



SONAMI

CRU

Competitividad y desafíos de la industria

Semana de la Mediana Minería – SONAMI 2023

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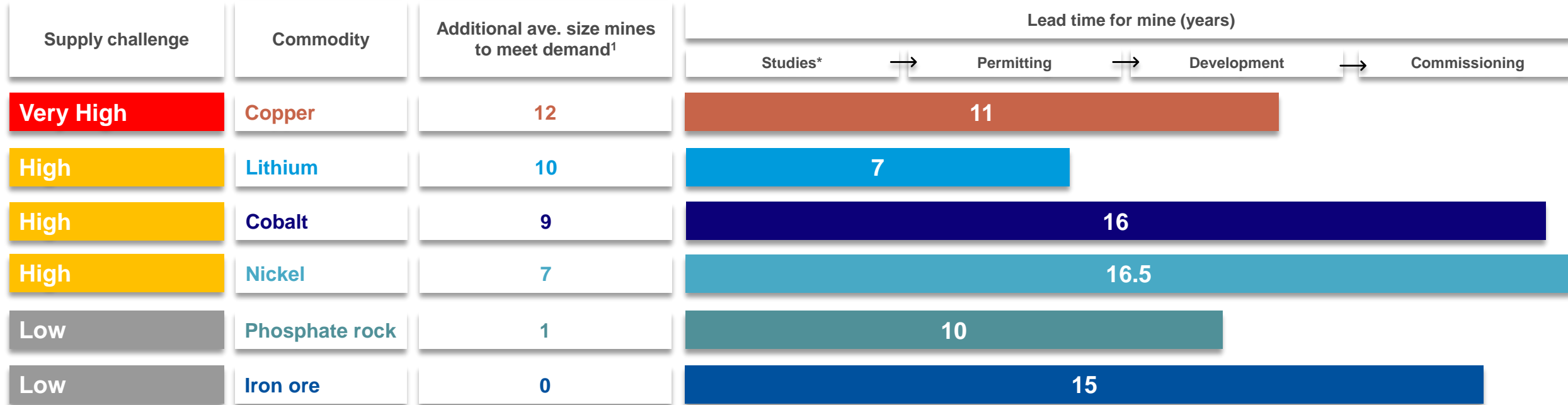
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1. **Global mining industry trends**
 2. **Chile competitiveness landscape**

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1. **Global mining industry trends**
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Decarbonization represents the dominant driver for growth across the medium term but the extent to which this impacts the overall share of demand attributable to decarbonization varies

Percentage of demand growth contributed by automotive or renewables :			Key end use drivers for demand <u>growth</u> between 2020 to 2027					
Commodity	2020	2027	% share					
Lithium	66%	>	91%	Transport and storage				Other
Cobalt	60%	>	75%	Transport and storage				Other
Nickel	8%	>	30%	Transport and storage		Stainless		Other
Aluminium	5%	>	14%	Transport and storage	Electrical	Packaging	Machinery	Other
Copper	5%	>	14%	Transport and storage	Machinery	Electrical in Construction	Appliances and consumer durables	Other
Phosphate rock	0.2%	>	2%	Transport and storage	Fertilizer			
Steel Plate ¹	12%	>	14%	Construction	Windfarms	Engineering	Linepipe	Transport and other

Long lead times make case for building new mines less attractive. Quicker permitting will make a big difference to supply availability



Capital intensity soars, while long lead times and overspend make case for building new mines less attractive

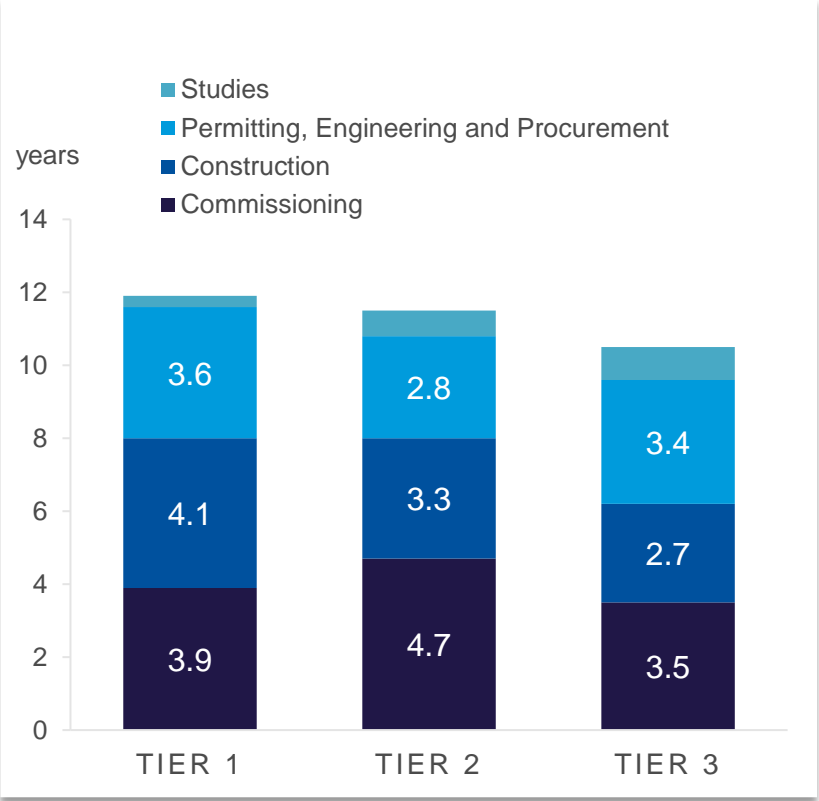
Capex inflation for greenfields has increased dramatically in the last 24 months

Capital intensity by project type (\$M/kt Cu), inflation adjusted

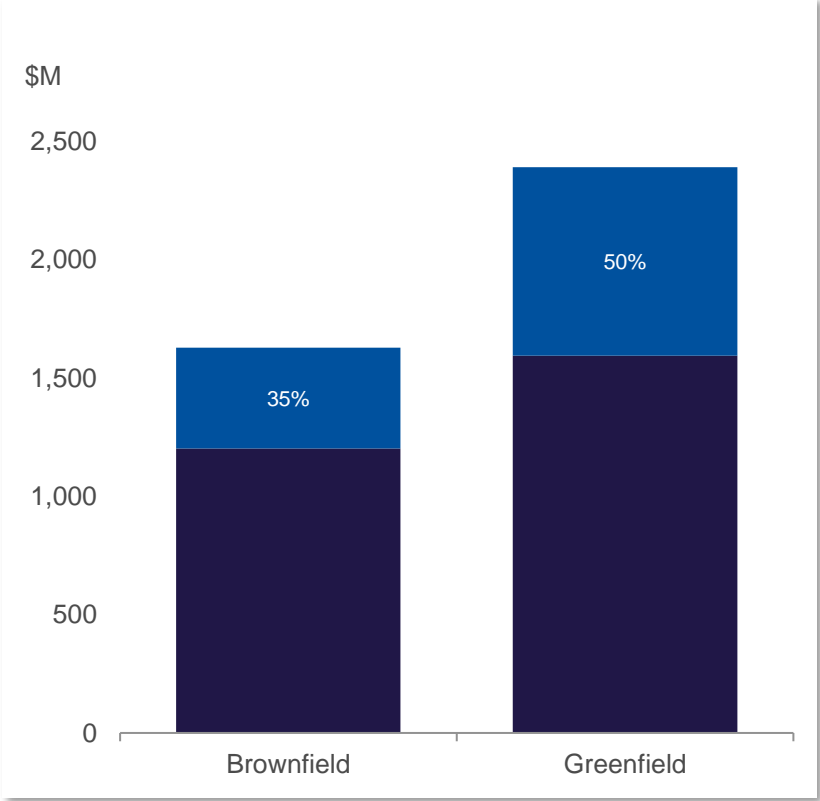


Long lead times and CAPEX overspend make case for building new mines less attractive

