Decarbonisation Update 2024

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Today’s programme

Grow in the materials necessary to support a low-carbon transition

Reduce Scope 1&2 operational emissions

Work with our **partners** to reduce Scope 3 emissions

Net zero operational emissions by 2050

50% reduction by 2030[1]

$5-6bn capex by 2030

Focus of this seminar

Jonathon McCarthy
Chief Decarbonisation Officer

Ben Woffenden
General Manager, Global Equipment & Diesel Transition

Stefan Kwiatkowski
General Manager, Decarbonisation Office

Kate Harris
Decarbonisation Investment Manager

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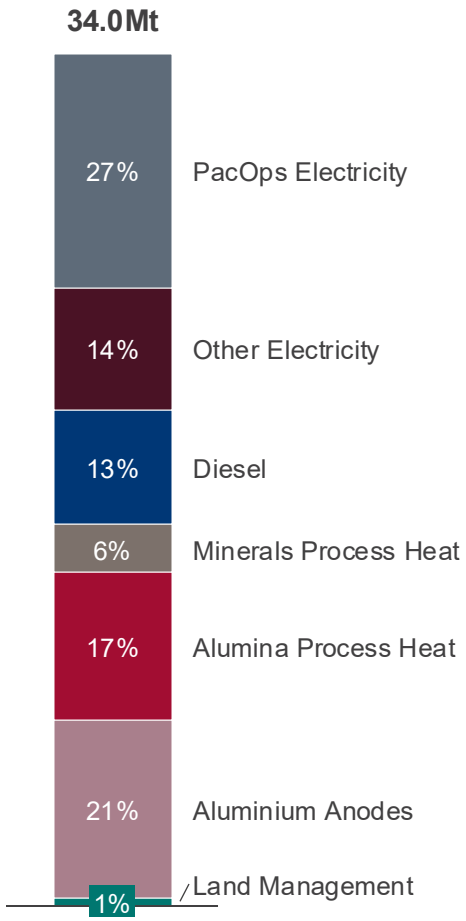
1. Represents net emissions reduction vs 2018 baseline

A new era in decarbonisation commitments

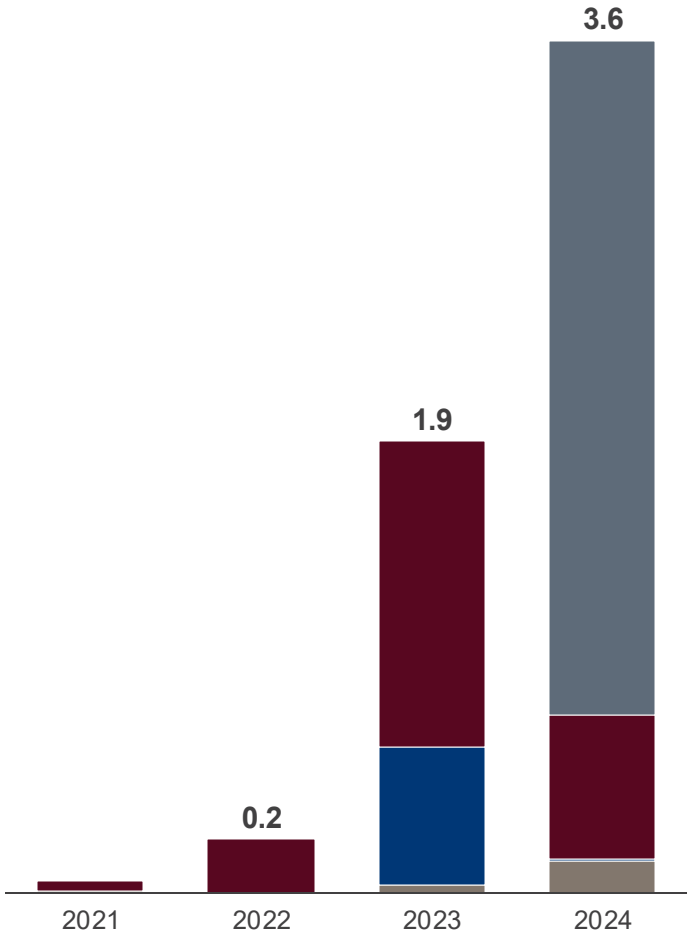
2023 emissions[1]

% by source



Annual abatement commitments

Mt CO_2e equity basis



Chute-à-la-Savane

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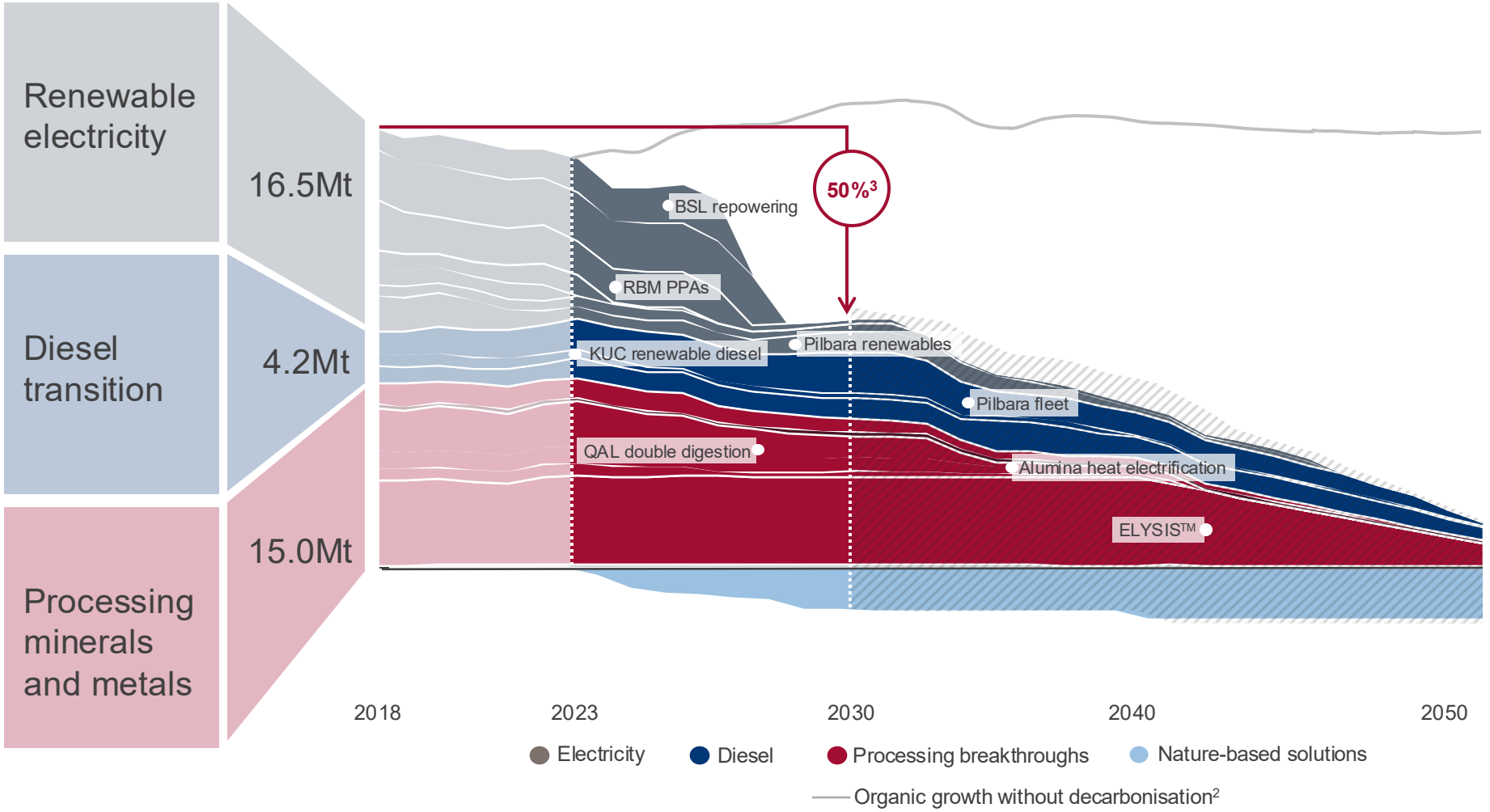
1. Emissions baseline updated to reflect increased equity at BSL, NZAS

Roadmap to net zero

Group decarbonisation pathway[1]

(Mt CO_2e equity basis, 2018 baseline)



