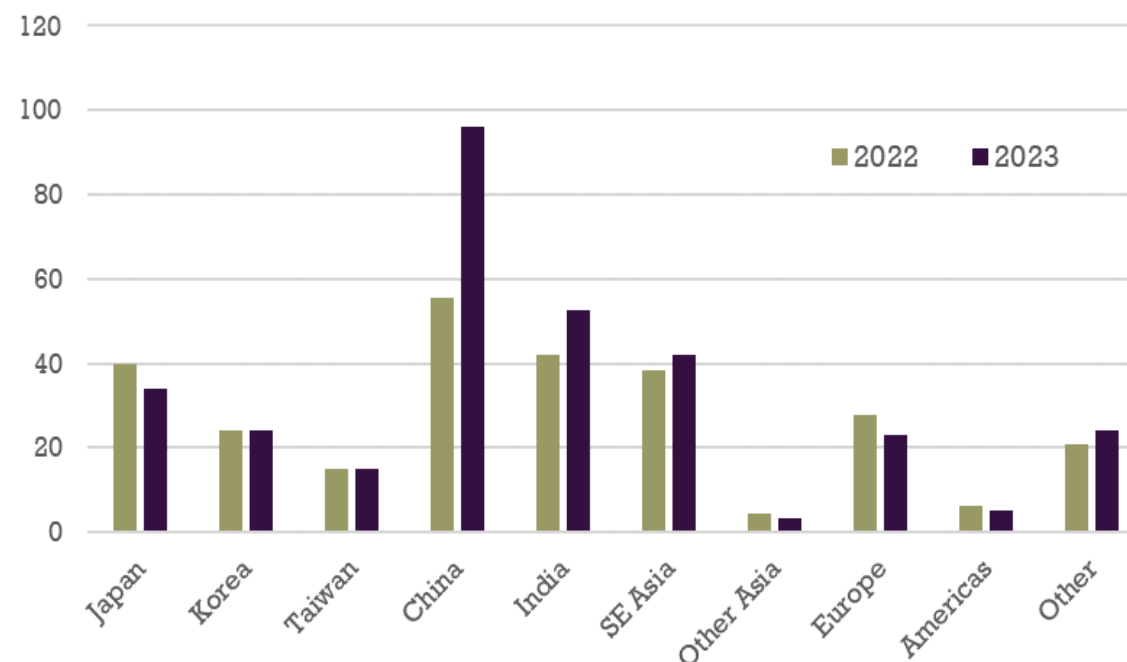
We believe many of these factors are still influencing analyst forecasts

1. Institutional **bias or disinterest**
2. **Under-estimation** of demand growth
3. **Over-estimation** of supply growth/response
4. **Over-reliance** on cost curves, which are irrelevant in an under-supplied market
5. Cost inflation not factored into cost curves

CONTRARY TO POPULAR OPINION, THERMAL COAL DEMAND IS NOT FALLING

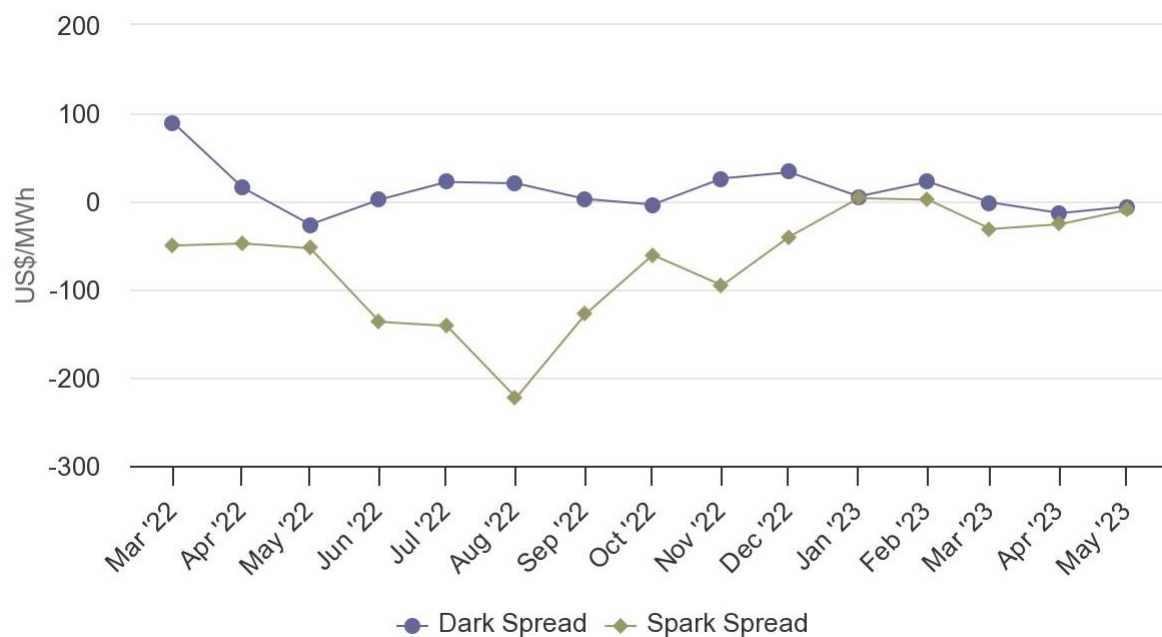
- Global thermal coal consumption hit record levels in 2022, according to the IEA.
- Seaborne thermal coal volumes have increased every year since 2000 except two years:
 - 2015 - Tightening of Chinese policy
 - 2020 - Covid
- Traded volumes through April 2023 are up 17% on 2022 volumes, despite high prices.
- Growth in 2022 was modest due to constrained supply, not weak demand (see prices).