Time to develop copper mines*, years



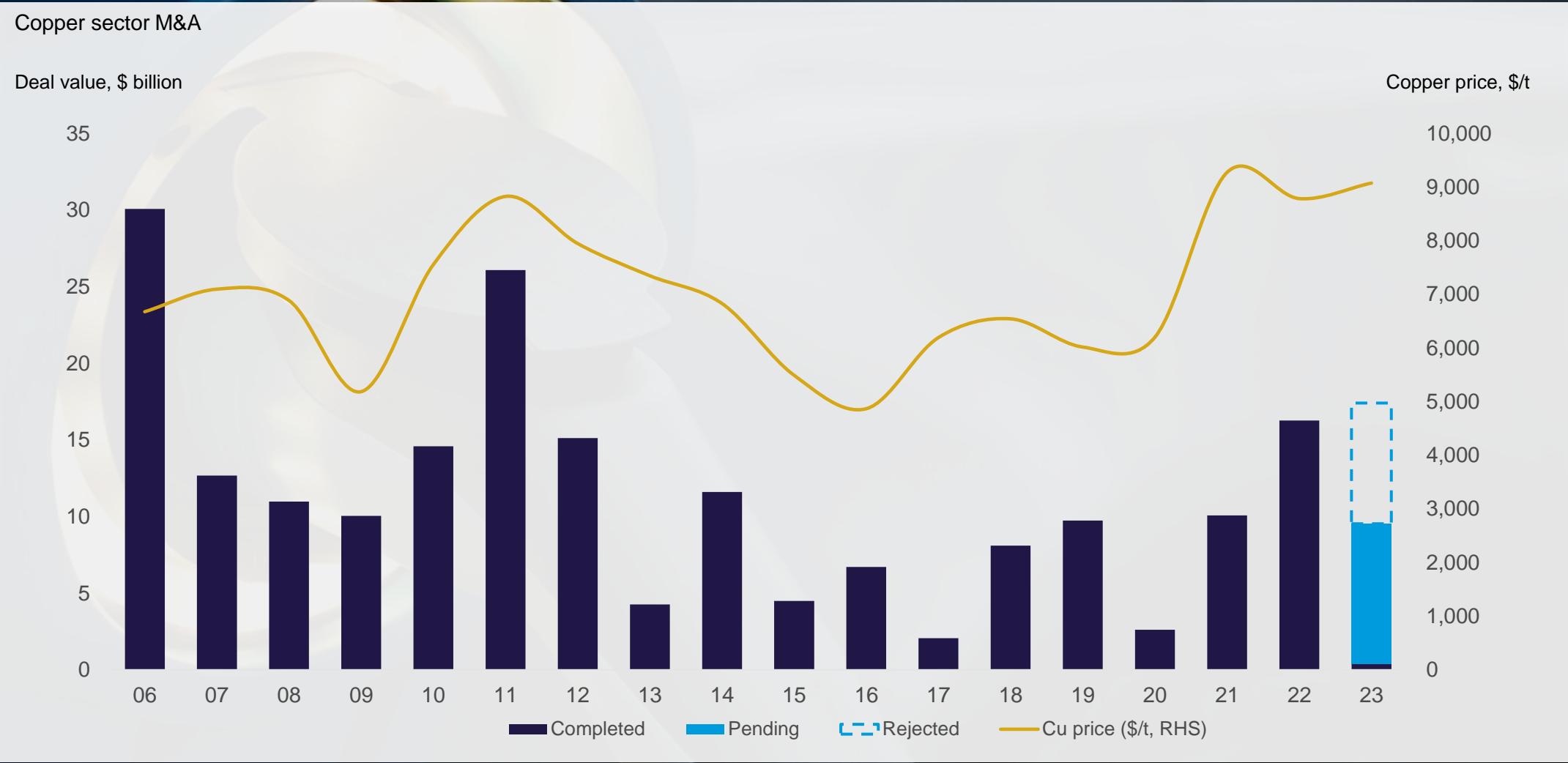
Average CAPEX and CAPEX overrun**, \$M



DATA: CRU

DATA: CRU. Note: * Based on the copper mines that went into production since 2010. Sections represent average duration of studies, permitting / engineering / procurement, construction and commissioning respectively ** Average CAPEX based on the analysis of a 107 base metals and gold mining investments.

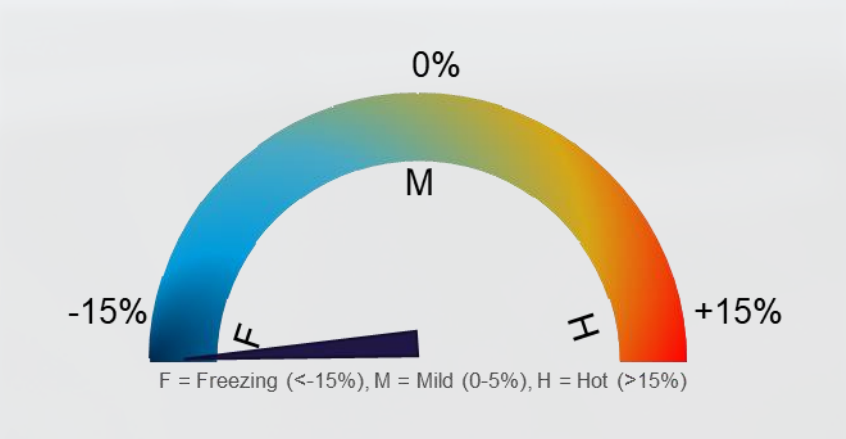
Green energy transition is driving deals flow



DATA: CRU - Updated June 2023

CRU basket of 40 metal, raw material and fertilizer price forecasts | 2026 over 2022*

Hot	>15%	Copper Molybdenum Gold Platinum Silver
Warm	5% to 15%	Alumina Aluminium US
Mild	0% to 5%	Bauxite Lead
Cool	-5% to 0%	Aluminium
Cold	-15% to -5%	Coal Tar Manganese Ore Steel HRC China
Freezing	<-15%	Iron Ore Steel Scrap Pet Coke Met Coke Met Coal Chrome Ore Brent Crude Thermal Coal European Gas (TTF) US Gas (Henry Hub) Nickel Zinc Lithium** Cobalt Ferrochrome Silico-Manganese Silicon Steel HRC Germany Steel HRC US Palladium Ammonia Urea Phosphate DAP Phosphate Rock Potash KCl Sulphur Sulphuric Acid



CRU basket	✓ - 25.6%
Raw Materials	✓ - 30.4%
Metals	✓ - 19.5%
Precious Metals	^ 6.6%
Fertilisers	✓ - 47.3%