Pathway to 2030 targets underpinned by repowering of electricity supply

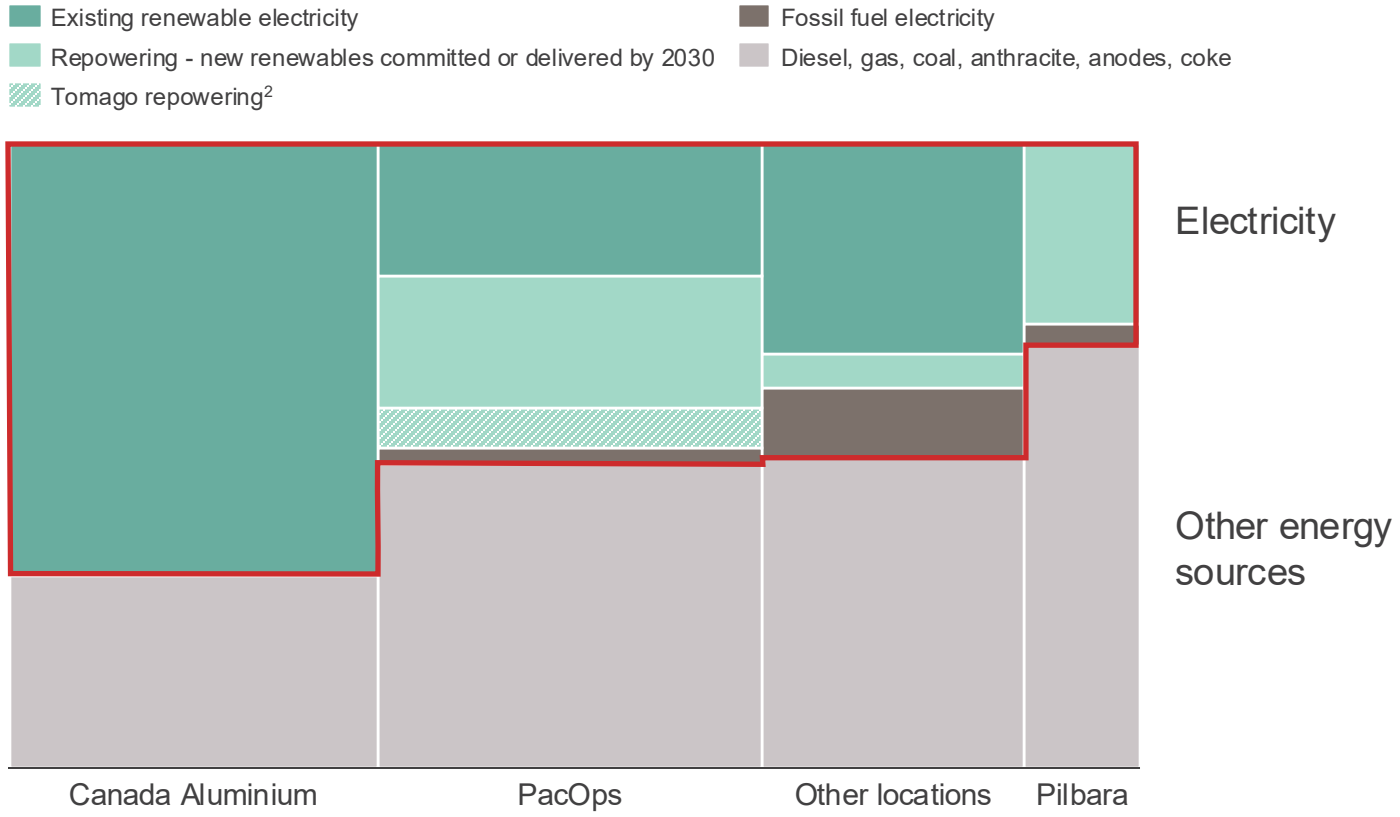
Net zero requires scale up and economic deployment of technology breakthroughs

Nature-based solutions play a role in addressing climate change and nature loss, offset use toward target limited to 10%[4]

1. Totals shown represent 2018 baseline emissions, reflecting increased equity at BSL, NZAS
2. Baseline emissions extended post-2040 using assumed asset life extensions
3. Represents net emissions reduction vs 2018 baseline
4. We anticipate the use of high-integrity offsets (including compliance credits) towards our 2030 target (up to 10% of 2018 baseline)

Rio Tinto is a significant user of energy

2023 Group energy consumption[1]
(PJ, equity basis)



~500PJ
annual energy consumption

55%
energy consumed as electricity

71%
Renewable electricity today

>90%
Renewable electricity by 2030[3]

Repowering our legacy fossil fuel contracts onto new renewable sources

Developing a pipeline for electrification of other energy sources

1. All energy data reflects increased equity at BSL, NZAS and other baseline changes. PJ of electricity energy includes all energy from fuel combustion and energy from generation assets. Renewable electricity includes electricity from all self-generated renewable electricity sources, electricity from gridswhere market-based mechanisms apply and environmental attribute certificates are owned, and grids where market-based mechanisms do not exist but the source of electricity in the grid is materially from renewable sources. Grid definitions are as outlined in Rio Tinto's climate change methodology report.
2. Tomago energy repowering remains subject to finalisation of asset and repowering discussions with partners and governments
3. Based on 2023 operating performance, excludes organic and inorganic growth, closure, productivity changes

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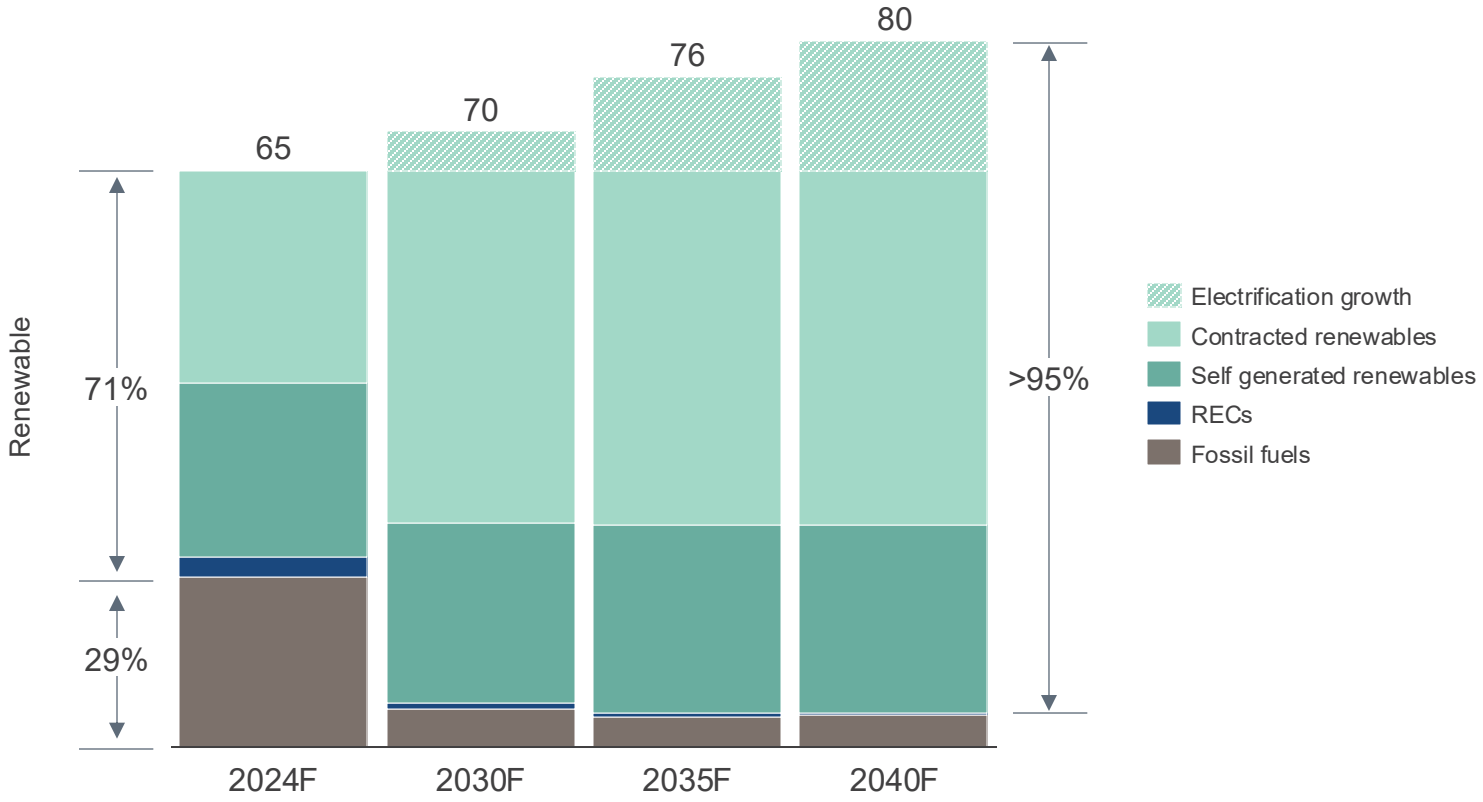
Increasing our share of competitive, high quality renewable electricity