Seaborne Thermal Coal Imports YTD (Apr 23)

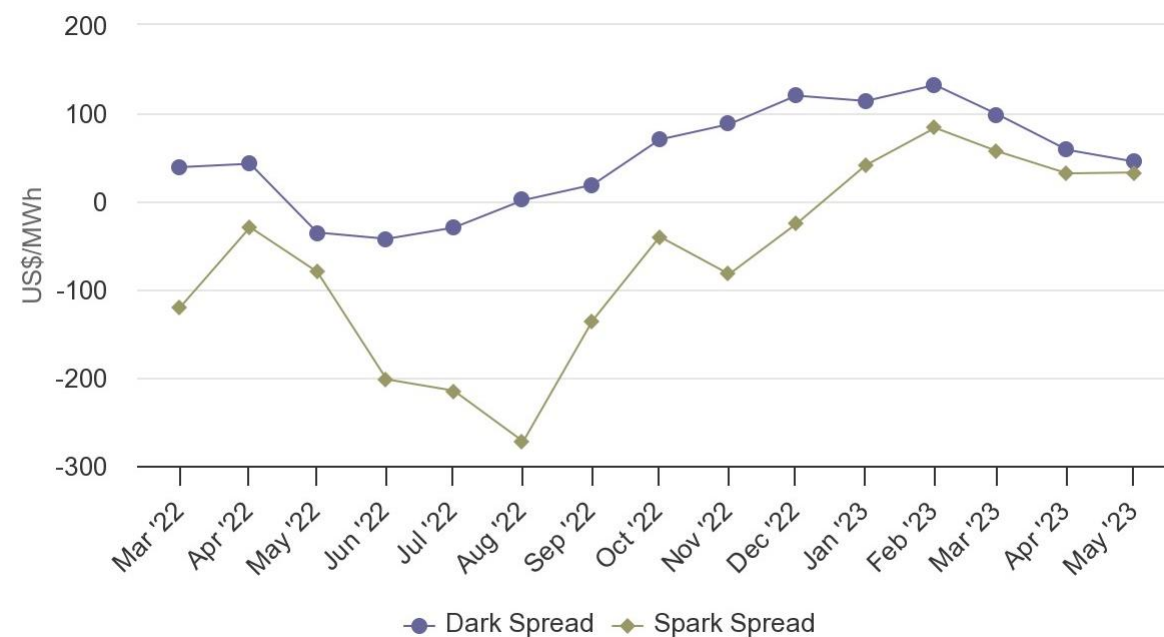


IN MOST MARKET CONDITIONS, COAL REMAINS CHEAPER THAN GAS FOR GENERATION

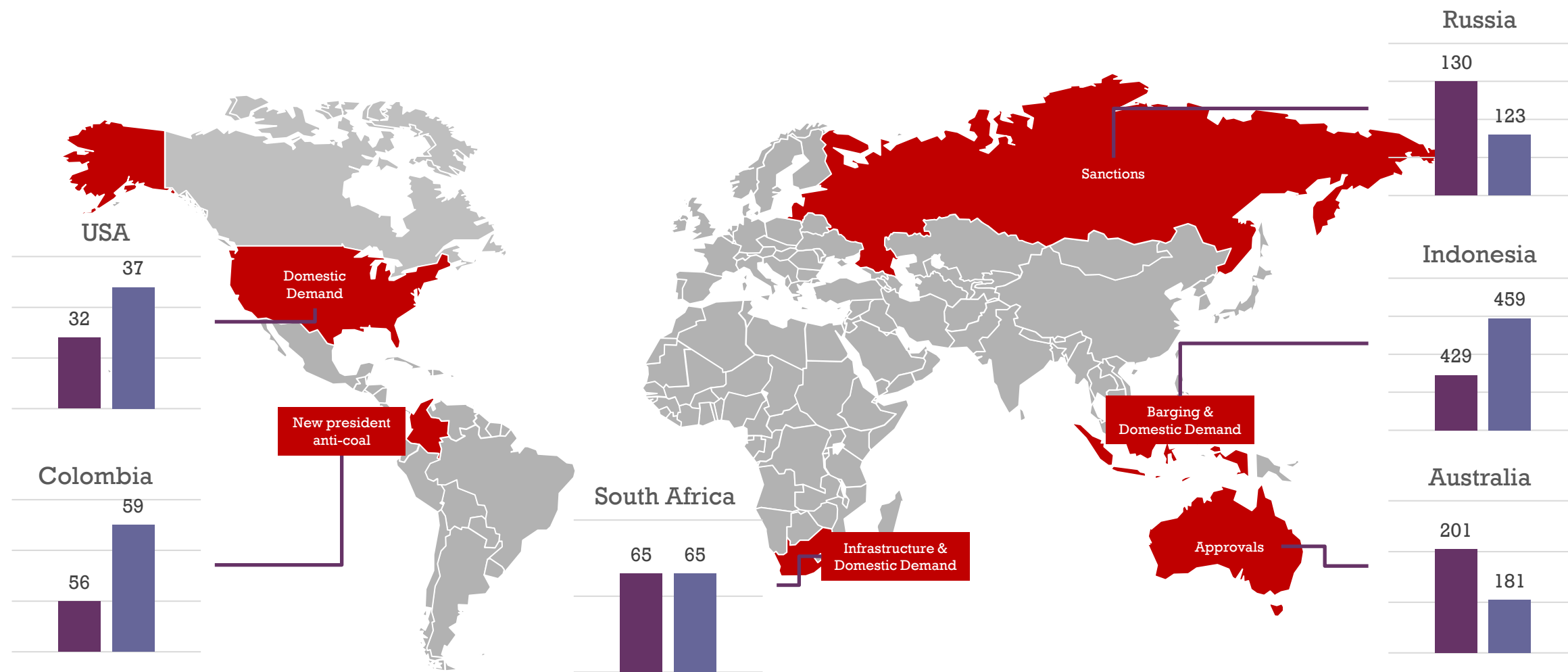
Japan – Dark vs Spark Spread



Korea – Dark vs Spark Spread

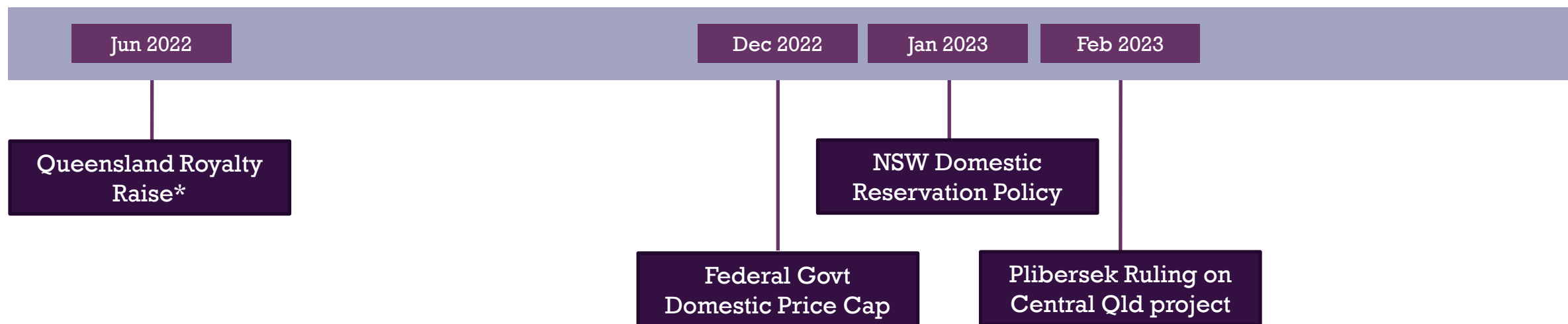


SEABORNE SUPPLY IS NARROW AND CONSTRAINED



Purple represents 2021 total thermal coal exports, Blue represents 2022 total thermal coal exports

AUSTRALIA HAS RAPIDLY BECOME A NATION WITH HIGH SOVEREIGN RISK



The market interference has been rapid, significant, largely unwarranted and leaning towards quasi-nationalism. Combined, it massively raises sovereign risk.

* See Commodity Insights' report at <https://www.qrc.org.au/media-releases/qld-govt-tax-damns-river-of-coal-gold/>