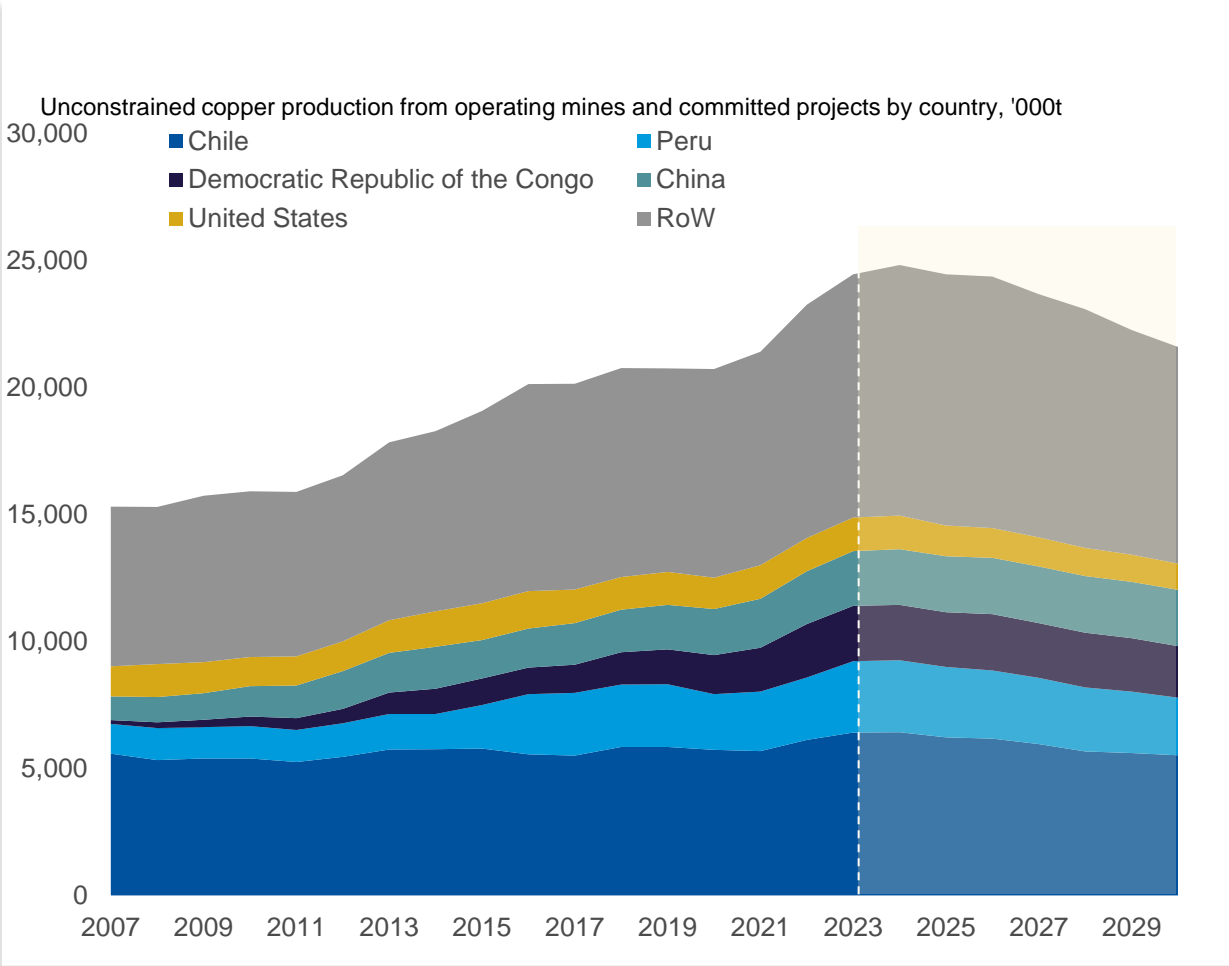
DATA: CRU Market Outlooks *2026 annual average price forecast over 2022 (forecasts as released as 29 June 2023). **Lithium Contract Price.



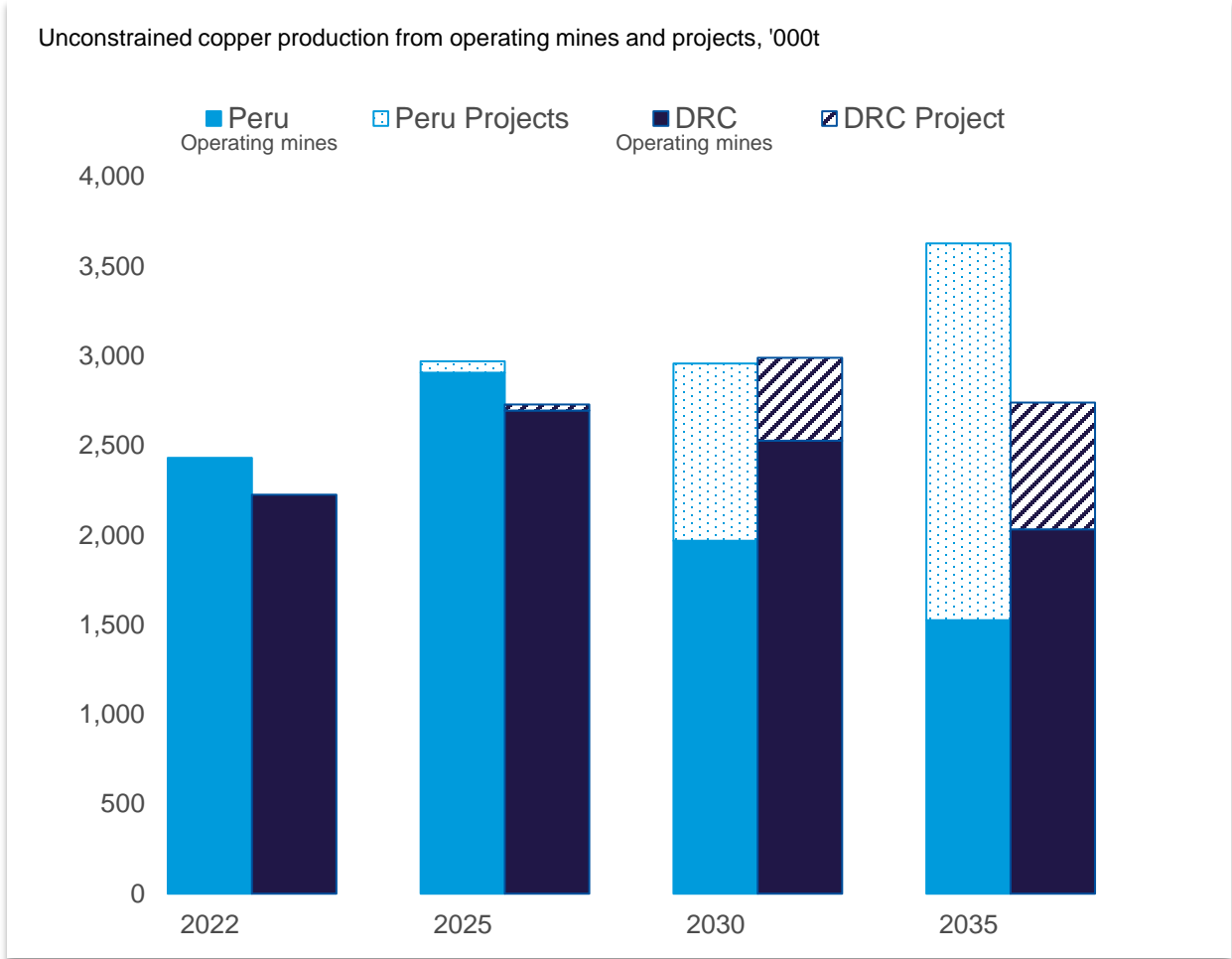
1.  Global mining industry trends
2. Chile competitiveness landscape

Chile and Peru to remain as the largest copper hubs in the world

The two key copper producing nations account for ~40% of global production...



... however, Peru could lose its position as the second largest producer before 2030