Group electricity use[1]
(TWh, equity basis)

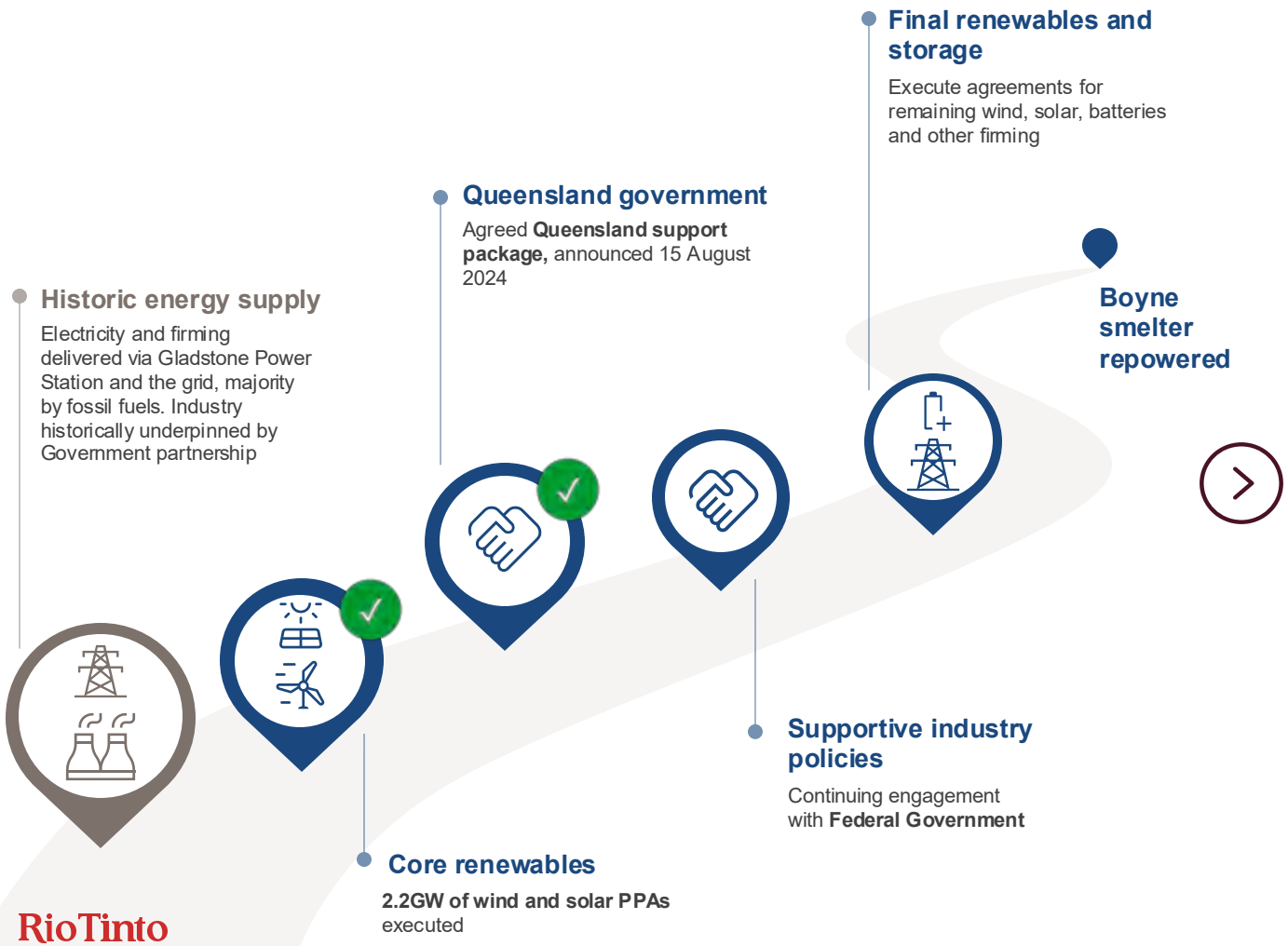


Delivering increasing proportion of direct owned and greenfield contracted renewables

Leveraging our world-class energy assets to underpin growth and electrification

1. All energy data reflects increased equity at BSL, NZAS, 2024 M&A and other baseline changes. PJ of energy includes all energy from fuel combustion and energy from generation assets. Renewable electricity includes electricity from all self generated renewable electricity sources, electricity from grids where market-based mechanisms apply and environmental attribute certificates (EACs) are owned, and grids where market-based mechanisms do not exist but the source of electricity in the grid is materially from renewable sources. Grid definitions are as outlined in Rio Tinto's climate change methodology report.
2. Contracted renewables growth includes Tomago energy repowering, subject to finalisation of asset and repowering discussions with partners and governments
3. Forecasts based on 2023 operating performance, excludes organic and inorganic growth, closure, productivity changes
4. Electrification growth is the additional renewable electricity required for electrification across repowering initiatives and minerals / alumina processing electrification
5. RECs includes all 'unbundled' Environmental Attribute Certificates (EACs), including Renewable Energy Certificates (RECs), Guarantees of Origin (GOs), etc.

Significant progress to repower Boyne smelter



	1982-2029	2029+
Power System	1.7GW coal power station	3-4GW renewables + storage
Smelter load	810MW	970MW
Demand flexibility	Minimal	>15%
Transmission	Direct connection to power station	Integrated regional transmission system
Energy Market	Stand alone	Engaged market participant

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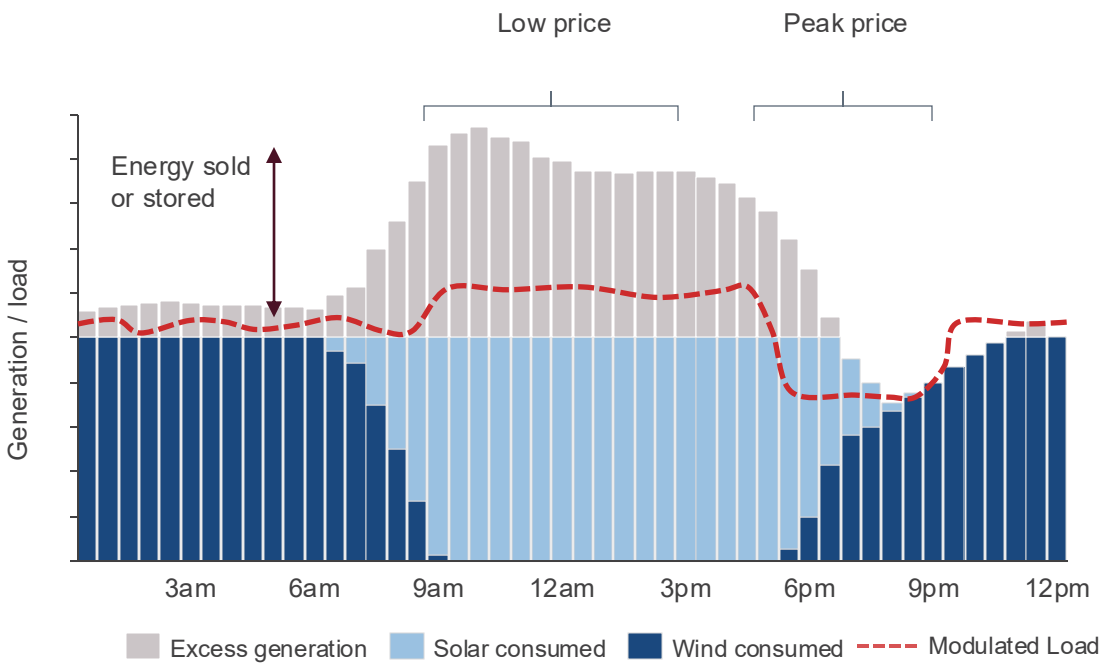
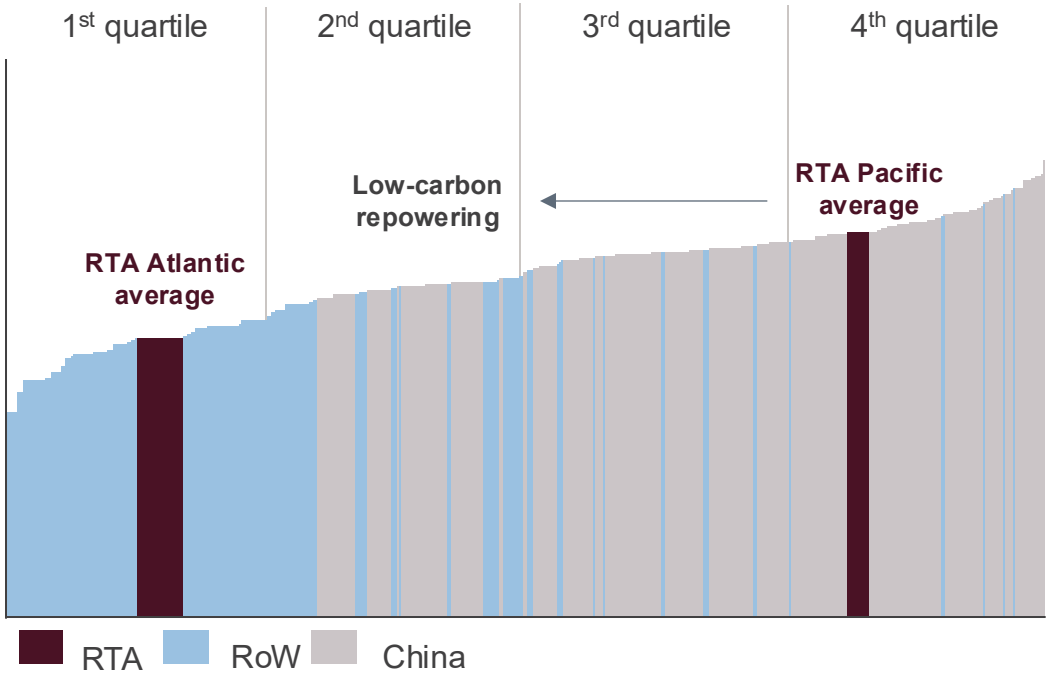
Flexible smelting and energy management can unlock value in a transitioning grid