OUTSIDE AUSTRALIA, SUPPLY CONSTRAINTS ARE INCREASING

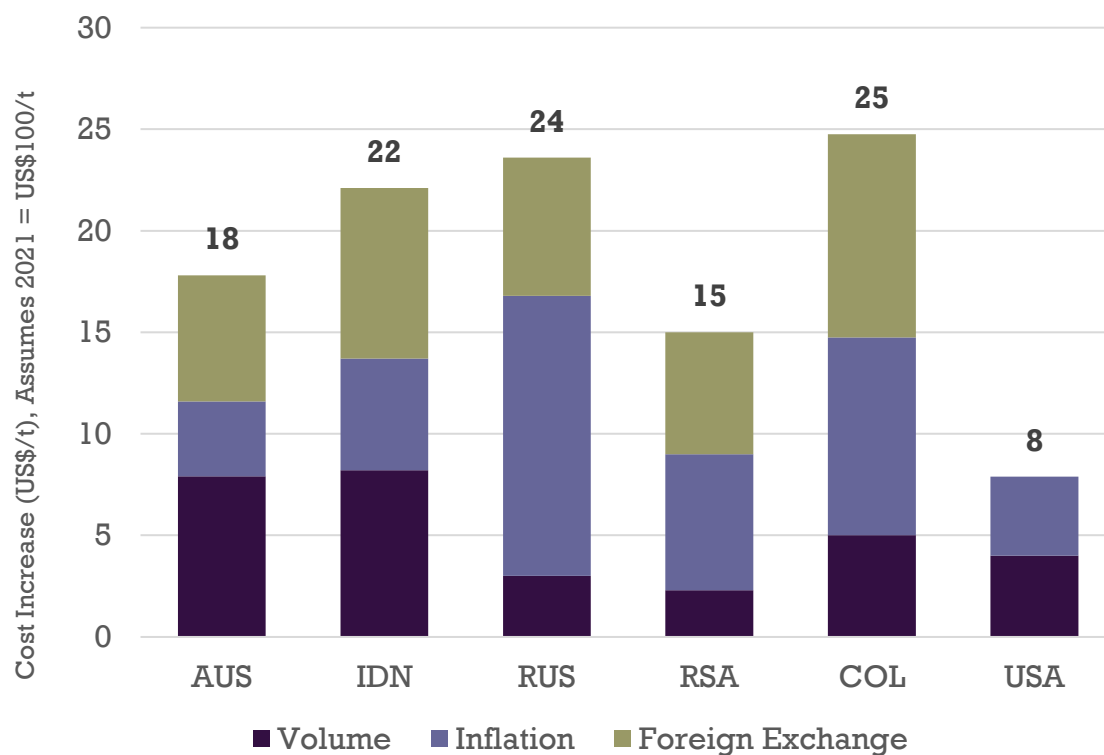
Other policy / regulatory developments

Country	Development	Implications	Seaborne market impact (Mt)
Canada	No thermal coal exports by 2030	US volumes that export via Vancouver impacted	~20
Colombia	1. New open-cut mines banned 2. Fossil fuels phased out by 2032	1. Prodeco unlikely to restart. 2. Industry closed down?	1. 14 2. ~60
Russia	Sanctions	Banned from a range of markets	~190
South Africa	Domestic energy crisis Call to halt exports	Nationalisation of ESKOM* / mining?	~65

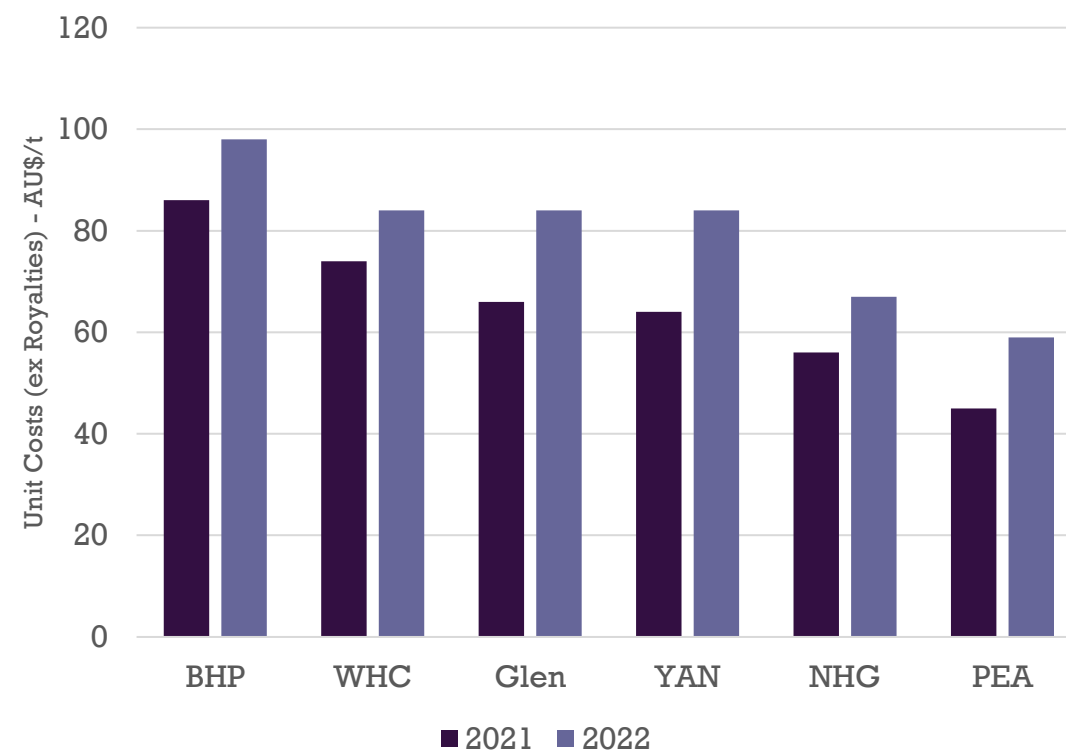
* Government has already taken on up to 66% of ESKOM's debt