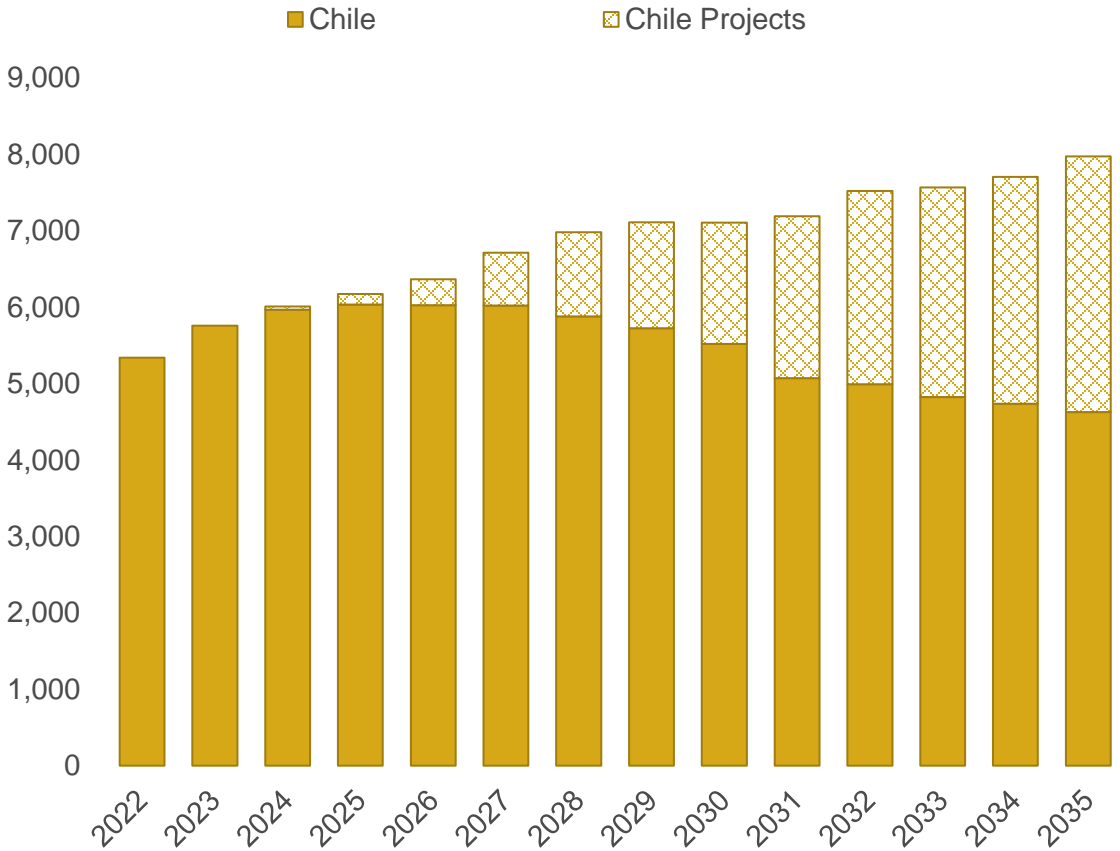


Chile will likely maintain its position as the world largest copper producer, but new projects are needed to secure it

Committed production can however be impacted if Codelco does not recover its production levels

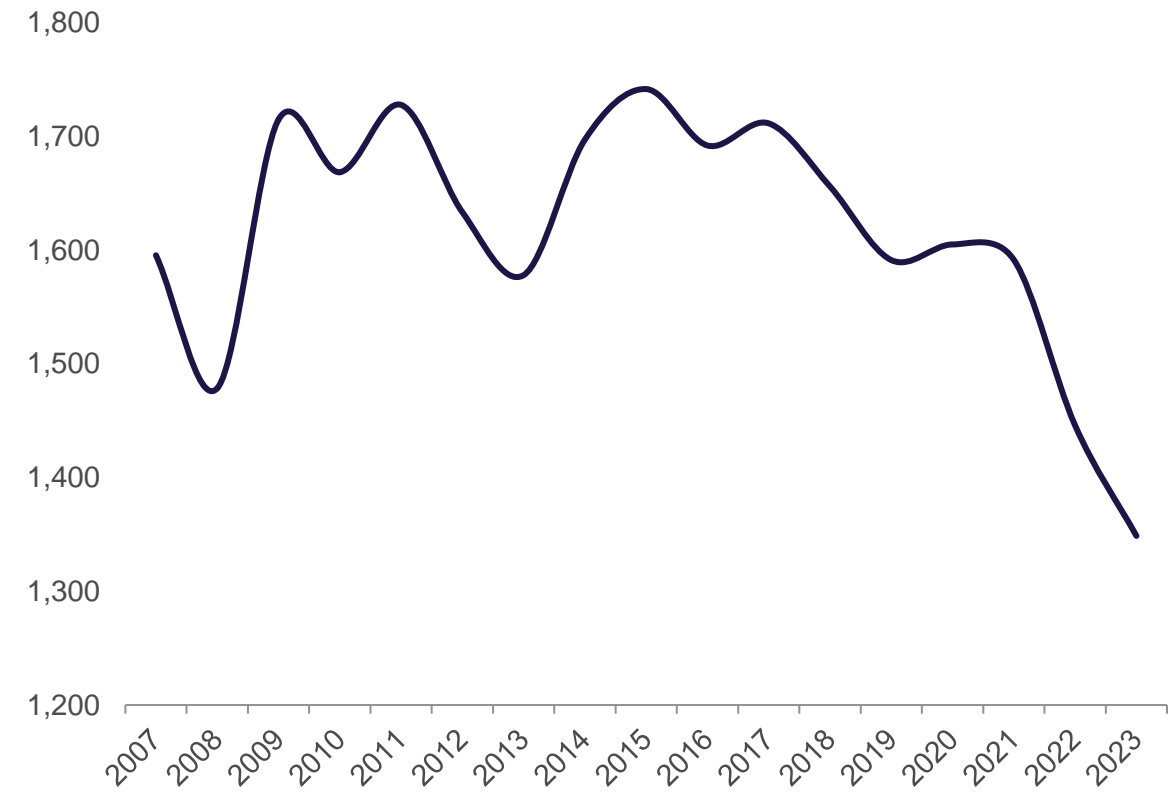
Chile's mine production will peak in 2025, new projects will be required

Unconstrained copper production from operating mines and projects, '000t



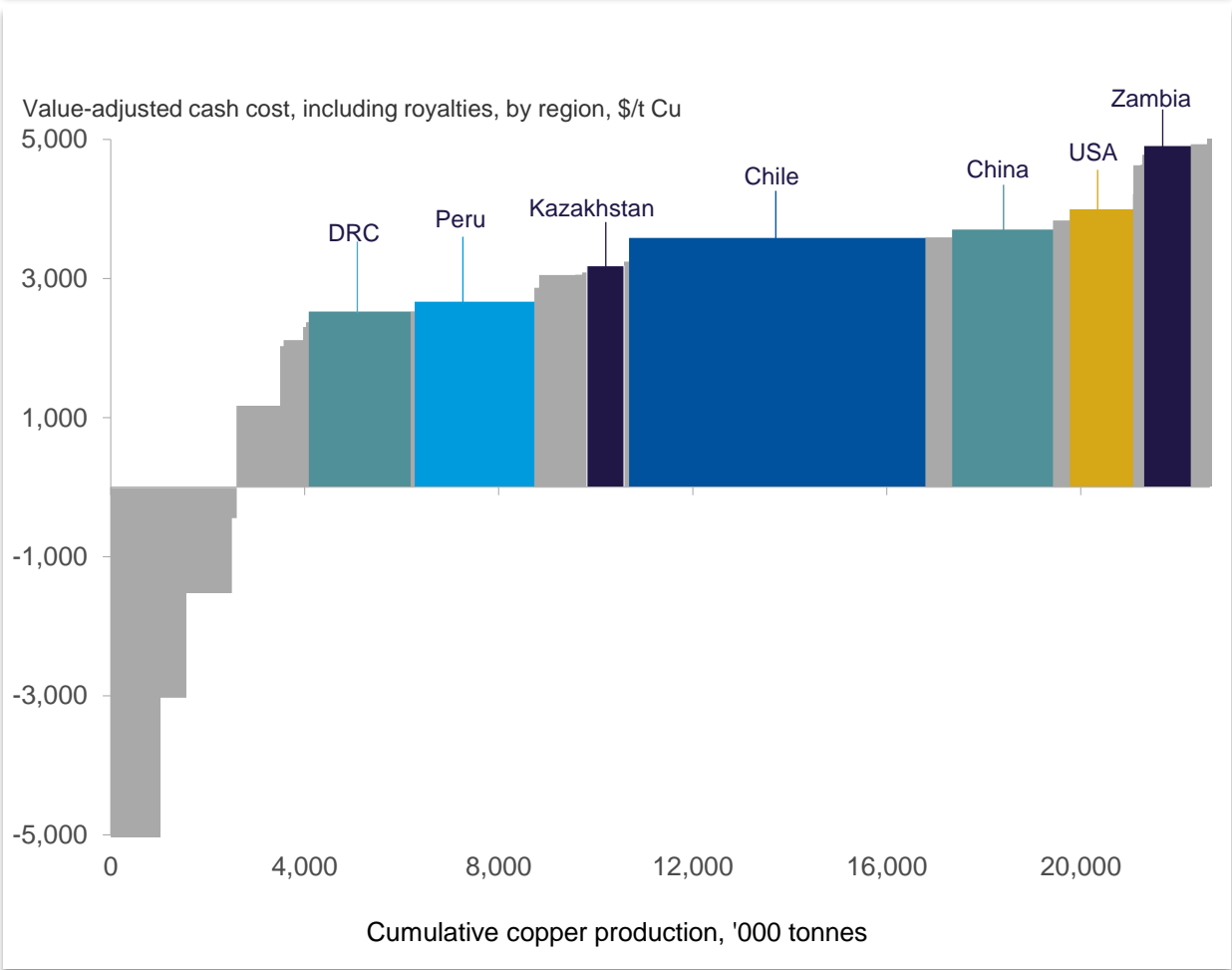
In 2023 Codelco will reach its lowest annual production in over a decade