Example 24-hour window with energy contracts and smelter load



Improving our position on the cost curve

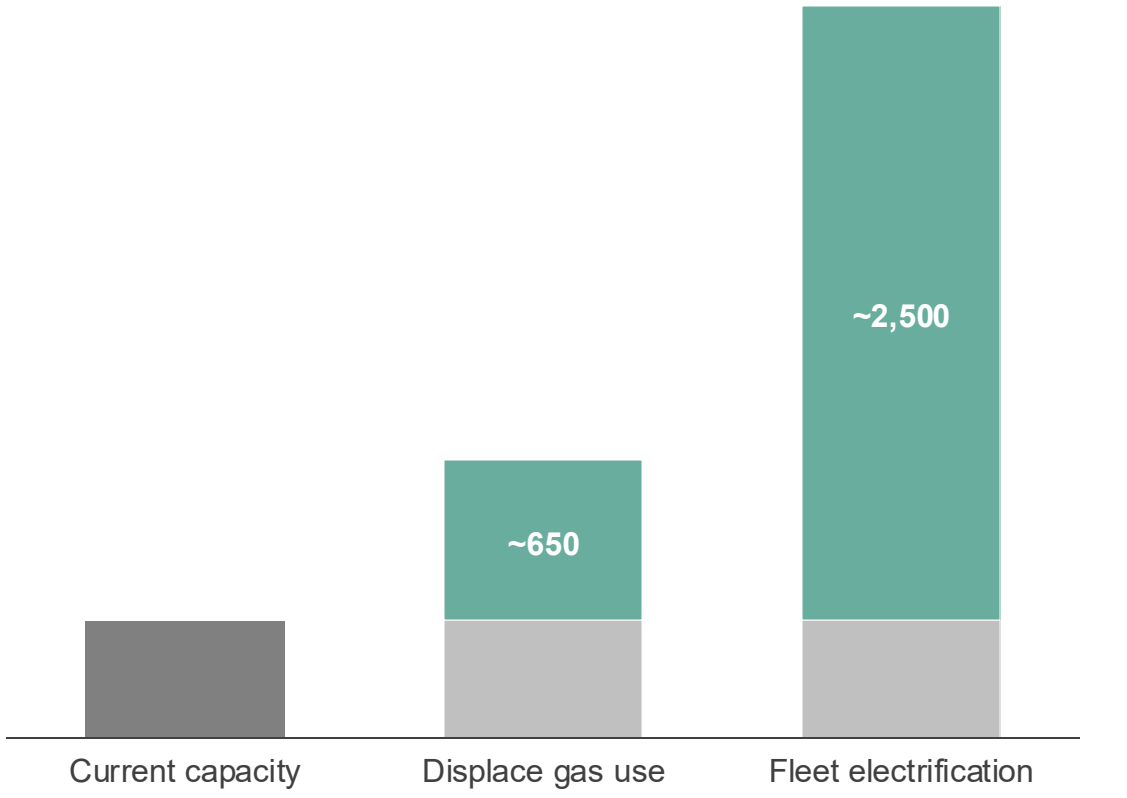
2024 aluminium cost curve[1]



1. Source CRU. Weighted average RTA costs are based on internal data

Partnering to deliver Pilbara renewables

Pilbara generation capacity
(MW)



Traditional Owner benefits sharing

Respectful engagement takes time, but novel partnering will deliver on ambitions and create shared value

Improved energy economics

Displacing gas generates returns by reducing fuel costs and carbon exposures

Enabling demand growth from electrification

Estimated ~2.5GW of renewables is required to enable electrification

Underpinned by an Integrated System Plan

A portfolio of options is under study to identify optimal community, cost and reliability outcomes

Taking action for a competitive transition

We have clear plans to pursue net zero

We are taking real action

Our value-led approach is strengthening our business

Our investments benefit the regions and the communities where we operate

Gudai-Darri

RioTinto

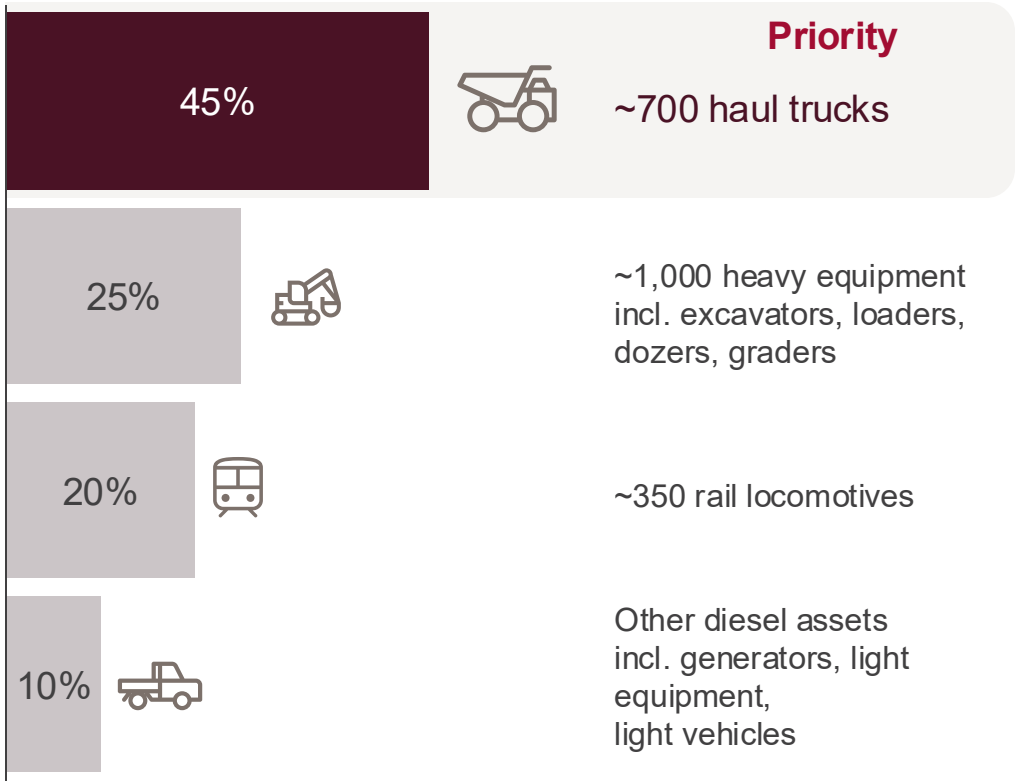
Diesel Transition

Ben Woffenden

RioTinto

Displacing diesel through electrification and renewable diesel

>1.5bn litres of diesel is consumed across primary mobile equipment (% diesel use)