OPERATING COSTS HAVE INCREASED IN RECENT YEARS WITH FEW SIGNS OF EASING

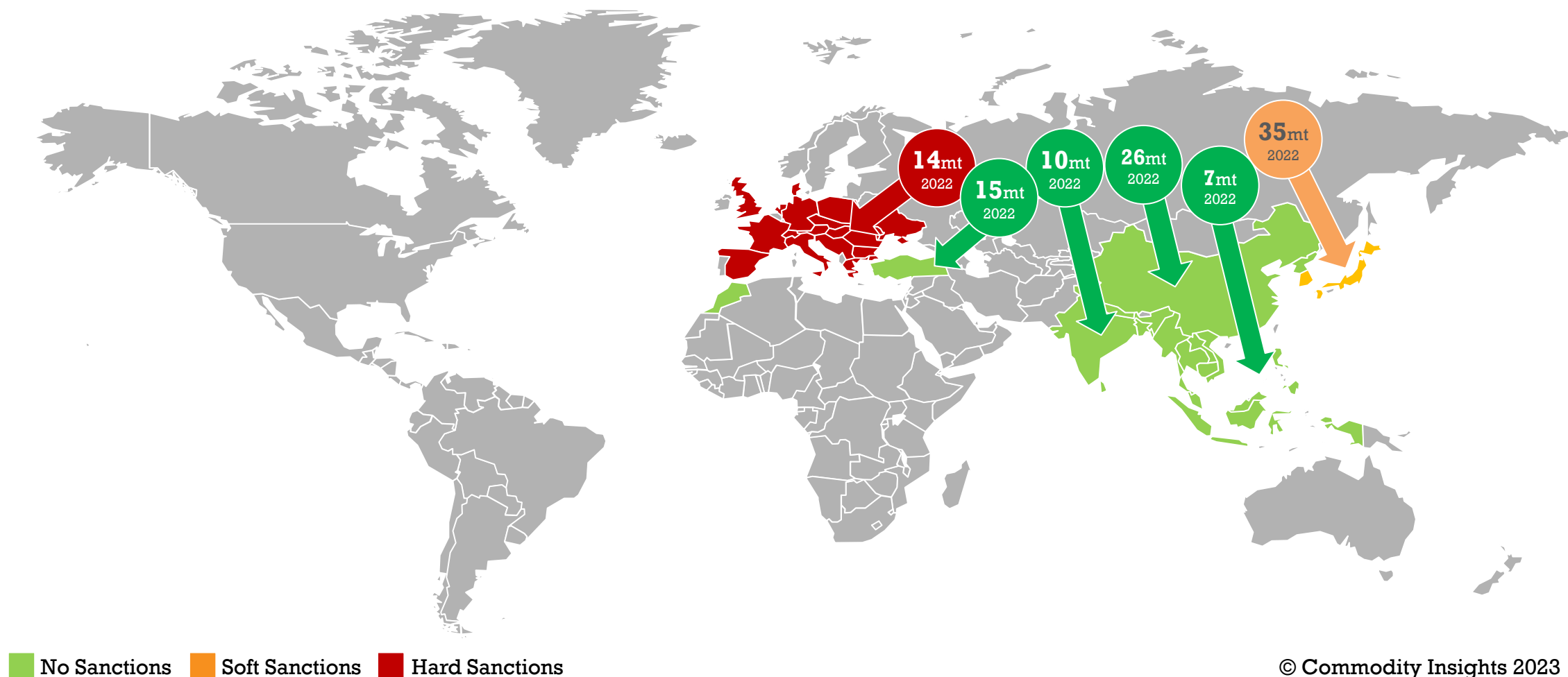
Cost Increases for Coal Producers (2021-2022)



Unit Costs of key Australian Producers (AU\$/t)