CODELCO annual copper production '000 t

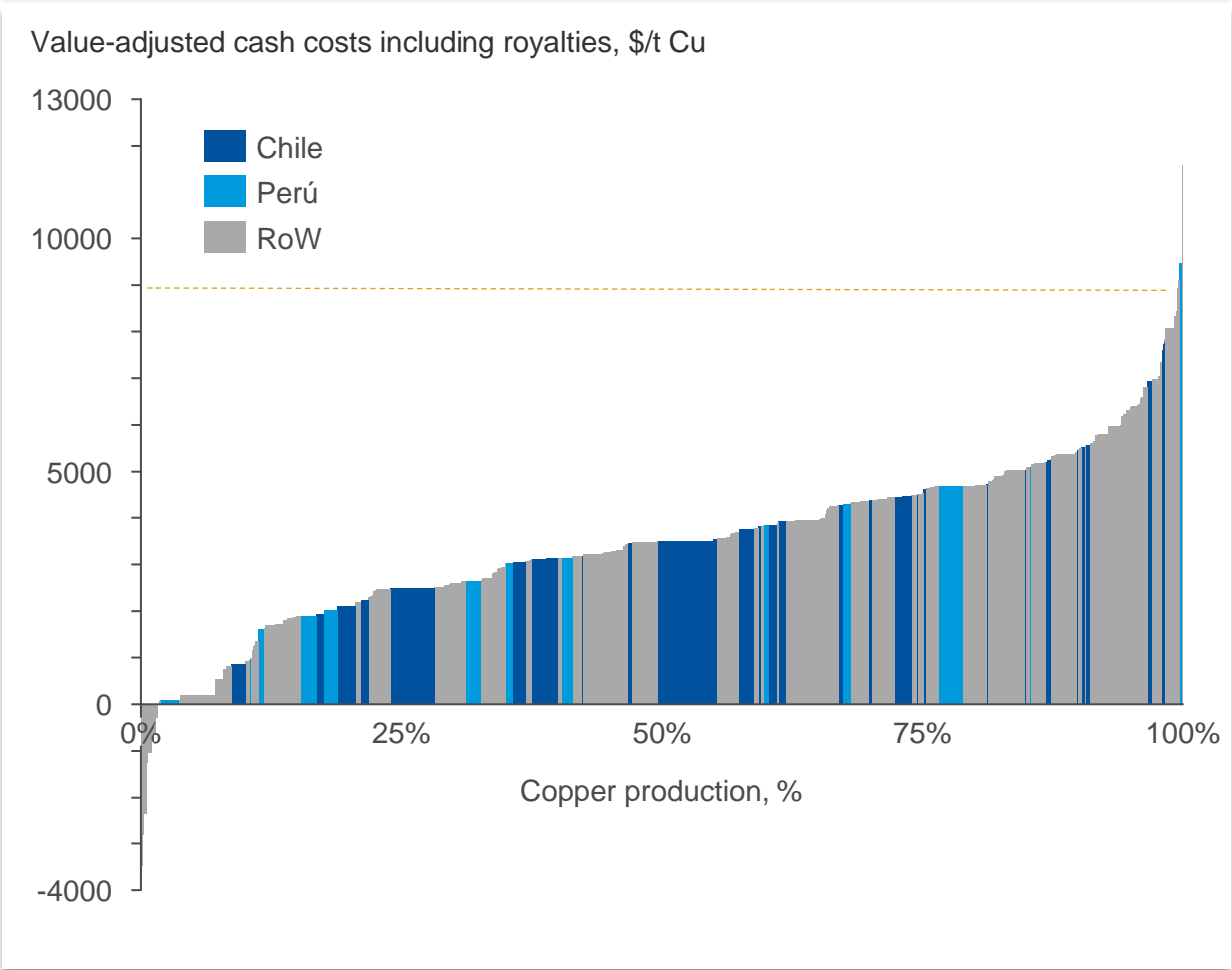


Medium and large producers from Chile and Peru are seeing positive margins at current price

Peru, the 2nd largest producing country, ranks fourth in terms of cash cost in the top 10

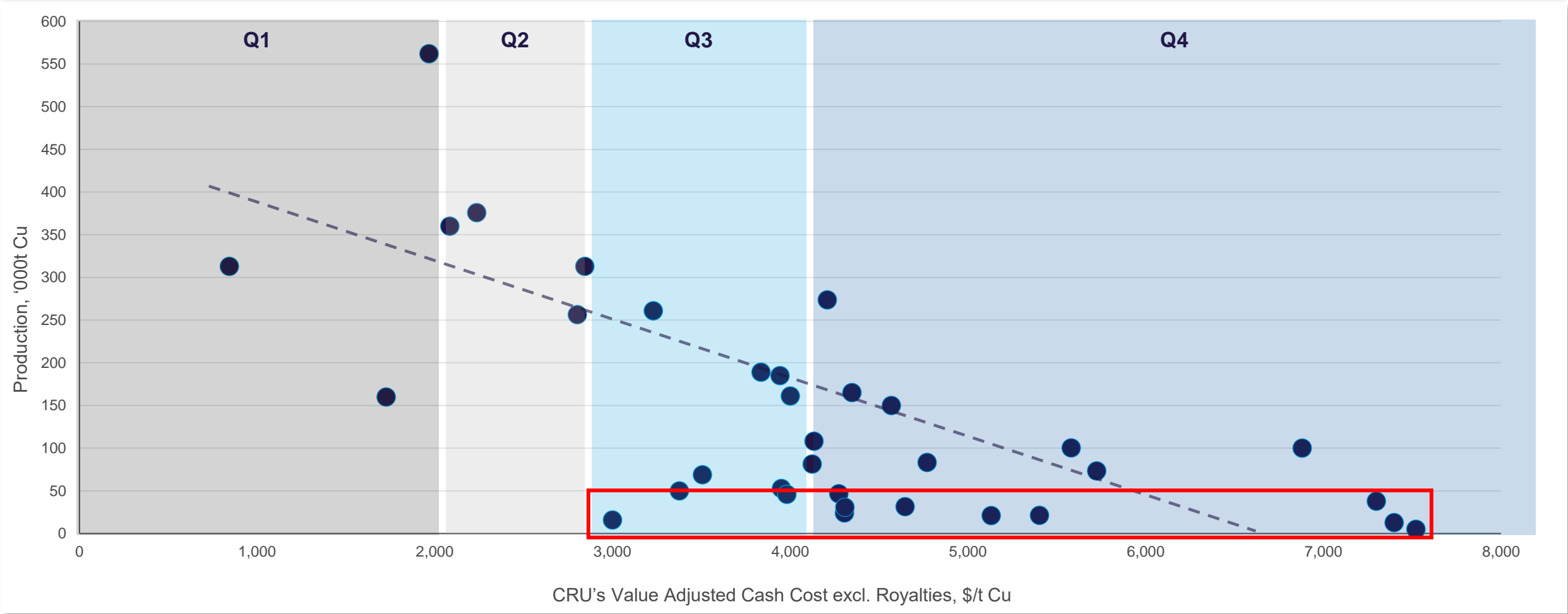


Less than 1% of the industry is burning cash



Most medium size producers in Chile are in the 4th quartile of the industry

Chilean mines and global cost quartiles - CRU's Value Adjusted Cash Cost excl. Royalties (year 2023)



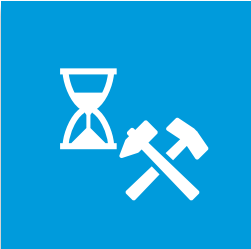
Producing copper is becoming more difficult

More than ever, copper miners face challenges to increase production



Geology

Lower grades, deeper deposits, harder ore, smaller discoveries, complex metallurgy