Our solutions will enable a pragmatic pursuit of decarbonisation while delivering value to our stakeholders

Electrification

- ⊕ Higher ‘energy to wheel efficiency’ of ~80% compared to ~35% for diesel engine
- ⊕ Aligned with industry development
- ⊖ Technologically constrained
- ⊖ Deployment must be aligned with fleet replacement timing

Renewable diesel

- ⊕ ‘Drop in’ fuel – no modifications required
- ⊕ No system or technology changes
- ⊖ Sourcing sustainable feedstock supply
- ⊖ Pricing uncertainty as regulation changes and industry demand increases

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Trialling multiple technologies to secure viable fleet pathways

Projects	What we are doing	What we are solving for
 Ultra class battery electric haul truck trials	• CAT trial in Pilbara from 2024 • Komatsu trial in Pilbara from 2026	• Fleet, energy and battery system integration • Productivity impacts due to battery charging • Testing and development of truck and battery design
 SPIC truck and battery swap trial	• Demonstrate end to end solution at Oyu Tolgoi • 8 trucks and a battery swap & charge station	• Test new technology for wider application • Leverage Chinese speed of innovation • Downtime vs static charge technology
 Renewable diesel pilot (self-developed)	• Develop Pongamia farm pilot in Queensland • Exploring scaleable options	• Test viability of Pongamia seed as a feedstock • Assess economics of new renewable diesel options
 Renewable diesel deployment (commercial)	• Fully transitioned Boron and Kennecott • Investigating additional deployments	• Faster abatement and reduced exposure to diesel • Incentivising competitive market supply options

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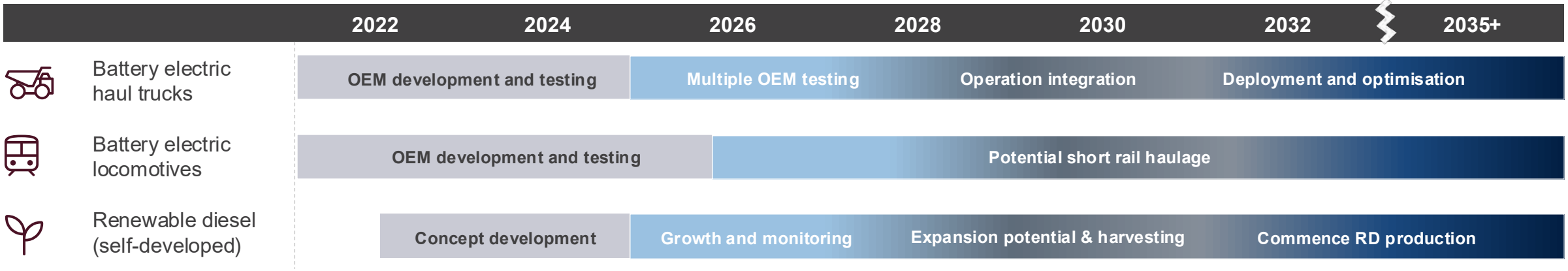
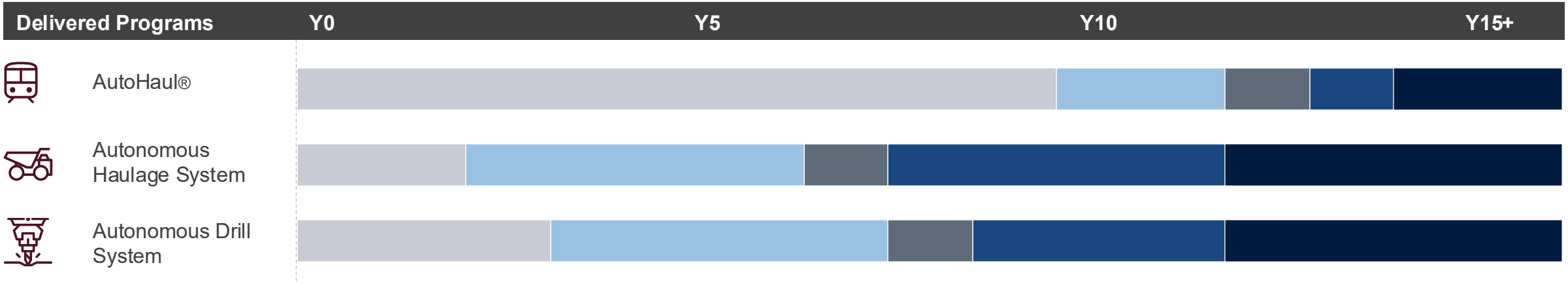
Taking learnings from our major fleet transformations

We need to test, scale and deploy industry breakthroughs…



…. and are informed by our history in taking new technologies from inception to proliferation



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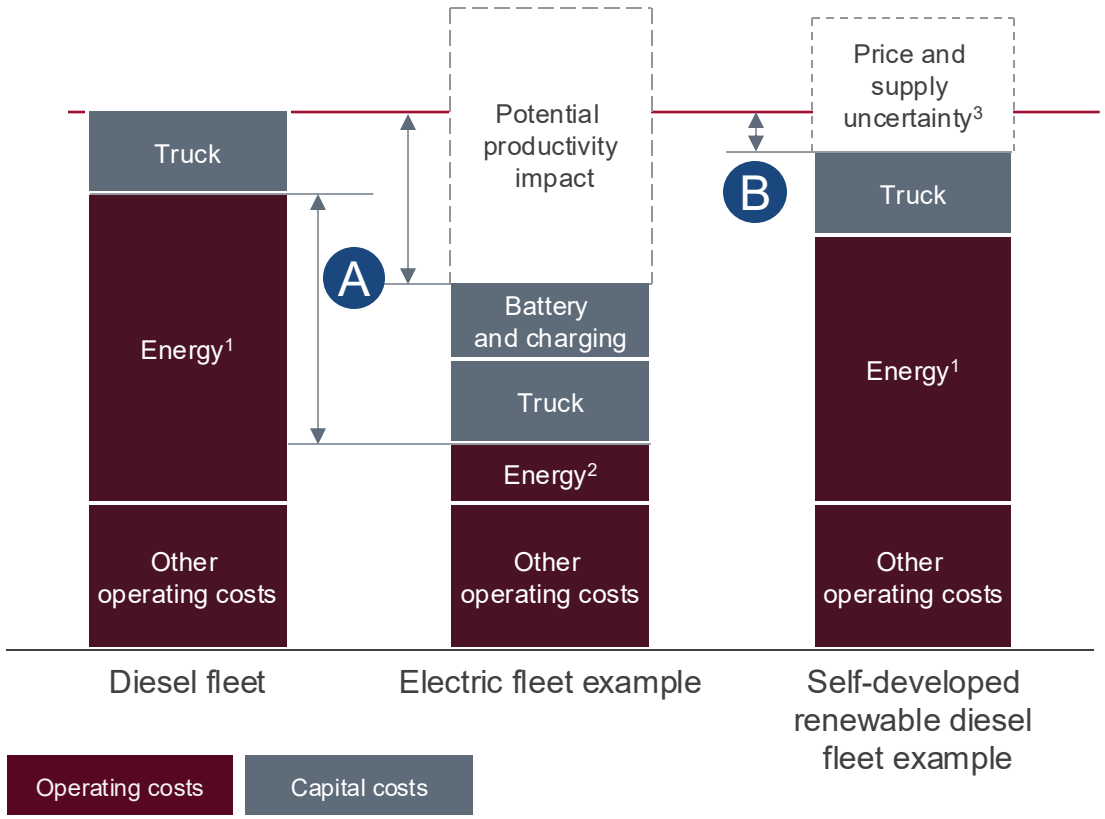
Solving electrification and self-development of renewable diesel can deliver value