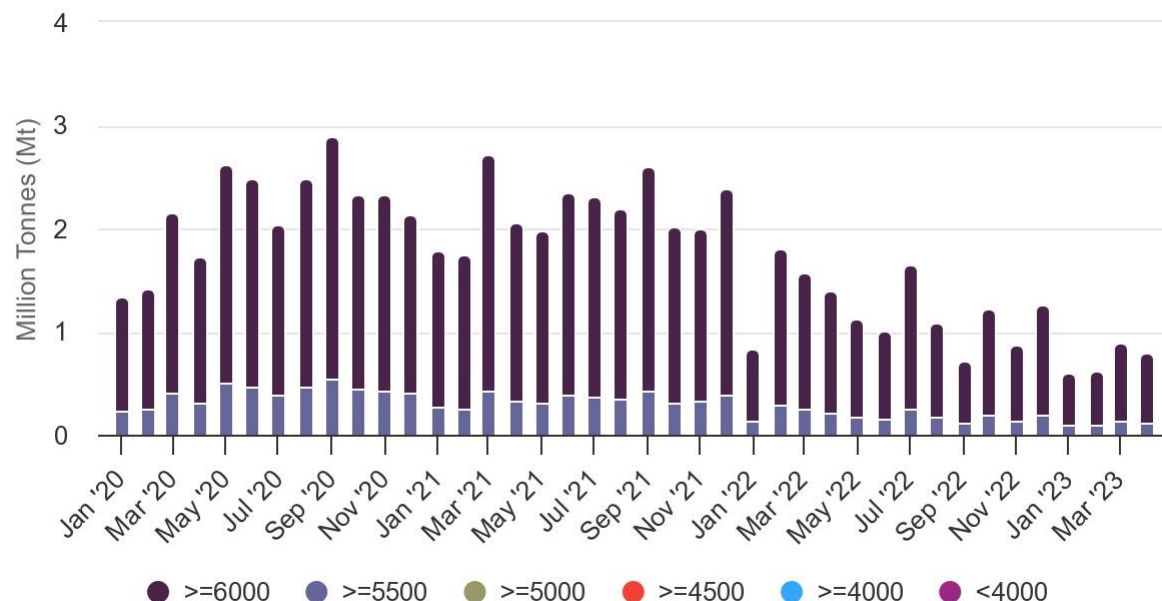


THE EFFECTS OF SANCTIONS ON RUSSIAN SUPPLY WILL CONTINUE TO ALTER GLOBAL TRADE FLOWS

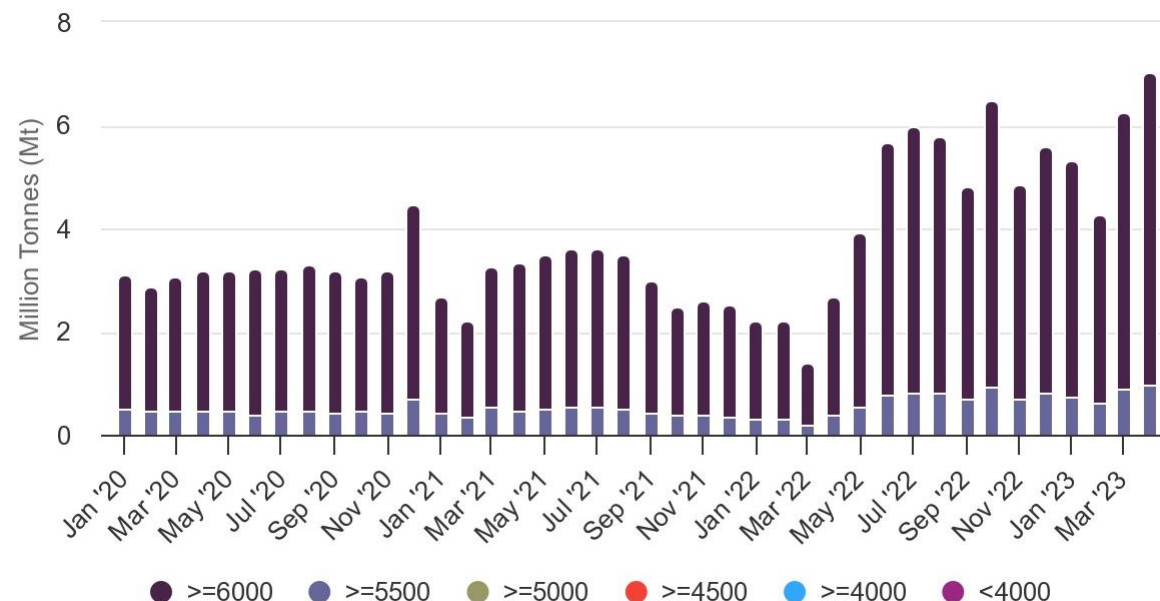


CHANGING RUSSIAN EXPORT FLOWS FURTHER COMPLICATE MARKETS AND PRICING

Russian TC Exports to Japan & Taiwan

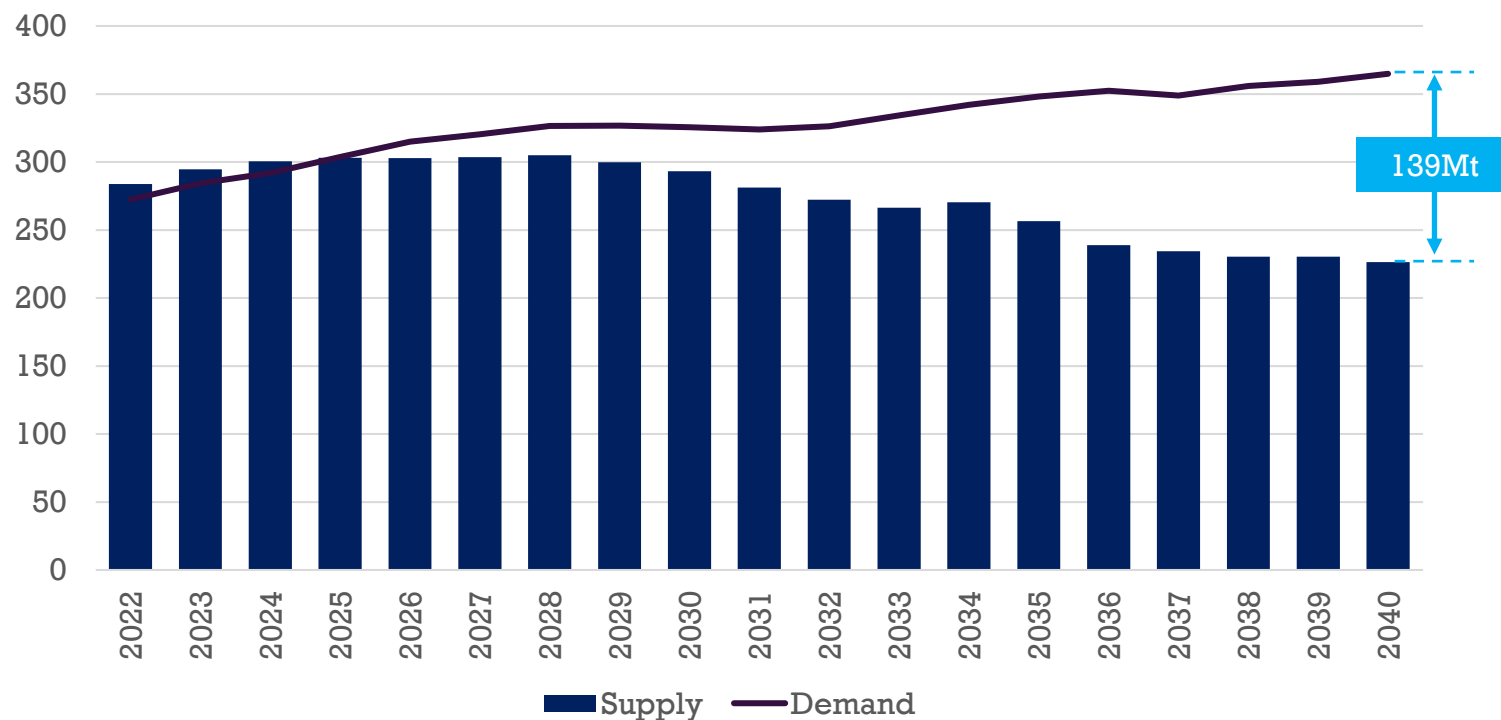


Russian TC Exports to China, India & Turkey



NEW SUPPLY ADDITIONS WILL BE INSUFFICIENT

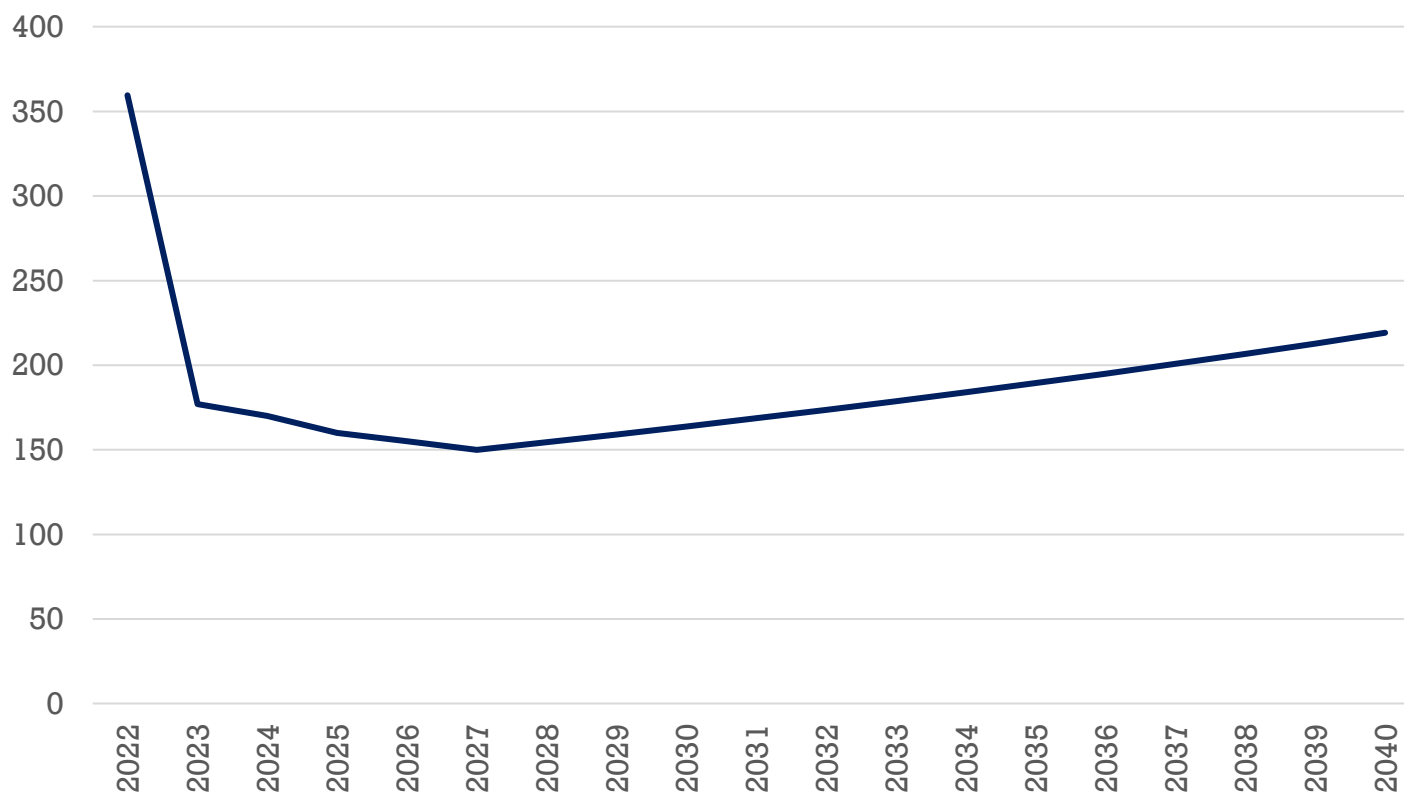
Supply and Demand Balance (Mt)
Unloved Yet Lucrative (CI Base Case Scenario)



- The market will be close to balancing across the next 3-4 years as several expansion projects are commissioned.
- As several larger mines approach their end of life, critical volumes will be lost from the market (i.e., Mt Arthur, Glencore assets).
- The Net Zero narrative is delaying a supply response that will leave the market short ~140Mt of High CV thermal coal by 2040.