Development time and technical complexity

Complex environmental permits, lengthier engineering stages



ESG

Communities, water, land, emissions, taxation, social scrutiny

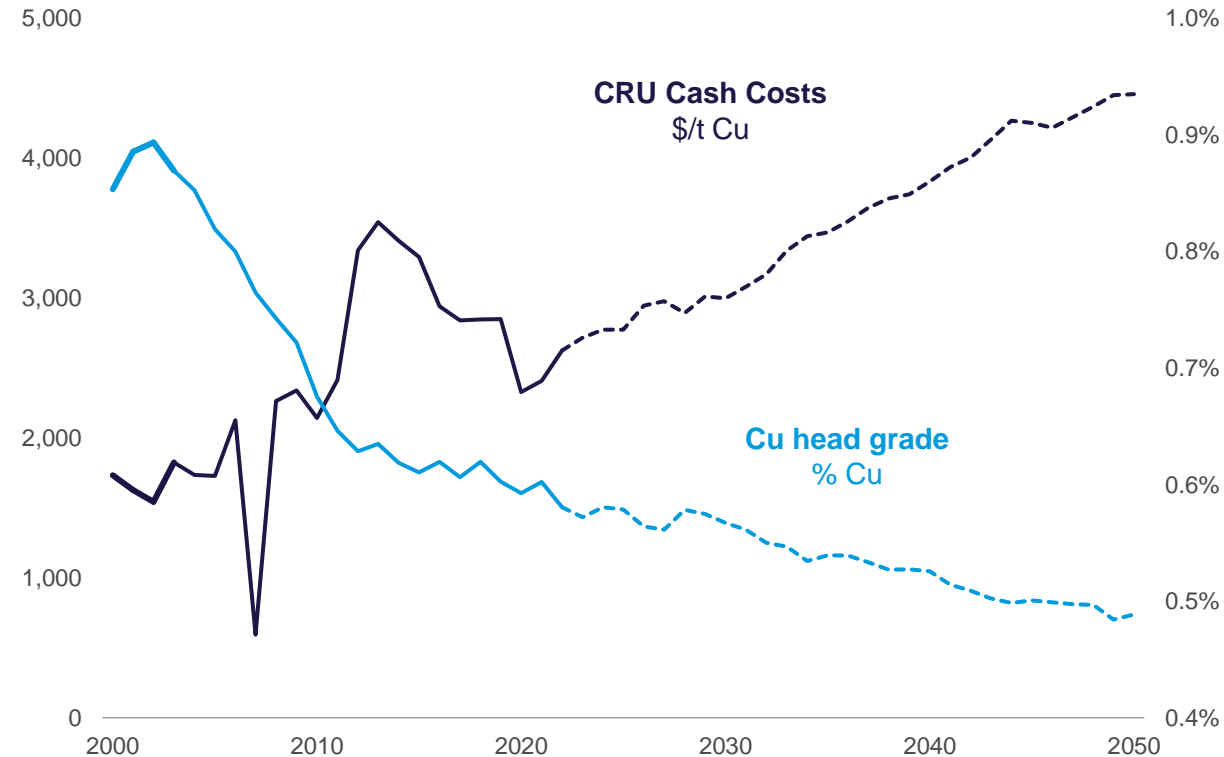


Growth

Organic growth vs M&A, access to financing, CAPEX overrun risks, project investment vs shareholder returns

CRU Cash Costs and copper grade decline




\$/t Cu, real 2022 (LHS); Copper head grade, % Cu (RHS)



DATA: CRU Copper Costs Tool 2023

Why measure emissions?

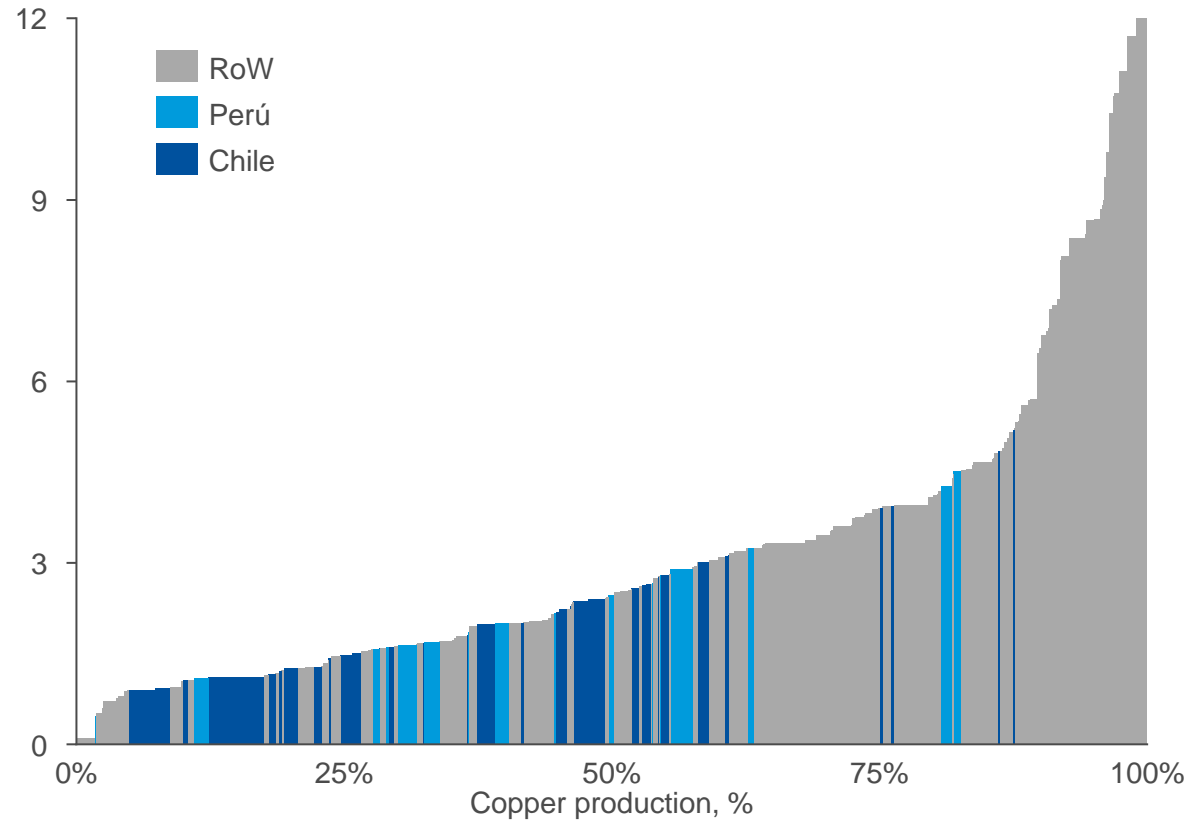
Establishing a logical, standard methodology is a vital pre-modelling step

	Scope 1	Scope 2	Scope 3
Scope	<ul style="list-style-type: none"> - Diesel - Other fuels used in mining and processing plant - Fuels used in smelter if integrated - Self-generated electricity 	<ul style="list-style-type: none"> - Electricity purchased to mining site <ul style="list-style-type: none"> - Country average - Contracts - Electricity purchased for smelting and refinery if integrated 	<ul style="list-style-type: none"> - Explosives - Acid - Grinding media - Inland transportation - Ocean freight - Downstream processing
Boundaries	 <p>Mining, processing, site general and administration.</p>	<p>+</p>  <p>Transportation of intermediate products</p>	<p>+</p>  <p>Downstream processing of intermediate products</p>
Intensity	Metal basis (t CO2/t metal)		Metal equivalent basis (t CO2/t metal equiv.)