Indicative haulage total cost examples 2030+



Electrification

A

~30%
total cost of ownership savings

~55%
operating cost savings

Prospective value in electrification – long term shift to lower cost mining

Value unlocked with focus on fleet productivity and energy management

Renewable diesel

B

~10%
total cost of ownership savings

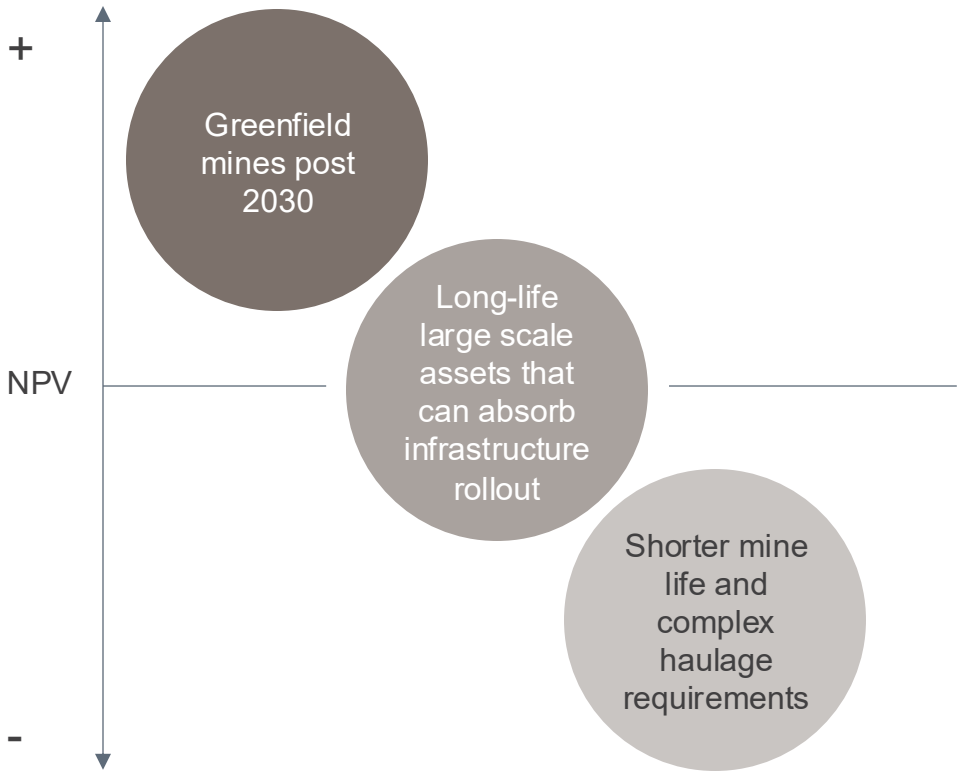
Prospective value in self-developed renewable diesel

Market stimulation, upstream access and viability of Pongamia as a feedstock

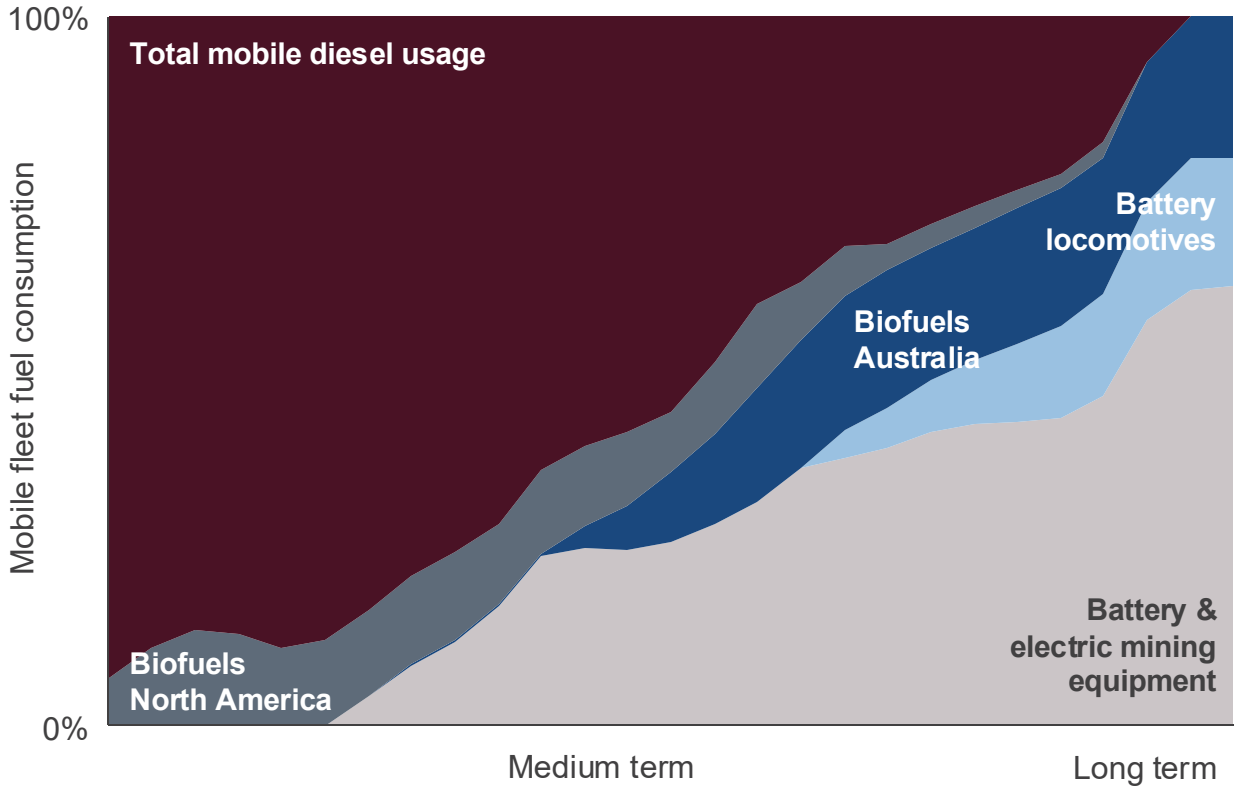
1. Energy costs for liquid fuels are inclusive of forecast carbon cost in our operating regions
2. Energy costs for fleet electrification based on median forecast LCOE electricity costs in our operating regions
3. Renewable diesel pricing and supply uncertainty based on forecast range of potential economic outcomes in new Australian supply chain

Deployment is reliant on asset life and other characteristics

Value proposition of electrification will vary by application and site



Leading to a staged roll out of electrification



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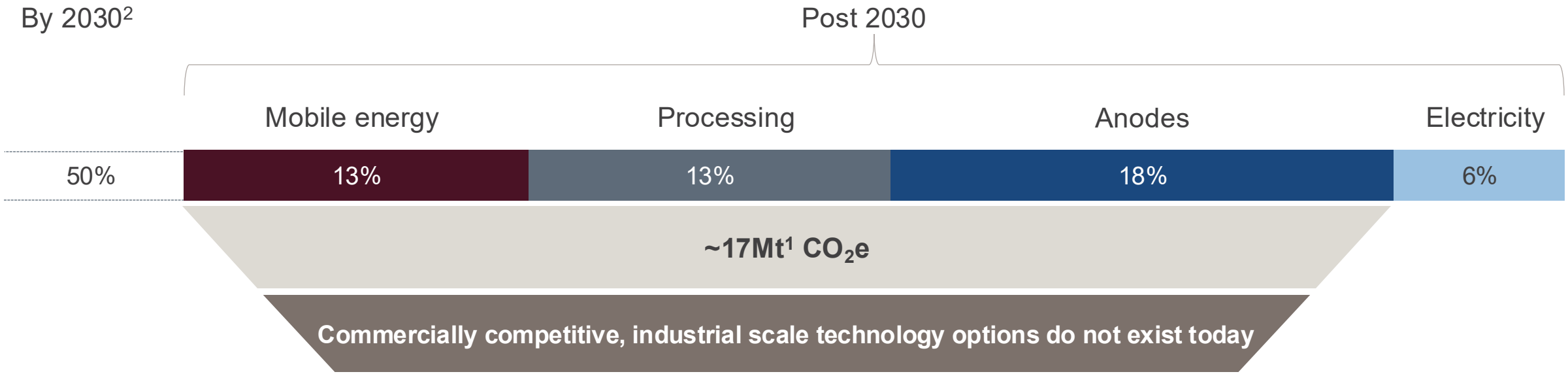
Post 2030 pathway

Kate Harris

RioTinto

Our post 2030 hard to abate emissions require deployment of breakthrough technology



Deployment barriers

- Nascent technology
- Challenging economics
- Asset fundamentals
- Impact to operations