A GROWING SUPPLY PREMIUM CAN BE EXPECTED

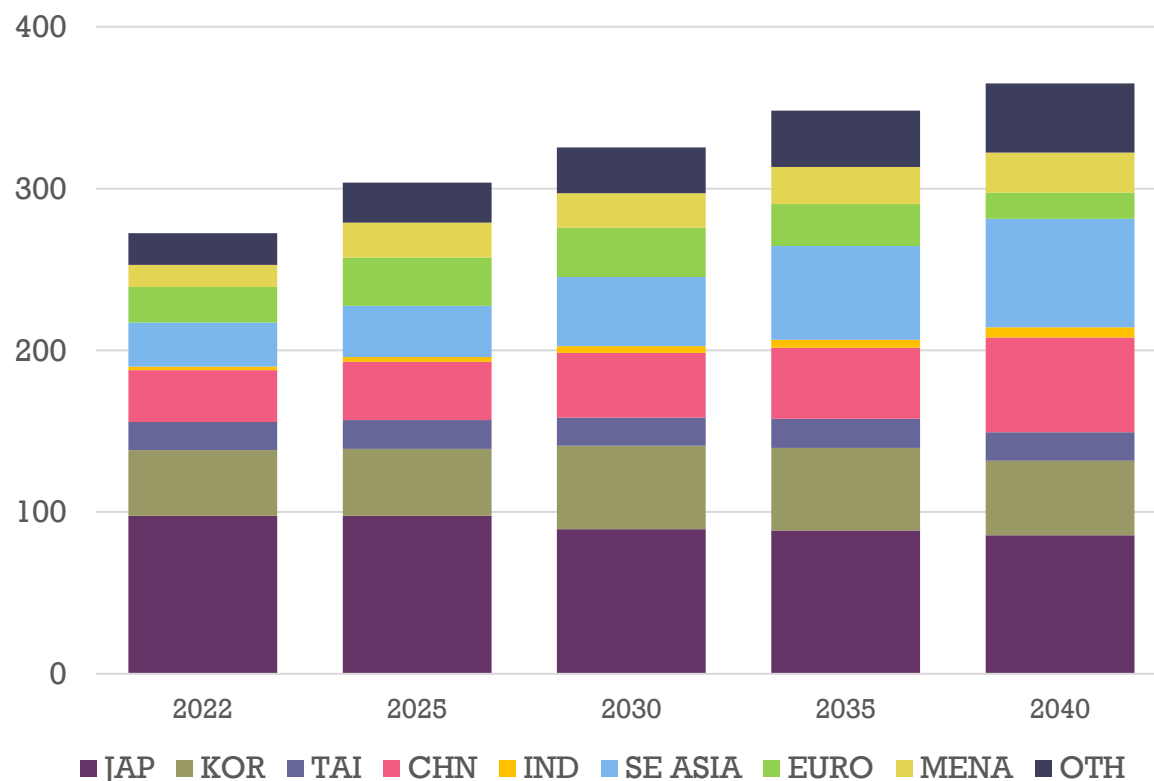
Forecast Price (US\$/t,) nominal terms Unloved Yet Lucrative (CI Base Case Scenario)



- Demand for energy outweighs Net Zero aspirations.
- High-CV coal demand is steady, driven by South-East Asia and China.
- Supply remains constrained due to lack of mine approvals resulting in supply volumes falling post-2030.
- The growing gap between demand and supply results in a price premium (above the cost curve), similar to what was experienced from early 2022 to the present.

DEMAND GROWS STEADILY, DRIVEN BY DEVELOPING ASIA AND CHINA

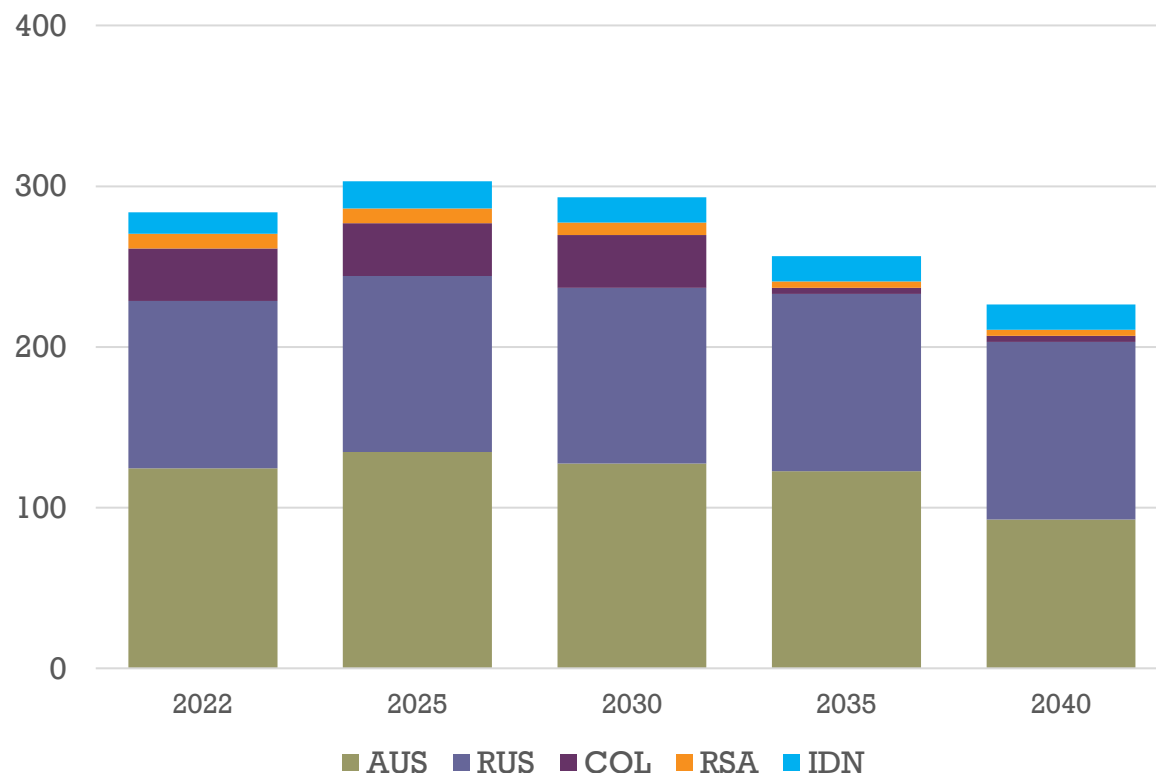
High CV Demand Forecast (Mt)



- While coal's share of generation falls in Japan, South Korea and Taiwan, high-CV demand remains robust as older units are shut down first.
- Chinese demand for high-CV coal grows due to a significant program of super-critical plants being built.
- South-East Asian demand is driven by Vietnam and Thailand, which have rapidly growing power demand (despite coal's share declining).
- In Europe, coal is almost completely shut out.
- MENA will see small growth into Turkey.
- Other is predominantly Pakistan and Bangladesh.