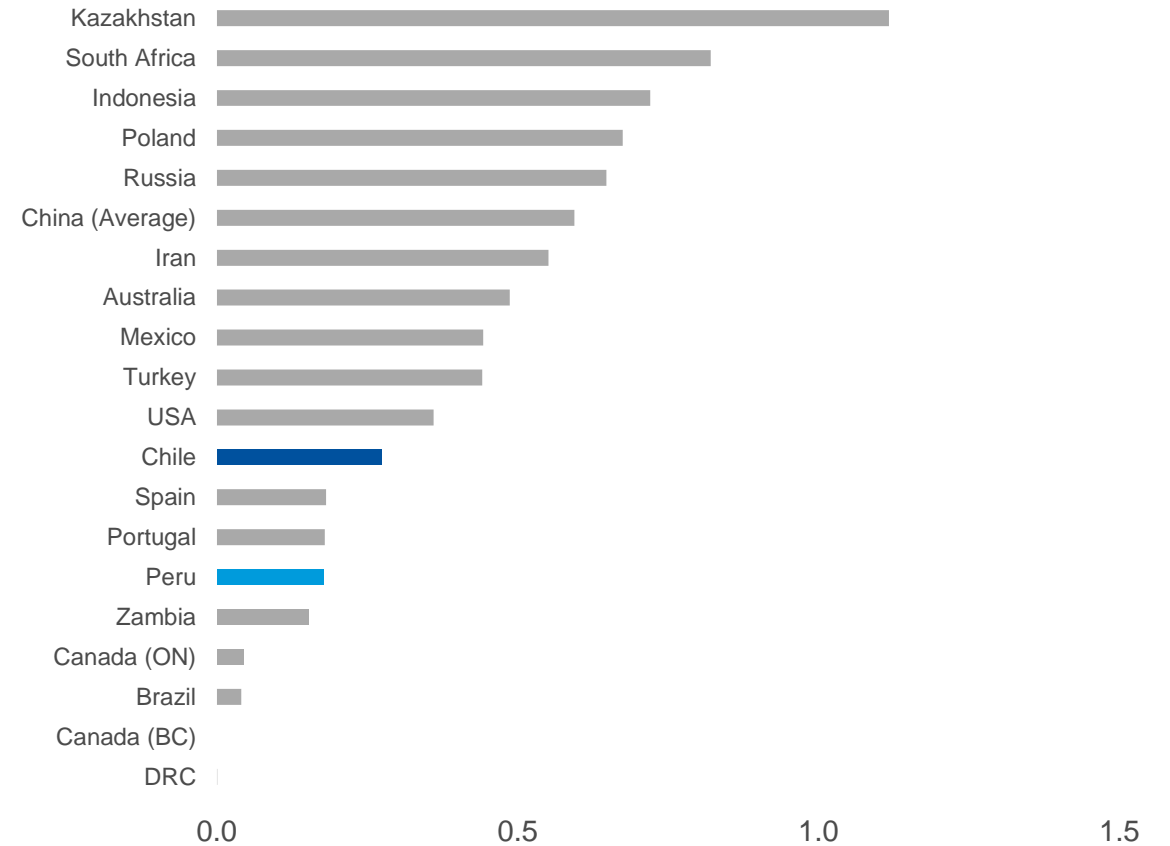
Peru and Chile have relatively low emissions in scopes 1 and 2, mainly due to hydropower and LNG as a source of energy

New deposits have an edge against aging mines

2023 Scope 1 & 2 Site Emissions by country
t CO₂/t Cu



Power grid intensity factors for main copper producing jurisdictions
t CO₂/MWh



Moving away from high uncertainty driven by the constitutional process and new royalty

2022



2023

Reuters
Americas
Chile plans to raise copper mining royalties and reform tax system
Reuters
July 1, 2022 4:45 PM GMT-4 · Updated a year ago

REUTERS
Americas
Chile constitutional assembly could reshape mining rights on Saturday
Reuters
May 6, 2022 4:13 PM GMT-4 · Updated a year ago

lundin mining
Lundin Mining to Acquire a Majority Interest in the Caserones Copper Mine in Chile
March 27, 2023
TORONTO, March 27, 2023 /CNW/ - (TSX: LUN) (Nasdaq Stockholm: LUMI) **Lundin Mining Corporation** ("Lundin Mining" or the "Company") is pleased to announce it has entered into a binding purchase agreement with JX Nippon Mining & Metals Corporation and certain of its subsidiaries (collectively, "JX") to acquire the outstanding equity of SCM Molybdenum Mine ("Caserones") a wholly owned subsidiary of JX Nippon Mining & Metals Corporation. The transaction includes an upfront cash consideration of \$150 million, plus \$150 million in deferred cash installments over a six-year period. JX Nippon Mining & Metals Corporation also have the right to acquire an additional \$350 million over a five-year period. The date of closing. Additional details will be provided in a future press release.

Anglo American
Press releases – 2023
Back to 2023
Anglo American secures environmental approval for Los Bronces Integrated Project
18 April, 2023

Reforma Tributaria
Chile justo y desarrollado

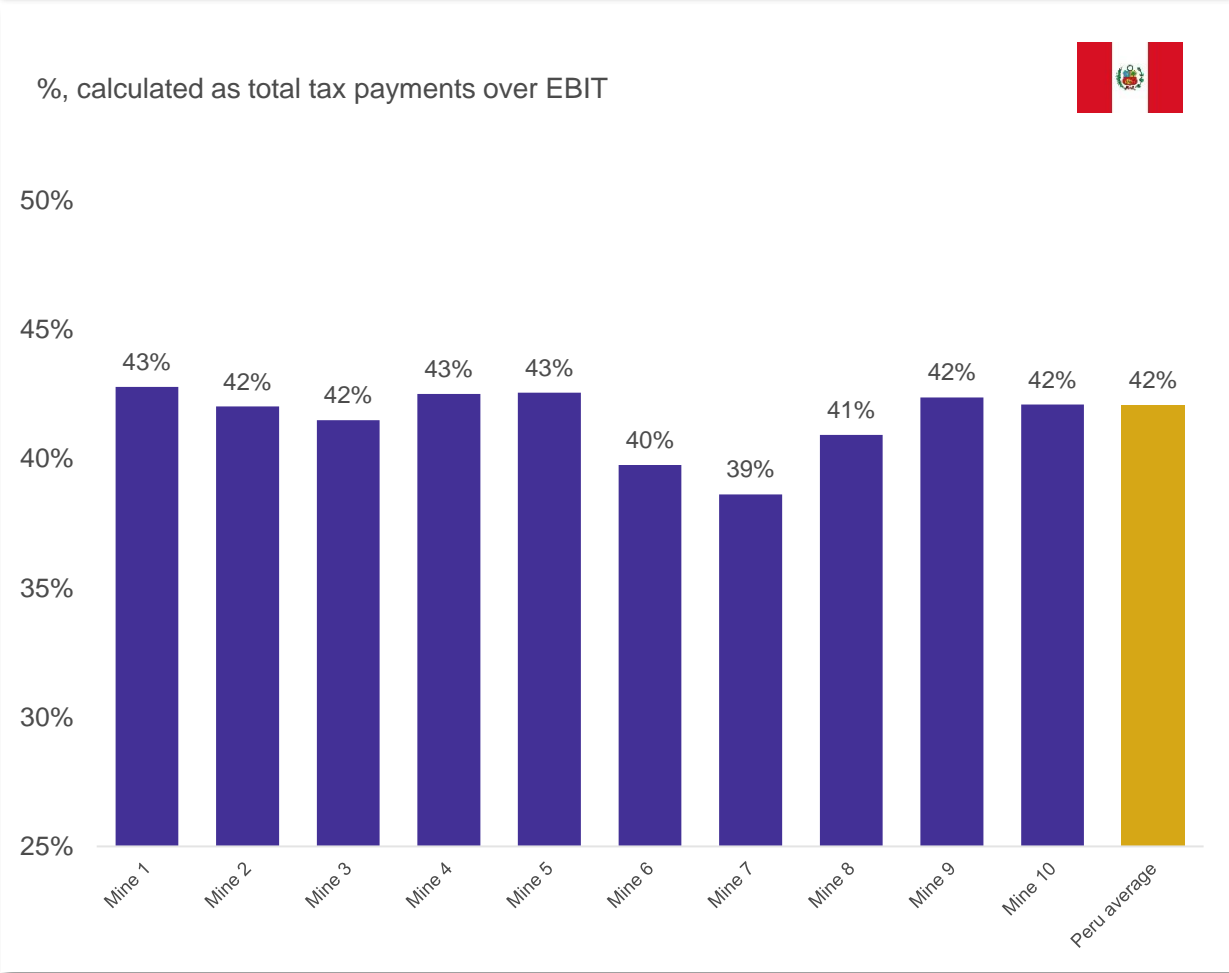
MINING.COM
BHP may reconsider investments in Chile if tax hikes go forward
Reuters | July 17, 2022 | 10:42 am | Top Countries: Latin America, Canada

BHP
BHP calls for public-private agreement to promote an investment climate in Chile
19 April 2023
BHP Americas President Rag Udd said it is imperative to streamline the permitting process, push for regulatory and fiscal certainty for the development of large mining investments, while highlighting the natural resources company's willingness to increase its contribution to the country.
The President of BHP Americas, Rag Udd, spoke at the World Copper Conference and called for a broad public-private agreement to enable new long-term investments in the mining sector in Chile, guaranteeing faster permit delivery and ensuring regulatory and fiscal certainty.