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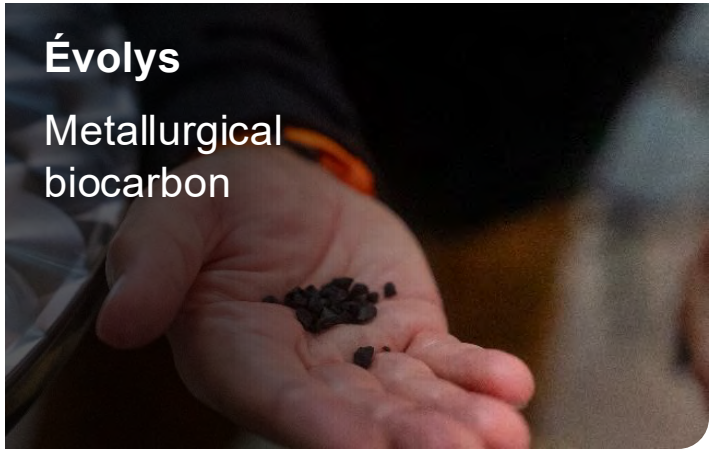
1. Represents forecast 2030 emissions for mobile energy, processing and anodes and reflect increased equity at BSL, NZAS. Percentages based on total forecast residual emissions at 2030
2. 50% represents net emissions reduction vs 2018 baseline

Investing now for a net zero future

Pipeline of **~60 projects** with **~$1bn**[1] of committed co-investment in industrial scale R&D

Targeted **co-investment with Government** and **other strategic partners** where we see scope for competitive advantage

Future potential to **scale up beyond pilot** and **demonstration** both within and outside Rio Tinto



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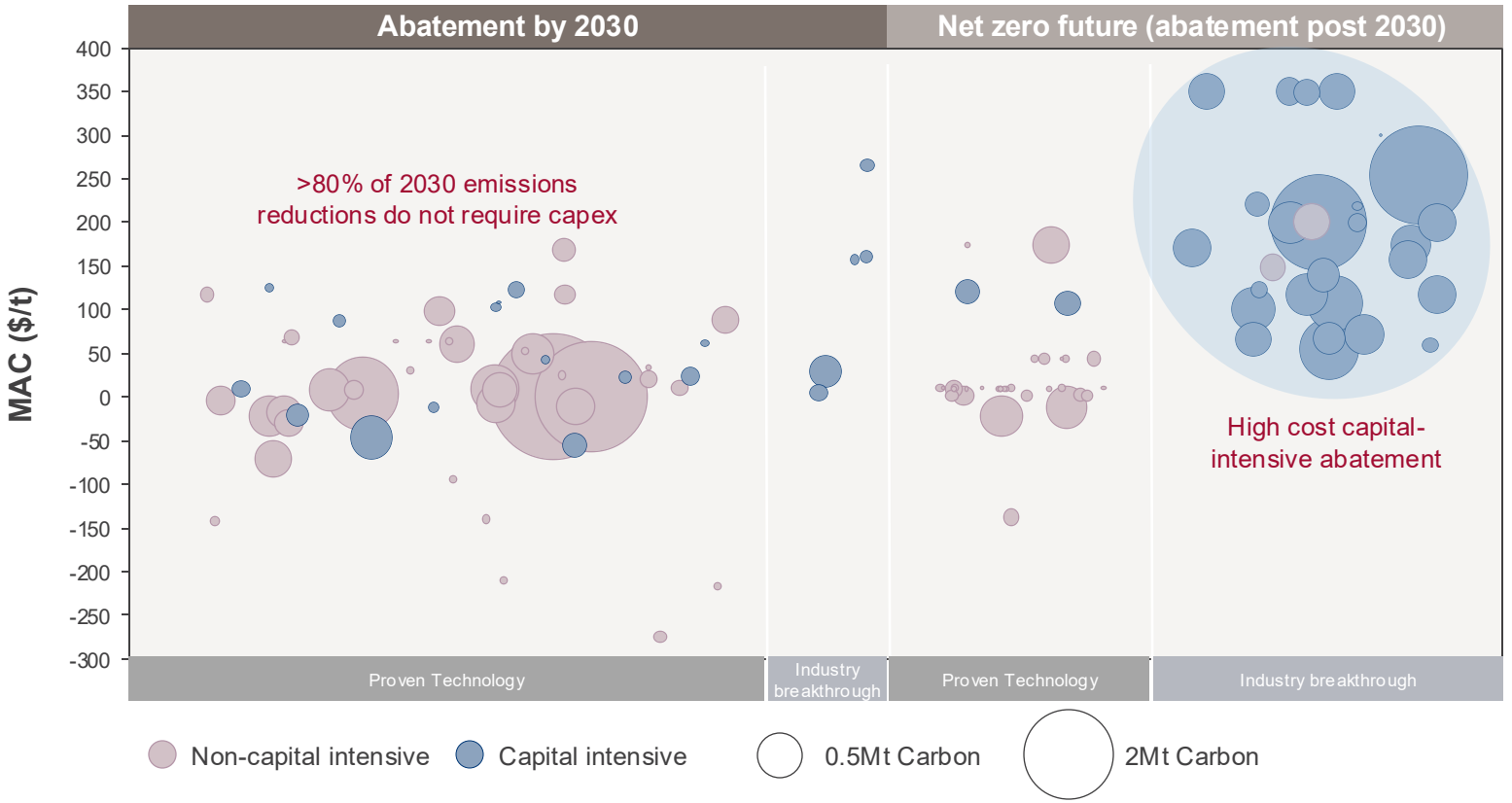
1. Based on 100% of committed project investment and includes contributions by Rio Tinto, our partners and the government associated with decarbonisation

Net zero industry requires co-ordinated global action

Decarbonisation pipeline

(Mt CO_2e, equity basis[1], marginal abatement cost (MAC) excluding carbon costs)



Net zero metals processing requires high capex intensity rebuild of legacy industrial infrastructure

Reaching economic deployment requires:

- Strong industry partnerships
- Global carbon pricing and/or green metal premiums that enable competitiveness with legacy high carbon assets
- Entirely new net zero economy supply chains

1. Peak abatement associated with each individual initiative
2. MAC calculated as net present cost (value) excluding any carbon savings divided by the present value of the abatement deliveed

Value considerations

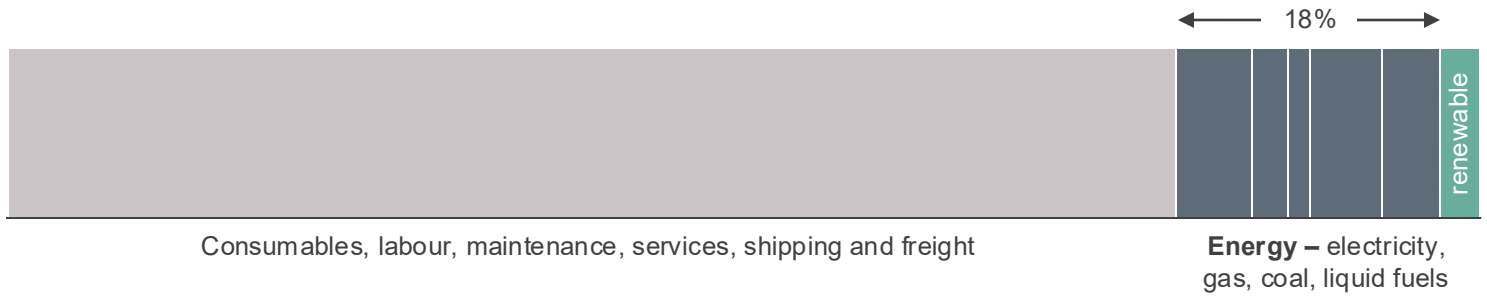
Stefan Kwiatkowski

RioTinto

Transitioning from fossil fuels is a key business imperative

2023 cash operating costs

($bn equity basis)[1]

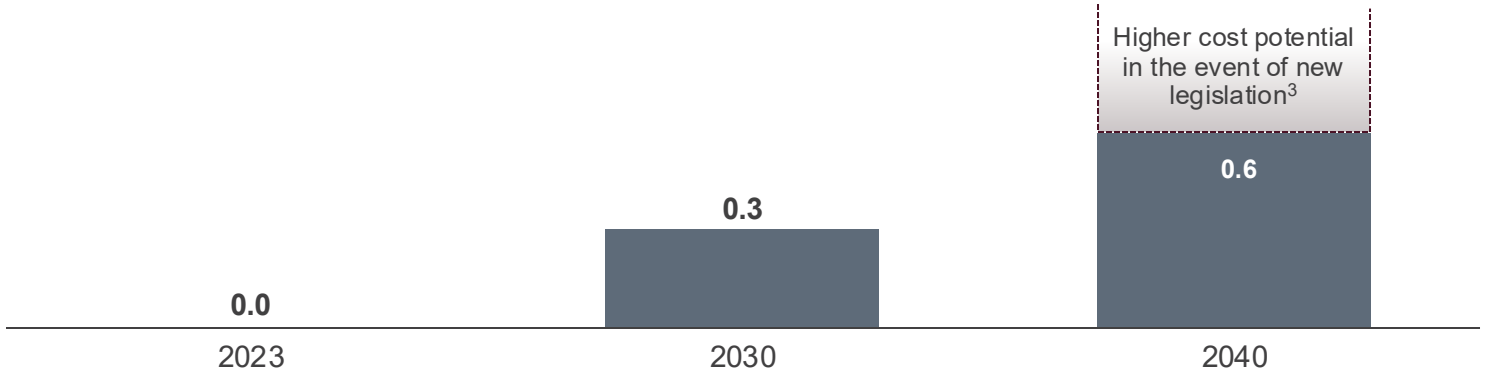


Fossil fuels are ~18% of operating cash costs

Structural decarbonisation de-risks our operations from volatile fossil fuel markets

Cost of currently legislated carbon penalties, excluding carbon abatement[2]

($bn p.a.)