SUPPLY SIDE CONSTRAINTS RESULT IN A CONTRACTION GLOBALLY POST-2030

High CV Supply Forecast (Mt)



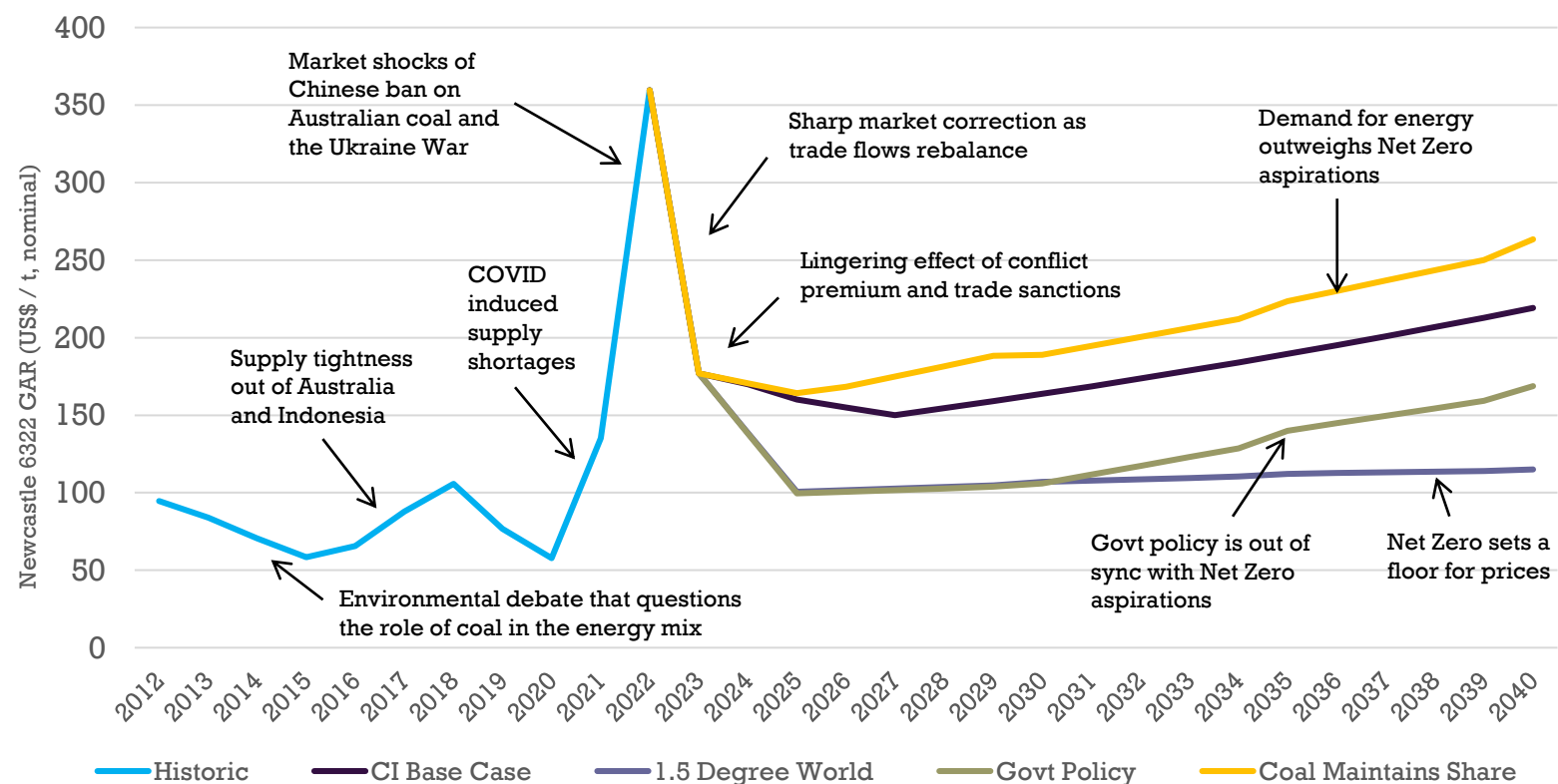
- Australian high-CV exports grow to 2030, due to a post-La Nina recovery and several new projects being commissioned (i.e., Maxwell, Vickery), but decline post-2030 due to reserve depletion.
- Russian supply remains robust across the period, although it's markets may be limited.
- Colombian volumes contract sharply late in the period, due to Cerrejon's mining license expiring.
- South African ease slightly over the period as several small mines close.
- Indonesian exports of high CV coal remain steady over the period.

FOUR INDEPENDENT SCENARIOS WERE MODELLED IN THIS PROCESS

	Greedy Governments (1.5 Degree World)	Greenwashed (Govt Policy Targets)	Unloved Yet Lucrative (CI Base Case)	Free Markets Prevail (Coal Maintains its Share)
Demand	Coal's share of electricity generation is dictated by the IEA's forecasts to net zero at a country-by-country level.	Coal's share of electricity generation is dictated by current government policy at a country-by-country level.	Coal's share of electricity generation is informed by CI views on an achievable share of coal at a country-by-country level.	Coal maintains its current share of electricity generation at a country-by-country level.
Supply	No new mines are approved. Many will be shut down due to weak demand.	Supply is modelled to include all potential expansion projects.	Supply is modelled based on best estimate of which new projects will be approved.	Supply is modelled to match demand, including incentivized new supply.

THERE IS A SIGNIFICANT VARIANCE IN PRICE OUTCOMES TO 2040 ACROSS THE SCENARIOS

Supply constraints will support prices, but there are scenarios where prices are subdued



Key Drivers of Price Evolution

- 1 Foreign Exchange**
 - Capital costs
- 2 Inflation**
 - Operating costs
 - Royalties
- 3 Supply Constraints**
 - Sovereign risk
 - Access to capital/funding
 - Approvals
 - Infrastructure

SEABORNE COAL MARKETS WILL REMAIN VOLATILE, BIFURCATED AND CONSTRAINED

Seaborne Coal Market Outlook

- In our view, Russia is likely to remain sidelined (via sanctions) from key markets for a long time, so expect trade flows to continue re-balancing.
- As a result, market and price bifurcation will be an ongoing feature in all coal markets. Trade blocs will become a stronger feature.
- Australian exporters (particularly PCI and thermal) will see increased competition from Russia in non-sanctioning markets (e.g. India) but less competition in sanctioning markets.
- China's return to Australian imports will support markets in the short-mid term.
- Recovering demand and structurally constrained supply will result in all coal prices remaining above long-term averages for several years.

THANK YOU

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