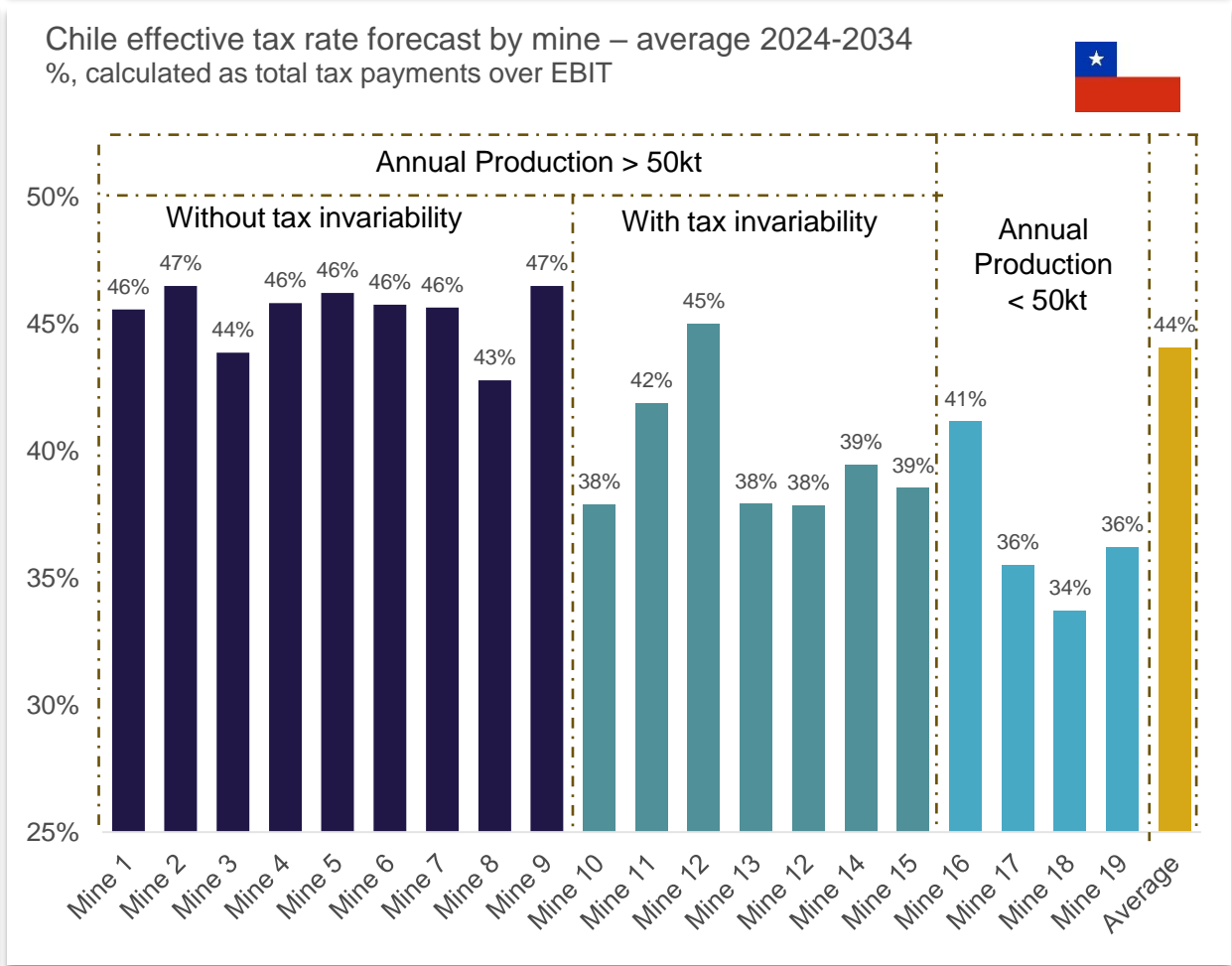
Anglo American
Anglo American secures environmental approval for Los Bronces Integrated Project
Anglo American welcomes the decision in Chile by the Committee of Environmental Permit Application for the Los Bronces Integrated Project, the next phase of development for one of the world's largest copper mines. Anglo American's Base Metals business, said: "We welcome the

New Chilean royalty law will put Chile 2% ahead of Peru in terms of effective tax rate

Peru effective tax rate forecast by mine – average 2024-2034



Chile effective tax rate forecast by mine – average 2024-2034

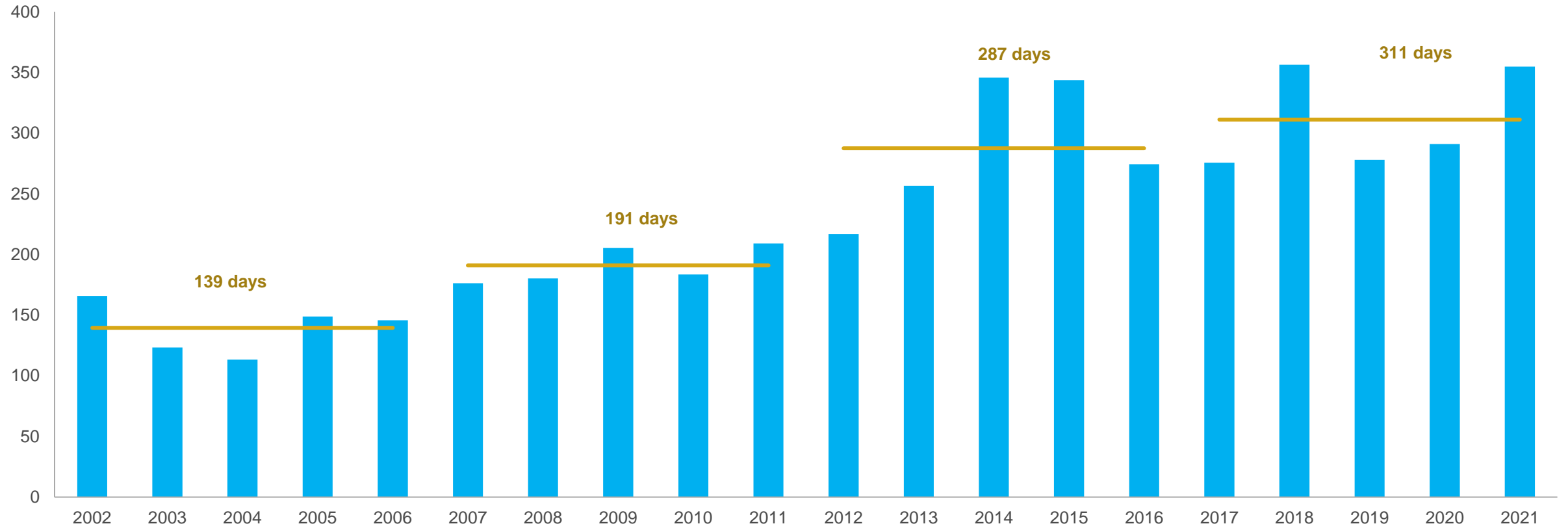


Approval time has more than double in less than 10 years

Chile has not yet addressed a major issue impacting investing decisions

DIA approval time for mining projects

Days since date of filling up to qualification





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