48% of emissions are in scope for carbon penalties, cash impacts not yet felt

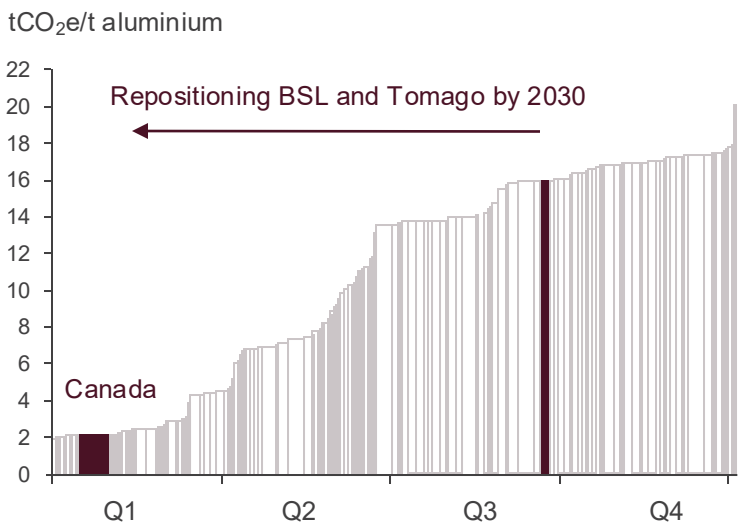
Decarbonisation reduces carbon penalty exposures

1. Rio Tinto 2023 Annual Report, excludes non-cash items such as depreciation, amortisation, provisions, freight and shipping partially allocated to liquid fuels
2. Australian Safeguard Mechanism and Western Climate Initiative (WCI) which apply to Scope 1 (excluding generated electricity) emissions in Australia, Canada and California, carbon pricing utilises Rio Tinto scenarios. Carbon abatement includes carbon allowances currently generated by operating assets.
3. $0.6bn of 2040 costs assumes no decarbonisation is delivered and assumes extension of currently legislated policies remain capped at 2030 baseline level with no further reduction. Further cost exposure possible if legislated policies are subsequently revised

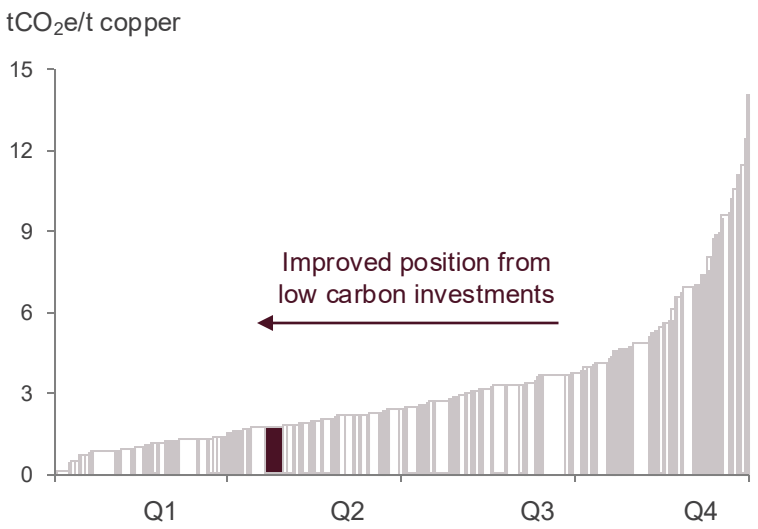
Positioning our assets competitively for a low-carbon future

CO_2e intensity positioning of our assets[1]

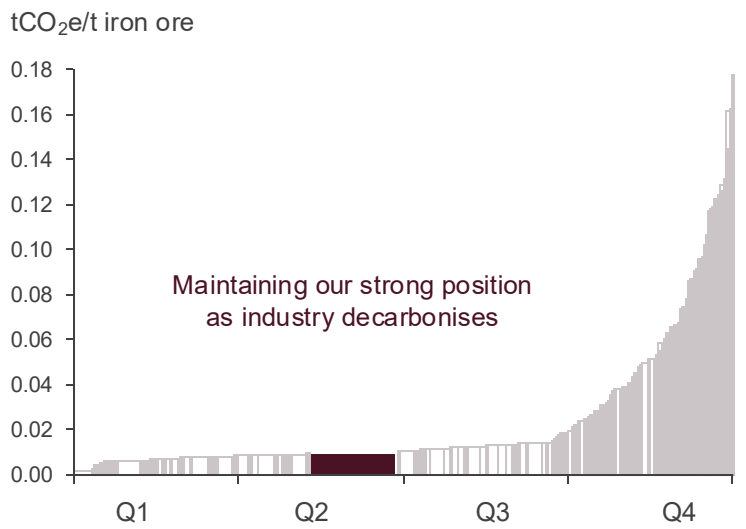
Aluminium



Copper[2]



Iron ore[2]



Uncertainty exists in the extent and timing of consumer appetite to pay for green premiums

Pursuing a value accretive decarbonisation pathway provides opportunistic no-cost optionality as markets mature

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1. Carbon intensity data sourced from CRU, MineSpans and Rio Tinto internal numbers, data shown for 2023
2. Copper and iron ore carbon intensity positioning shown on an aggregated asset basis

Supporting our regions for success in the transition

Energy

Indigenous-owned and participation in development

Underwriting large-scale energy and modulating industry demand to support the transition

Regional industry

Partnering with Government to preserve and grow employment opportunities

Fostering new industry – Évolys biocarbon plant, Pongamia farm, hydrogen in Gladstone

Nature

Investing in nature-based carbon projects in our operating regions

Co-designing solutions with communities for improved livelihoods through nature

Continuous optimisation for carbon reduction and shareholder value

	2021	2024
Target	50% by 2030	50% by 2030
Capex	$7.5bn	$5bn-$6bn (lower end) Seeking further opportunities to lower capex intensity
Returns	WACC[1] for Rio Tinto	12-15% IRR[2] Portfolio allocation Carbon price evolution
Delivery		>30 partnerships


Oyu Tolgoi

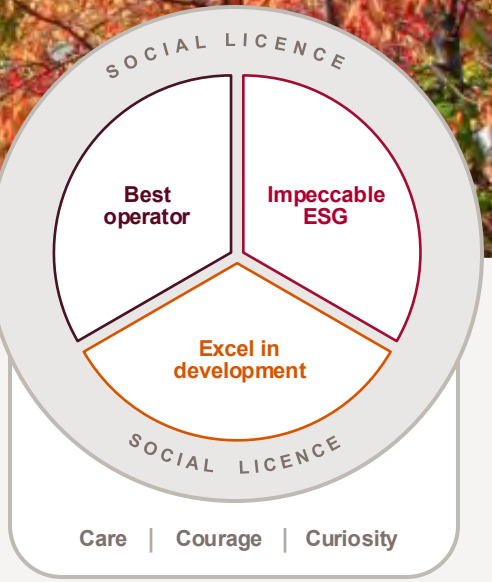
1. In 2021 returns from our decarbonisation investments were expected to align with Rio Tinto's Weighted Average Cost of Capital (WACC)
2. IRRs stated on a post-tax, real basis inclusive of carbon pricing under Rio Tinto's Conviction scenario. Returns applicable to 2030 delivery portfolio only

Decarbonisation

Making **industry leading commitments** to repowering and industrial scale R&D

Transitioning our assets for value in a low-carbon future

Strengthening the regions the communities where operate



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Q&A

Diavik